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Revised Pre-Construction Investigation Work Plan – Proposed Sky Harbour North Hangar Building

Hudson Valley Regional Airport Site
Town of Wappinger
Dutchess County, New York
Site #C314129

Prepared for:

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"I, Jim McIver, certify that I am currently a Licensed Professional Geologist in New York and that this work plan was prepared in accordance with applicable statutes and regulations and in substantial conformance with DER Technical Guidance for Site Investigation and Remediation (DER-10)."

PRE-CONSTRUCTION INVESTIGATION WORK PLAN
HUDSON VALLEY REGIONAL AIRPORT
18 GRIFFITH WAY
TOWN OF WAPPINGER, DUTCHESS COUNTY

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1.0 INTRODUCTION & PURPOSE

1.1 Introduction

The Hudson Valley Regional Airport is located at 18 Griffith Way, in the Town of Wappinger, Dutchess County, New York (the “Site”). Refer to Figure 1 – Site Location Map. The Site is operated by the Dutchess County Department of Public Works (the “County”). This Site was listed as a Potential Inactive Hazardous Waste Disposal Site (IHWDS) ("P-Site") under Environmental Conservation Law (ECL) 27-1305, due to the discovery of the per- and polyfluoroalkyl substances (PFAS) perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) detected in May 2016 at concentrations exceeding regulatory criteria in an on-Site potable drinking water supply well. The New York State Department of Environmental Conservation (NYSDEC) accepted the Site into its Brownfield Cleanup Program (BCP) on October 15, 2024, to address the PFAS impacts (BCP No. C314129).

A privately driven construction project is proposed at the Site and the developer wishes to begin this project before the NYSDEC-approved Remedial Investigation (RI) has begun and/or been completed. This project is herein referred to as Sky Harbour North (refer to Figure 2: Site Overview Map for the location of the proposed Sky Harbour site). Since the RI has not begun or been completed for the Site, the NYSDEC has requested that a Pre-Construction Investigation be conducted at the hangar location to characterize Site conditions to determine the potential presence of contaminants in project soil, soil vapor, sediment, surface water, and groundwater within the proposed construction area. If contaminants are encountered at levels exceeding the applicable regulatory guidance values, an Interim Remedial Measures Work Plan (IRM WP) will be provided to the NYSDEC that outlines the steps that will be taken during construction to address contaminated soil, soil vapor, sediment, surface water and/or groundwater identified within the proposed construction footprint and associated buffers, and to address potential human health exposure pathways and potential environmental impacts.

This Pre-Construction Investigation Work Plan (PCI WP) describes the investigation activities proposed for the future construction area within the Site. The PCI WP is intended to collect sufficient data to determine the remedial actions necessary during construction if contamination is identified in the proposed work area above applicable regulatory guidance values.

1.2 Purpose and Scope

The purpose of the PCI is to characterize the nature and extent of contamination that may be present in Site media within the construction footprint and buffer areas of the proposed North Hangar site. The purpose of this PCI WP is to describe in detail the proposed investigation means and methods for the Sky Harbour North Hangar site. Data from this PCI will be reported in a PCI Report and in an IRM Work Plan, to be submitted simultaneously. The IRM work plan will propose remedial activities to be employed as necessary during construction to address contaminated materials effected by the proposed construction, if required. These remedial activities may include, but are not limited to, on-site reuse of soil (as approved by the NYSDEC), including placement beneath a suitable cover system (in accordance with DER-10), and/or off-site disposal at a permitted disposal facility. If remedial actions are deemed necessary due to on-site contamination, they will be proposed in an IRM Work Plan subject to NYSDEC approval prior to construction.

The future hangar site has significant far-reaching economic benefits for the region. Construction is scheduled to begin before the RI is completed. The scope of work presented herein is intended to characterize soil, soil vapor, sediment, surface water and groundwater contaminants that may be present within this area.

The data obtained during this PCI will be collected in accordance with the general requirements identified in the NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation, DER-31, Green and Sustainable Remediation Initiative and the NYSDEC Guidance for the Sampling, Analysis and Assessment of Per and Polyfluoroalkyl Substance (PFAS) Under Part 375 Remedial Programs (April 2023).

The proposed construction disturbance area footprint generally consists of two proposed hangars and associated aprons: Hangar 1, Hangar 2, a general access (G.A.) apron, and an apron south of the proposed hangars abutting Taxiway D. Foundation Plans and Site/Utility Permit Drawings for the North Sky Harbour Hangar facilities are included in Exhibit 1. All work shall be within proposed Work Area 1 and Work Area 2, as defined on sheet C-031.

The two proposed hangars at the North Sky Harbor Site each measure 269 feet by 156 feet. The apron south of the proposed hangars is roughly rectangular, and measures 569 feet by 171 feet. The apron north of the proposed hangars consists of a rectangular portion 569 feet by 52 feet. An additional portion of this apron extends north 73 feet for additional parking and general access purposes. Excavation associated with construction of the proposed hangars will generally be limited to approximately the upper 4-8 feet of soil across the site, with few select features (e.g. utility related structures) excavated to 10 feet below ground surface.

The foundation of the proposed hangars will be slab on grade with typical spread foot foundation design. The reinforced concrete slab for the hangars shall be 12.5 inches thick, and the reinforced concrete slab for the office areas shall be 5 inches thick. Below the reinforced concrete slab, a 15-mil Stego wrap vapor barrier will be installed to protect the concrete slab from moisture and vapor intrusion. A 6-inch layer of clean crushed stone shall be placed below the vapor barrier to allow for drainage and uniform bearing. The hangar walls will be metal, enclosing a wide-open working space and there will be an enclosed office space within each hangar, with ancillary associated utilities. Water will be provided from the existing municipal/public water supply at the airport, and sanitary waste management will be provided by underground disposal facilities built in compliance with applicable health department requirements.

Two stormwater infiltration basins, a septic tank, and a hydrodynamic separator are proposed within Work Area 1. The largest infiltration basin/bioretention area is proposed north of proposed Hangar 2. The bioretention area will consist of a 36-inch concrete sand layer, a 12-inch clean washed gravel layer, a 6-inch underdrain to connect to the overflow catch basin, and a control structure. A silt fence will be installed around the bioretention area during construction. The second infiltration basin will be located east of Hangar 2. It will consist of underdrain piping embedded in pea gravel, located beneath filter media, and growth media with plantings. A septic tank and associated sanitary subsurface disposal system are proposed north of Hangar 2. The septic tank shall be 8.5 feet in length by 5.5 feet in width. The five (5) sanitary subsurface disposal system trenches shall be 60 feet in length and 2 feet wide, with all trenches spaced 4 feet apart. An oil / water separator is proposed north of proposed Hangar 2 within the G.A. apron. The separator will be constructed of mild carbon steel and gauged based on a 60-inch maximum burial depth. Work Area 2 includes construction associated with the watermain connection; an 8-inch PVC water line will be connected to the existing water valve southeast of Work Area 1 with proposed water service line connected to the proposed hangars. Additional details can be found on sheet C-521.

The construction contractor shall at all times control dust, mud, and runoff resulting from operations in accordance with the CAMP, Fugitive Dust Mitigation Plan (per DER-10 Appendix 1B as applicable and as required). The Contractor will be responsible for installing and maintaining all erosion control measures at access, fill areas and staging areas during construction in accordance with the Storm Water Pollution Prevention Plan.

Soil spoils and other construction materials are anticipated to be staged north of Citation Drive and accessed by a gravel driveway. Spoils include excess soil, rock and broken pavement; no unsuitable or organic materials shall be stored in this area. Soil spoils shall be placed on and covered with polyethylene sheeting pending analytical results. The spoil area shall be graded to pitch the lower polyethylene sheeting base toward a lower collection area to capture any water draining from the spoils. The drained water will be collected and containerized for characterization and off-site disposal as applicable, if necessary.

Construction details of proposed material staging areas will be specified in the PCI Report and IRM WP if required due to identification of contaminated soil.

The locations of soil borings were selected to characterize the entirety of the work area, including specific areas of proposed excavation for construction. It is the intention of this investigation to determine, to the extent possible, the extent of impacted media located within the proposed construction footprint and associated buffer areas around the buildings. Remedial actions, if necessary, due to contamination identified above standards and/or guidance values, to address impacted media affected by the construction project will be proposed in a PCI Report and associated IRM WP. Additionally, an Interim Site Management Plan (ISMP), submitted under separate cover will specify methods to manage impacted soil, soil vapor, sediment, surface water and groundwater, as applicable.

The results of this PCI will be incorporated into the future site-wide Remedial Investigation. The PCI Report, IRM WP, and IRM completion report will be appended to the RI report and Site Management Plan.

The proposed PCI will generally include the following tasks:

- Advancement of soil borings to aid in the collection of surface, near-surface, and sub-surface soil samples for subjective field evidence of contamination (FEC) screening; a visual inspection for staining, and screening for organic vapors with a photoionization detector [PID], and for laboratory analysis.; installation of groundwater monitoring wells in overburden groundwater aquifer; and hydrogeologic characterization of the Site's saturated subsurface materials.

- Collection and laboratory analysis of a sediment sample and a surface water sample within the area of proposed outfall replacement.

- Collection and laboratory analysis of soil vapor samples within the area of the proposed building footprints.

- Collection and laboratory analysis of groundwater samples from the newly installed groundwater monitoring wells.

All material to be imported to or reused at the North Hanger site during construction shall be requested via the NYSDEC's Request to Import/Reuse Fill or Soil form. This form shall be approved by the Department prior to importation to or reuse at the site during construction. Recommendations regarding importation or reuse will be included in the PCI Report and IRM WP, if applicable.

2.0 SITE DESCRIPTION & HISTORY

2.1 Geology

The Site is relatively large and expresses variations in both overburden soils and bedrock. Soils generally consist of sandy loams, alluvial river deposits and/or glacio-fluvial deposits and glacial tills, which have been reworked in some sections of the Site. Bedrock is reportedly predominantly shale or limestone but is likely to vary significantly in elevation below and surrounding the Site.

The recovered soils in borings advanced at the Site during the SCI were observed to be loose sands and gravels overlying dense tills or silts. The SCI soil borings were limited to overburden soil depths. Bedrock was not encountered during on-Site drilling for the SCI.

2.1.1 Geologic History

The oldest bedrock found in Dutchess County is a mixture of gneiss and granite that were formed from pre-existing sedimentary rocks during a continental collision known as the Grenville Orogeny, approximately 1 billion years ago (bya). Roughly 0.5 bya, the supercontinent formed by the Grenville Orogeny broke apart, leaving the area now known to be Dutchess County on the edge of the North American continent, subject to sedimentary deposition that varied as sea level transgressed and regressed. The limestones and shales that now underly much of the County were largely deposited in their present location during periods of deeper sea level. About 450 million years ago (mya), North America was affected by another continental collision that is now known as the Taconic Orogeny, resulting in significant mountain building along the eastern edge of present-day New York, and the ultimate formation of a foreland basin that spanned much of the state, including Dutchess County. An extensive series of thrust faulting occurred during the Taconic Orogeny, which pushed large masses of sandstones and shales over much of the previously formed sedimentary rocks of Dutchess County. The foreland basin formed during the Taconic Orogeny which ultimately led to the deposition and lithification of other sedimentary rocks including sandstones and shales as the Taconic Mountain Range that formed during the Orogeny eroded. A combination of sedimentary rocks formed through these events now underly Dutchess County, though the oldest metamorphic and igneous rocks have been encountered as bedrock in some areas as well.

The Laurentide Ice Sheet fully covered Dutchess County roughly 20,000 years ago and is the most recent geologic force to drastically influence the regional geology and topography. Glaciers associated with the ice sheet's retreat scoured the bedrock, forming undulating valleys and leaving behind surficial deposits (glacial till) of varying source and grain size that are still present today. Fluvial processes of erosion have since dominated the area and continue to modify the landscape.

2.1.2 Soils

Overburden soils at the Site consist primarily of silts and sands. Gravelly sections of overburden also exist but are less extensive, based on review of soil borings from previous site investigations. Deeper sections of soil consist of glacial till with a silty-clay matrix and highly variable grain size. Glacial till was observed or reported to be somewhat weathered, saturated, and only moderately dense in most instances. Additionally, like most overburden units encountered at the Site, the glacial till was not found extensively, likely having been eroded away entirely in some locations. Other overburden soils generally reflect fluvial deposits expected given the Site's proximity to Wappinger Creek.

Soils on the Site are mapped by the United States Department of Agriculture (USDA) Web Soil Survey primarily as udorthents, or gravelly loam, likely derived from glacial outwash and kame deposits. Udorthents are described by the USDA as well drained soils that have often been disturbed or reworked by cutting or filling in areas that are covered by buildings or pavement. The Wappinger loam and Pawling Silt loam are both mapped by the USDA in the western portions of the Site, and are siltier, fine-grained loams that are likely derived from lake and stream sediments.

2.1.3 Bedrock

Boring logs for pre-existing monitoring wells installed by others which extended into the surface of bedrock at the Site indicate that the bedrock beneath the Site is predominantly shale accompanied by intermittent to abundant veins of quartz. Some of the boring logs indicate limestone as bedrock. Upon additional review of bedrock mapping completed for Dutchess County, it is suspected that the bedrock beneath the Site is primarily the Austin Glen Member of the Normanskill Formation. This is a Middle Ordovician unit of interbedded greywackes and shales whose depositional setting would most likely correlate to the foreland basin of the Taconic Orogeny, described in the sections above. It is possible that greywacke was misclassified as limestone in limited instances at the Site where limestone was reportedly encountered. It is also possible that limestone encountered at the Site is an autochthonous unit, older than the Taconic Orogeny, or a section of Taconic Melange, thrusted into the foreland during the collision event. The predominantly shale bedrock at the Site was noted to be moderately to heavily eroded at most locations, and can be seen in outcrops surrounding the Site, as well as in the bed of Wappinger Creek immediately adjacent to the Site.

2.1.4 Hydrology

A surface water body referred to as the Fire Pond located adjacent north to the Dutchess County Airport Hangar, another pond located in northernmost portions of the Site, and an unnamed stream running through the northeastern portion of the property, east of Route 376 are the only surface water bodies located on-Site. Wappinger Creek is located topographically downgradient from and borders the northern and western Site boundary. The creek flows southwest toward Wappingers Falls and Wappinger Lake, ultimately discharging to the Hudson River. The off-Site Greens Pond is located topographically downgradient from, and approximately 500 feet to the south of the Site across New Hackensack Road. This pond drains via a seasonal, unnamed stream to Wappinger Creek. Lastly, a series of unnamed, perennial tributaries are noted to the east and south of the Site, which ultimately drain to either Wappinger Lake or Wappinger Creek.

2.1.5 Site Hydrogeology

The Site hydrogeology is relatively complex, largely due to the heterogeneity of soils across the roughly 500-acre area. Site soils were presumably reworked in several areas to develop the land surface in a manner necessary for site operations, adding to the complexity. Monitoring well and soil boring logs were obtained from previous site investigations and information compiled in the SCI Records Search Report and were carefully considered during the development of the conceptual site model. However, logs for several boring/monitoring well locations could not be obtained.

Monitoring wells were gauged monthly in March, April, and May of 2021 during the SC for the purpose of groundwater flow mapping and to observe single-season variations in groundwater behavior.

2.1.6 Hydrogeologic Units

After review of the available boring and monitoring well installation logs, it appears that three distinct aquifers exist at the Site, pending further evaluation and aquifer testing: 1) a bedrock aquifer (Bedrock Aquifer), 2) a deep unconsolidated aquifer, located directly above bedrock or till stratigraphically, (Unconsolidated Semi-confined Aquifer) separated by a leaky aquitard and 3) a shallow or perched water table aquifer (Perched or Water Table Aquifer).

Confining Layers and Aquitards

The distinction of each of the three (3) aquifers categorized above stems from the identification of two (2) confining units, or more likely, leaky aquitards: The first being the interface of the weathered bedrock surface and basal till, where encountered, and the second being a clayey silt and/or sand unit encountered at several deep monitoring well locations which extends from about 10-15 feet below the water table to about 20-40 feet below the water table.

2.2 Environmental Site History

Previously, the NYSDEC had classified the Site as a potential IHWDS (P-Site #314129) due to the presence of the PFAS substances PFOA and PFOS detected in May 2016 at concentrations exceeding regulatory criteria in an on-Site potable drinking water supply well. Concentrations of the PFAS, PFOA, and PFOS were also detected in nearby off-Site private water supply wells. Based on the Site's P-Site designation, NYSDEC mandated a Site Characterization Investigation (SCI) of the Site. Nine (9) areas of concern (AOCs) were identified and investigated during the SCI. AOCs included the aqueous film forming foam AFFF firefighting testing area (AOC-1) located at the ends of Runway 15-33; the former Balefill Landfill (AOC-2) located in northwestern portions of the Site; the former Dutchess County Landfill (AOC-3) located in northwestern portions of the Site; the former Jackson Road petroleum spill (AOC-4) located in southwestern portion of the Site; several stormwater outfalls that may have received AFFF during routine testing

(AOC-5) located in southern and west central portions of the Site; the Associated Aircraft Ground (AAG) hangars, former IBM and Flagship Hangars, (AOC-6) located in southeastern portions of the Site; the Airport Rescue and Firefighting Facilities (ARFF)[1]/maintenance building (AOC-7) located in southeastern portions of the Site; the Fire Pond (AOC-8) located in southeastern portions of the Site; and the ends of Runway 6-24 (AOC-9) where AFFF may have been applied at the ground surface.

Results of the SCI are summarized in Section 2.3.1 of this work plan. The PFAS compounds PFOS and PFOA were detected at concentrations exceeding regulatory criteria in various media samples in all of the AOCs with the exception of AOC-9 (ends of Runway 6-24). Other analytes detected above regulatory criteria included metals in soil; 1,4-dioxane (AOC-2 and -3 only), SVOCs and metals in groundwater; and SVOCs and metals in surface water collected from a single sampling location in AOC-5 (Outfalls).

2.3 Previous Environmental Investigations

The following sections summarize two (2) environmental investigations that have been conducted at the Site since execution of an Order on Consent between the NYSDEC and Dutchess County in March 2018. The investigations were conducted from 2018 to 2024 and focused primarily on the presence of the PFAS compounds, PFOS and PFOA, in the Site's media, and to a lesser degree on the presence of other potential contaminants.

2.3.1 Summary of Previous Investigations

The following summarizes the two (2) previous investigations conducted at the Site.

Site Characterization Report, prepared by C.T. Male Associates, December 2019 (Revised October 2021, August 2022, May, June, and October of 2023) (2019 C.T. Male Site Characterization Report). The Site Characterization Report is presented as Exhibit 2.

In general, the SCI included the collection of surface soil, near-surface soil, subsurface soil, sediment, groundwater, stormwater, surface water, and potable drinking water samples from seven (7) Areas of Concern (AOCs) identified within the Site. The SC also

[1] A new ARFF building, situated in the northwest corner of the property, has since been constructed to replace the old ARFF building and is currently operational. References to the ARFF building in this report refer to the former ARFF building, which remains situated in the southeast corner of the property.

included the collection for laboratory analyses for PFAS of potable drinking water samples from on-Site and off-site private potable water wells. The AOCs are depicted in Figure 2.

Surface, near surface, and subsurface soil samples were collected from sampling locations MW 100 to MW 105, as shown on Figure 2: SC AOCs and SC Sampling Locations. The sample type and sampling depths are summarized in the following table.

Sample Location	**Sample Type**	**Sample Depth**
MW 100	Near-Surface Subsurface	2″ – 12″ 6.0′ – 7.0′
MW 101	Surface Near-Surface Subsurface	0 – 6″ 6″ – 24″ 8.0′ – 9.0′
MW 102	Surface Near-Surface Subsurface	0 – 6″ 6″ – 24″ 4.5′ – 5.5′
MW 103	Surface Near-Surface Subsurface	0 – 6″ 6″ – 24″ 10.0′ – 11.0′
MW 104	Surface Near-Surface Subsurface	0 – 6″ 6″ – 24″ 9.5′ – 10.5′
MW 105	Surface Near-Surface Subsurface	0 – 6″ 6″ – 24″ 4.0′ – 5.0′

As depicted on Figure 3: SC Soil PFAS Sampling Results Summary, PFOS exceeded its Protection of Groundwater Soil Cleanup Objective (POGW SCO) promulgated in Chapter 6, part 375 of the State of New York's Codes, Rules and Regulations. POGW SCO's were exceeded in surface, near surface and subsurface soil at five (5) of six (6) sampling locations while PFOA slightly exceeded its POGW SCO in surface soil only at two (2) sampling locations. PFOS and PFOA did not exceed Commercial Use SCOs. As depicted on Figure 4: SC Non-PFAS Soil Sampling Results Summary, the metals copper, lead, and zinc exceeded their Unrestricted Use SCOs in subsurface soil at one (1) sampling location (MW 100) only but were below POGW and Commercial Use SCOs.

Sediment samples were collected for laboratory analyses from the stormwater underdrain outfalls (AOC-5) and Fire Pond (AOC-8) sampling locations, as depicted in Figure 2. As depicted in Figure 5: SC Sediment PFAS Sampling Results Summary, PFOS concentrations ranged from non-detect at Outfall 007 to 11.6 ppb at Firepond 01 sampling locations. PFOA concentrations ranged from non-detect at Outfalls 001 and 007, to 0.637 ppb at Outfall 005 sampling locations. Please note that there currently are no promulgated Sediment Guidance Values (SGVs) for PFAS in sediment.

Groundwater samples were collected from monitoring wells MW 100 to MW 104 in AOCs -1, -4, -7 and -9; monitoring wells MW 2S and MW 3S in AOC-2; monitoring wells MW 15, MW 20 and MW 29 in AOC-3; and monitoring wells MW 3, MW 4, MW 6, MW 18ME, MW 21G, MW 21R and MW 21S in AOC-6. Potable water samples were also collected from the Maintenance Building in AOC-7 and the AAG Hangar in AOC-6. The sampling locations are depicted in Figure 2. PFOS and PFOA concentrations in groundwater exceeded Ambient Water Quality Standards (AWQS) in groundwater at 15 of the 17 sampled monitoring wells with the highest concentrations at AOC-1 (AFFF Testing Area). PFOS and PFOA concentrations also exceeded the Maximum Concentration Limit (MCL) within the domestic water system of the AAG hanger at AOC-6 (AAG Hangars). These concentrations are depicted in Figure 6: SC Groundwater PFAS & 1,4-Dioxane Sampling Results Summary. 1,4-dioxane also exceeded the AWQS in groundwater samples collected at AOC-2 (Balefill Landfill) and AOC-3 (Dutchess County Landfill). PFOS and PFOA exceeded the MCL in a potable water sample collected from the AAG Hangar. PFOS and PFOA were not detected in the potable water sample collected from the Maintenance Building. As depicted in Figure 7: SC Groundwater Non-PFAS Sampling Results Summary, semi-volatile organic compounds (SVOCs) were detected above AWQS in groundwater samples collected at AOC-9 (ends of Runway 6-24). Metals, consisting of iron, magnesium, manganese, and sodium were above AWQS in six (6) of the sampled wells.

Surface water samples were collected for laboratory analyses from the stormwater underdrain outfalls (AOC-5) and Fire Pond (AOC-8) sampling locations, as depicted on Figure 8: SC Surface Water PFAS Sampling Results Summary. PFOS was detected above AWQS at all sampling locations except Outfall 006, as depicted in the figure. The highest PFOS concentrations were from samples collected from the Fire Pond (AOC-8) and from Outfall 003, located adjacent to the Balefill Landfill (AOC-2). PFOA was detected above its AWQS at six (6) of nine (9) sampling locations with the highest concentrations at samples collected from the Fire Pond (AOC-8) and Outfall 001. SVOCs and metals exceeded AWQS at sampling location Outfall 001, as depicted in Figure 9: SC Surface Water Non-PFAS Sampling Results Summary, SVOCs were detected above AWQS in a surface water sample collected from Outfall-001.

PFAS Soil Investigation: Hudson Valley Regional Airport, prepared by Partridge Venture Engineering, PC (PVE), dated December 1, 2022. (2022 PVE Soil Investigation Report for the Proposed North Sky Harbour Hangar). The report is presented as Exhibit 3.

The investigation was focused solely on the location of the Proposed North Sky Harbour Hangar, the location of which is depicted in Figure 2. The investigation included the advancement of 31 soil borings across the parcel employing direct push geoprobe techniques (soil borings) to aid in the collection of 42 soil samples for laboratory analyses for PFAS. Figure 10: PVE Soil PFAS Sampling Results Summary North Sky Harbour Hangar depicts the soil boring locations and the soil sampling locations where PFAS detections were encountered. As depicted in Figure 2, there were no PFOS and PFOA detections that exceeded Unrestricted Use SCGs. It should be noted that each soil sample consisted of a composite sample that was collected from a four (4) foot long depth interval. As such, the actual PFAS concentrations in the soil samples may have been diluted.

2.3.2 Shallow Groundwater Flow as Presented in the Supplemental Site Characterization Report

Six monitoring wells were installed under the supervision and direction of C.T. Male Associates (CTM) Field Staff in August 2019 in accordance with the Site Characterization Work Plan (2018). The wells were intended to supplement the pre-existing monitoring well network and to address immediately identifiable data gaps at the Site. They target the shallow groundwater aquifer at ends both major runways, the Jackson Road Spill area, and the Maintenance/ARFF Building.

The shallow groundwater aquifer generally flows west and northwest, across the Site in the direction of the Wappinger Creek and mirroring the topography and drainage characteristics of the area surrounding the Site. Groundwater in the shallow unconsolidated soils exists under typical unconfined aquifer conditions. Based on the observed shallow groundwater flow pattern and local topography, the shallow aquifer likely discharges at the Wappinger Creek, which exists at an elevation approximately 60 feet lower than the central portion of the Site. In general, the proposed hangar site is hydro-geologically downgradient from the Areas of Concern where PFAS was applied to the ground surface as part of FAA mandated testing. The hangar site may also be hydro-geologically downgradient from the AAG Hangars within AOC-6: the area where chlorinated solvents were found in the subsurface, however AOC-6 is located ~2,200 feet away. See Figure 11: Groundwater Flow Map, Shallow Overburden Wells for additional information.

3.0 OBJECTIVES, SCOPE & RATIONALE

3.1 Objectives

The objective of this PCI is to define the nature and extent of soil, sediment, soil vapor, surface water (storm water), and groundwater contaminants within the area of the Site where construction is proposed for the North Sky Harbour Hangar Facility. Each of these media are anticipated to be affected by the proposed work. Soil, soil vapor, sediment, surface water, and groundwater contaminant concentrations will be characterized to evaluate potential human health exposure hazards to Site workers, adjacent residents, and potential hazards to the environment. This data will be used to evaluate the need for mitigation based on applicable standards, criteria, and guidance (SCGs) in accordance with 6 NYCRR Part 375. Using this information, a remedy will be proposed using IRMs to mitigate exposure scenarios during construction and for future site users. Soil vapor and groundwater will also be assessed in the proposed construction area to determine if vapor mitigation systems may be warranted beneath the proposed buildings. There will also be an assessment as to whether groundwater collection (excavation dewatering) and treatment will be necessary if groundwater is encountered during construction.

Data obtained during this PCI will be incorporated into the future site-wide Remedial Investigation. The intent of this focused environmental assessment is to evaluate what remedial alternatives, if any, should be developed and implemented during construction in these areas.

3.2 Scope and Rationale

The scope of work for this PCI was developed based on the proposed construction plans as depicted on the *Site/Utility Permit Drawings for: Commercial Hangar Development, Hudson Valley Regional Airport (POU)*, prepared by Passero Associated Engineering and Architecture, Bid Set, dated March 2025, Site conditions, and existing data collected from previous investigations performed within the Site.

This work plan includes procedures for collection and analysis of soil, soil vapor, sediment, surface water, and groundwater samples within the proposed work area and associated buffer areas around the proposed hangar footprints, to be constructed in the northwestern portion of the property, abutting the eastern end of Citation Drive. The location of the proposed Site footprint is depicted in Figure 2.

This PCI sampling plan was adapted based on existing environmental data collected during a limited soils investigation within the proposed construction area in December of 2023. PFAS compounds were detected in soil at the proposed locations for the North Hangar site. None of the PFAS detections exceeded the Unrestricted Use, Protection of Groundwater, or Commercial Use Soil Cleanup Objectives but the data was not collected in accordance with the NYSDEC PFAS sampling guidance in place at the time of the investigation.

3.2.1 Proposed Sampling

Soil Sampling

Soil samples will be collected from twenty-nine (29) soil boring locations, one (1) sediment location, and one (1) surface water location as depicted on Figures 12 and 13: Proposed Sampling Locations Map, Sky Harbour North Hangar. The twenty-nine (29) soil boring locations, denoted B-1 to B-29, have been distributed across the Site to provide representative coverage across the proposed work area and adjacent buffer areas. A table detailing locations, depths, and analyses of all samples to be collected from the North Sky Harbour Hangar work area is attached as Table 1: North Sky Harbour Hangar Summary of Proposed Sampling.

The majority of the proposed soil borings (B-1 through B-29) will be advanced by utilizing direct push geoprobe methods to facilitate the collection of soil samples and characterize the environmental quality of soils and geology. A hand auger will be utilized to perform hand borings B-2 and SED-1 which are located within the embankment and outfall location north of Citation Drive. These locations, where excavation for drainage pipe and outfall replacement are proposed, are not accessible by geoprobe. Boring locations denoted on Figures 12 and 13 may be modified as necessary at the time of drilling based on buried utility mark outs by the utility locator (UDIG NY) and results of the GPR survey as applicable. Modifications to this proposed work plan, if required, will be discussed with the NYSDEC project manager prior to implementation and detailed in the subsequent report.

Soil borings will be advanced until saturated soils are encountered (approximate depth of eight to 13 feet below ground surface), except at the hand boring locations which will be limited to two (2) feet below ground surface within the embankment, and the sediment sample location which will be limited to the upper six (6) inches of the outfall sediment, or at refusal. Initial sampling will be limited to the upper two (2) feet of the embankment at proposed location B-2 due to the difficulty of sampling on the steep embankment. If PFAS in soil analytical results are above the Protection of Groundwater SCOs, additional sampling will be proposed to the NYSDEC project manager for approval, as applicable.

Initial sediment sampling will be limited to the upper six (6) inches at proposed location SED-1 within the storm pipe outfall due to the difficulty of hand augering within the larger angular stone (e.g., rip-rap) of this active outfall. If PFAS in sediment analytical results indicate elevated PFAS concentrations, additional sediment sampling will be proposed to the NYSDEC project manager for approval as applicable.

Soil Sampling Intervals

At 29 soil boring locations, three (3) soil samples will be collected from the following discrete depth intervals for PFAS analysis:

(1) A surface soil sample will be collected from the 0 to 2-inch depth interval.
(2) A near-surface soil sample will be collected from the 2 to 12-inch depth interval.
(3) A subsurface soil sample will be collected from the 12 to 24-inch depth interval.

At select locations, a fourth sample will be collected as detailed in Table 1. At these select locations, a sub-surface soil sample will be collected from the lowest 12-inch interval of the capillary fringe just above the water table. Depth to groundwater within the Site is anticipated to be eight to 13 feet below ground surface (bgs) based on previous investigations.

Soil sampling intervals collected for PFAS analysis at hand boring location B-2 proposed within the embankment north of Citation Drive will be from the 0 to 2-inch, 2 to 12-inch, and 12 to 24-inch depth intervals. A sediment sample will be collected from location SED-1 from the upper six (6) inches of sediment or refusal, as applicable.

Additional samples will be collected for full suite analysis as detailed in the Full Suite Analysis section below, and as detailed on Table 1.

The number of samples proposed for collection, and the distribution of the sampling points will provide overall coverage within the construction disturbance area and associated buffer areas around the proposed construction.

Soil Sample Laboratory Analysis

PFAS

The soil samples collected from the twenty-nine (29) proposed soil borings will be submitted for PFAS laboratory analysis via EPA Method 1633. All surface (0-2-inch interval) and near surface (2-12-inch) and the upper sub-surface (12-24-inch intervals) soil samples will be submitted for PFAS analysis. The lowest sub-surface samples (12-inch interval above the water table within the capillary fringe) collected from the following twelve (12) borings will be submitted for PFAS analysis: B-3, B-6, B-7, B-9, B-13, B-14, B-15, B-18, B-23, B-24, B-26, and B-28 as depicted on Figures 12 and 13. The lowest sub-surface samples collected from the remaining nineteen (17) borings will be held pending analysis of upper intervals. If upper intervals exhibit PFAS concentrations exceeding PG SCOs, then the laboratory will be directed to analyze the lowest held interval for PFAS.

Full Suite Analysis

Soil samples collected from thirteen (13) of the twenty-nine (29) borings will also be analyzed for "full suite analysis" which will consist of: Target Compound List (TCL) volatile organic compounds (VOCs) plus 10 tentatively identified compounds (TICs), TCL SVOCs (including 1,4-dioxane) plus 20 TICs, pesticides and PCBs; Target Analyte List (TAL) metals; and cyanide (TCL/TAL/CN Parameters), in accordance with the requirements outlined in the NYSDEC's DER-10, Technical Guidance for Site Investigation and Remediation.

One (1) interval from each of the following thirteen (13) borings will be collected for full suite analysis, as depicted on Figures 12 and 13: B-1, B-3, B-6, B-7, B-8, B-9, B-14, B-15, B-18, B-23, B-24 B-26, and B-28. The interval to be analyzed for full suite analysis will be selected based on FEC. If odors, staining, or elevated PID readings are observed, then the soil interval exhibiting the highest headspace value will be selected for full suite analysis. If no FEC is observed, then the soil interval collected from the lower foot of the capillary fringe will be analyzed for full suite analysis. Discreet samples for full suite analysis will only be collected from soil borings B-11, B-13, B-25, and B-29 and submitted to the laboratory if FEC is observed within these borings. Further, additional boring locations where FEC is observed will have one interval selected for full suite analysis as described above. For budget estimation purposes, a maximum of three additional locations have been assumed to require full suite analysis due to FEC. If FEC is observed at additional locations beyond three, the DEC project manager will be notified, and the requirement for additional sampling and analysis will be discussed and approved by the DEC project manager.

Contingency Sampling and Analysis

The proposed sampling plan is intended to characterize potential soil contaminants that may be present within Site soils. The quantity, location, and analysis of these proposed soil samples have been biased toward the nearest potential, though unknown, sources of release to the environment including hangars, taxiways, and a nearby above-ground petroleum storage tank. Additional soil samples may be collected for full suite analysis if soils exhibit FEC including odors, staining, and elevated PID readings as described above.

Soil Sampling Procedures

All of the proposed soil borings, except B-2, will be advanced by direct push geoprobe methods to facilitate the collection of soil samples and characterize the environmental quality of soils and geology. A hand auger will be utilized to sample soil at boring location B-2, which is located on the embankment north of Citation Drive in an area not accessible by geoprobe. Refer to Table 1 for proposed discrete soil sampling intervals.

Soil sampling will be performed in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation and NYSDEC Sampling, Analysis, and Assessment of Per- and polyfluoroalkyl substances (PFAS) Guidance dated April 2023. Soil samples will be collected immediately beneath the vegetative layer in grassy areas of the Site, immediately beneath the gravel layer in gravel surfaced areas, and immediately below the underlying sub-base, asphalt, and/or concrete in asphalt/concrete paved areas. The soil samples will be collected using a 5-foot long geoprobe tube with disposable acetate liner, field-decontaminated hand auger, shovel, trowel, split spoon sampler, or other equal method. Decontamination will involve an Alconox and PFAS-free water wash followed by a PFAS-free water rinse. Liquinox will not be used.

The soil samples will be assessed in the field for subjective FEC, then placed in laboratory provided sampling containers in a laboratory provided cooler containing wet ice. PFAS samples will be collected prior to any samples utilizing polytetrafluoroethylene lids (e.g. sample jars for volatile organic compound analysis) and stored in separate coolers due to potential cross contamination. A chain of custody form will be completed and will accompany the samples to the laboratory. The C.T. Male Standard Operating Procedures (SOPs), included in Appendix A, will be followed during collection of soil samples.

Sediment Sampling Procedures

Sediment will be sampled at proposed location SED-1, at the point of discharge within the outfall, at the north end of the existing drainage pipe. This feature is located north of Citation Drive, as depicted on Figure 13 Detail 2: Storm Line Removal. Sediment sampling will be performed in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation and NYSDEC Sampling, Analysis, and Assessment of Per- and polyfluoroalkyl substances (PFAS) Guidance, dated April 2023 and the NYSDEC's Screening and Assessment of Contaminated Sediment, dated June 2014.

A hand auger will be utilized to sample sediment within the upper six (6) inches of the outfall stream bed, or until refusal, as applicable. Equipment decontamination prior to sampling will involve an Alconox and PFAS-free water wash followed by a PFAS-free water rinse. Liquinox will not be used. The sediment sample will be assessed in the field for subjective FEC, then placed in laboratory provided sampling containers in a laboratory provided cooler containing wet ice. PFAS samples will be collected prior to any samples utilizing polytetrafluoroethylene lids (e.g. sample jars for volatile organic compound analysis) and stored in separate coolers due to potential cross contamination. A chain of custody form will be completed and will accompany the samples to the laboratory. The C.T. Male Standard Operating Procedures (SOPs), included in Appendix A, will be followed during collection of sediment samples.

Sediment Sample Laboratory Analysis

PFAS

The sediment sample will be submitted for PFAS laboratory analysis via EPA Method 1633.

Full Suite Analysis

The sediment sample will also be analyzed for “full suite analysis” which will consist of: Target Compound List (TCL) volatile organic compounds (VOCs) plus 10 tentatively identified compounds (TICs), TCL SVOCs (including 1,4-dioxane) plus 20 TICs, pesticides and PCBs; Target Analyte List (TAL) metals; and cyanide (TCL/TAL/CN Parameters), in accordance with the requirements outlined in the NYSDEC’s DER-10, Technical Guidance for Site Investigation and Remediation.

<u>Surface Water (stormwater) Sampling</u>

If water is present in sufficient quantity within the outfall, one (1) surface water sample will be collected at proposed location S-1 for laboratory analysis from the outfall scheduled for replacement, as shown on Figure 13 Detail 2. The surface water sample will be collected in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation and NYSDEC Sampling, Analysis, and Assessment of Per- and polyfluoroalkyl substances (PFAS) Guidance dated April 2023.

Surface Water Sample Laboratory Analysis

The surface water sample will be analyzed for TCL VOCs plus TICs, TCL SVOCs plus TICs, pesticides, PCBs; TAL metals, cyanide, PFAS (1633), and 1,4-dioxane.

The sample will be placed in laboratory-provided sampling containers and the containers will be placed in a laboratory provided cooler containing wet ice. A chain of custody form will be completed, and the chain of custody form will accompany the sample to the laboratory. The C.T. Male SOPs, included in Appendix A, will be followed by C.T. Male field personnel during collection of the surface water sample.

Groundwater Monitoring Wells

Boring locations B-4, B-8, B-12, and B-24 will be converted into permanent groundwater monitoring wells, PCI-MW4, PCI-MW8, PCI-MW12 and PCI-MW24 respectively, to facilitate the collection of groundwater samples across the proposed Sky Harbour North Site.

These wells will be screened in the shallow unconfined aquifer. At each well location two (2)-inch diameter PVC monitoring wells with slotted screens and solid riser will be installed. Well screen will be installed at a depth to provide five (5) feet of screen above the water table and ten (10) feet of screen below the water table where possible. The length of well screen may vary if refusal is encountered.

Monitoring well depths, and screen lengths and depths will be calculated by C.T. Male field environmental scientist/geologist by maintaining accurate measurements of sampling depth, casing depth, and screen and riser placed in the borehole. Monitoring wells will be protected via the installation of a flush mounted – bolt down cover road boxes set in an approximately 18-inch by 18-inch concrete apron. The C.T. Male SOPs, included in Appendix A, will be adhered to by C.T. Male field personnel during monitoring well installation.

Monitoring Well Development

Once installed, each monitoring well will be developed by pumping and surging with a pump capable of removing any accumulated fine sediment within the wells to establish a hydraulic connection with the surrounding aquifers. The wells will be developed at an appropriate time interval (at least 24 hours) post-installation using the methods described above. The C.T. Male SOPs, included in Appendix A, will be adhered to by C.T. Male field personnel during monitoring well development. Refer to Section 3.4 below for handling and disposal of purge water.

Groundwater Sampling

Four (4) groundwater samples will be collected for laboratory analysis from the groundwater monitoring wells PCI-MW4, PCI-MW8, PCI-MW12 and PCI-MW24, as shown on Figures 12 and 13.

Groundwater Sample Laboratory Analysis

The groundwater samples will be analyzed for TCL VOCs plus TICs, TCL SVOCs plus TICs, pesticides, PCBs; TAL metals, cyanide, PFAS (1633), and 1,4-dioxane.

The groundwater samples will be placed in laboratory-provided sampling containers and the containers will be placed in a laboratory provided cooler containing wet ice. A chain of custody form will be completed, and the chain of custody form will accompany the samples to the laboratory. The C.T. Male SOPs, included in Appendix A, will be followed by C.T. Male field personnel during collection of groundwater samples.

Groundwater Sampling Procedures

Prior to groundwater sampling, the wells will be purged employing low-stress pumping techniques utilizing pumps capable of achieving low-flow pumping rates with new factory supplied tubing for each well. Field parameter readings of pH, specific conductance, oxidation-reduction potential, and dissolved oxygen will be recorded in 5-minute intervals from the start of purging using a multi-parameter water quality instrument. The water level and turbidity will be recorded at the same interval using separate meters. The wells will be sampled after three (3) consecutive 5-minute readings whereby the parameters meet the criteria listed in USEPA low stress sampling guidance document. If the formation cannot support low-flow rates, the well will be purged dry or for deep wells to the top of the well screen, then groundwater within the wells will be allowed to recover to at least 90% of their initial static water level, to the extent possible and practical. Slow recharging wells will be allowed to recover for a period of up to four (4) hours before sampling.

The groundwater samples will be placed in laboratory-provided sampling containers and the containers will be placed in a laboratory provided cooler containing wet ice. A chain of custody form will be completed, and the chain of custody form will accompany the samples to the laboratory. The C.T. Male SOPs, included in Appendix A, will be followed by C.T. Male field personnel during collection of groundwater samples. Refer to Section 3.4 below for handling and disposal of purge water.

Soil Vapor Sampling

A soil vapor investigation of the North Sky Harbour Hangar building area will be completed to determine if a potential soil vapor intrusion condition exists at the proposed building site, as building construction will limit future access. Four (4) temporary soil vapor monitoring points will be constructed to facilitate the collection of soil vapor samples. The locations of two of the four proposed soil vapor monitoring points have been selected based on the proposed location of hangar office spaces. Refer to Figure 12 for proposed locations of soil vapor points SV-1 through SV-4.

Four (4) soil borings will be advanced via geoprobe within each of the proposed building footprints to a depth of approximately 5-feet bgs to facilitate construction of temporary soil vapor monitoring points. Soil characteristics will be logged by a field geologist or environmental scientist. Soils will be field screened continuously from the soil surface to the terminal depth. For each temporary soil vapor monitoring point, a new stainless steel vapor implant will be installed at a depth of 5-feet bgs. The stainless-steel vapor implant will be connected to Nylaflow tubing to facilitate sample collection at the ground surface. The vapor implants will be packed with sand and subsequently sealed from the ground surface with hydrated bentonite clay to prevent mixing of soil vapor and ambient air to approximately one (1) foot bgs. A flush mounted curb box will then be installed to enclose the tubing at the ground surface. These vapor monitoring points will remain in place for a minimum of 24 hours, prior to sampling.

A sample will be collected for analysis of VOCs via EPA method TO-15. The sample will be collected in conformance with the NYSDOH's Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006. The four temporary soil vapor monitoring points will be removed during construction earthwork.

3.2.2 Field Quality Control

Source Materials Quality Control

As a check for PFAS cross-contamination, quality control rinsate samples will be collected from source materials and equipment that are proposed for use during the PCI. These rinsate samples generally include:

1) Water used by the drilling contractor for drilling and decontamination (unless laboratory data or a water quality report are provided for the water source).

2) Casing, rods, and sampling barrels used by the drilling contractor.

3) Monitoring well construction materials (filter sand, bentonite, cement, and PVC riser pipe and screen stainless steel vapor implants)

The samples will be collected and analyzed for PFAS (method 1633). Analytical results will be reviewed prior to Site mobilization. Equipment and material mobilization to the Site will only be permitted if analytical results indicate PFAS concentrations below detection limits or at concentrations that are not expected to cross-contaminate environmental samples. Source equipment including rods, and sampling barrels will be segregated and will not be used for any other purpose by the drilling contractor from the time that the quality control samples are collected to the time that the equipment is mobilized to the Site for the investigation.

Field Quality Control

Field Quality Control samples include Equipment Blanks, Duplicates, and Matrix Spike/Matrix Spike Duplicates (MS/MSD). Quality Control samples will be prepared for each media type at a ratio of one (1) set of Quality Control samples per 20 media samples, with the exception of Equipment Blanks for PFAS analyses, which will be collected during each PFAS sampling event. Frequency of QA/QC might be modified in consultation with the Department. QA/QC samples will be collected in accordance with the QAPP attached as Appendix B.

3.2.3 Laboratory Reporting and Data Validation

The laboratory will generate NYSDEC ASP Category B data deliverable packages of the PCI analytical data. A Data Usability Summary Report (DUSR) of the analytical data developed during this PCI will be prepared to confirm that it is valid and usable for subsequent decision-making purposes. The DUSR will be completed by an independent third-party data validator. The data validation company being considered for this project is Environmental Data Services, Inc (EDS) of Palm Beach Gardens, Florida.

3.2.4 Survey

Soil boring locations, the sediment/surface water sample location, soil vapor monitoring point locations, and groundwater monitoring well locations will be located in the field via GPS for the PCI investigation. During the upcoming Remedial Investigation, a horizontal and vertical survey will be completed at the Site to locate the horizontal and vertical distribution of groundwater wells installed during both the PCI and RI.

At the time the monitoring wells are sampled, depth to groundwater measurements will be recorded for the purpose of determining the direction of groundwater movement across the site. For the purpose of determining the direction of groundwater movement, the vertical elevations of the top of the well PVC riser will be established from an established benchmark within the Site. The groundwater elevations will be used to construct a groundwater contour map for inclusion in the upcoming RI Report.

3.3 Project Standards, Criteria and Guidance

This PCI will include collection of the following media samples for laboratory analysis: soil, soil vapor, sediment, surface water (storm water) and groundwater.

Soil samples will be analyzed for either PFAS (EPA 1633) and/or full suite analysis consisting of TCL VOCs plus TICs, TCL SVOCs (including 1,4-dioxane) plus TICs, PFAS (1633), pesticides and PCBs; TAL metals; and cyanide, pH, TOC, and % Moisture

Soil vapor samples will be analyzed for TO-15 VOCs.

The sediment sample will be analyzed for full suite analysis as detailed above.

Groundwater and surface water samples will be analyzed for TCL VOCs plus TICs, TCL SVOCs plus TICs, pesticides, PCBs, TAL metals, cyanide, PFAS (1633), and 1,4-dioxane.

<u>Soil</u>

Soil analytical results for PFAS will be compared to Protection of Groundwater Soil Cleanup Objectives as summarized in Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs, April 2023.

Soil analytical results for the TCL/TAL/CN Parameters will be compared to SCOs for Protection of Groundwater promulgated at NYSDEC 6 NYCRR Part 375 Environmental Remediation Programs.

Sediment

Sediment analytical results for the TCL/TAL/CN. Parameters will be compared to Freshwater Sediment Guidance Values for Organic Compounds and Metals Promulgated in DEC Policy for the Screening and Assessment of Contaminated Sediment (June 24, 2014). Note that there are no promulgated standards and guidance values for PFAS in sediment. Sediment PFAS data will therefore be assessed on a presence/absence basis.

Soil Vapor

The collected soil vapor samples will be submitted for analysis of TO-15 VOCs. No regulatory guidance value is currently available for soil vapor concentrations. Soil vapor sampling analytical results will be compared to the DOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006) and addendums.

Groundwater

Groundwater analytical results for the TCL/TAL/CN Parameters and PFAS will be compared to ambient water quality standards and guidance values promulgated in the DEC Division of Water TOGS 1.1.1 and addendums.

Surface Water

Surface water (stormwater outfall) analytical results for the TCL/TAL/CN Parameters and PFAS will be compared to the more stringent ambient water quality standards and guidance values for either aquatic (chronic) or aquatic (acute) for Class B waterbodies promulgated in the DEC Division of Water TOGS 1.1.1 and addendums. Wappinger Creek has been identified as a Class B waterway. Unnamed tributaries and ponds both on the Site and off-site, and the on-Site outfalls and underdrain systems, discharge into Wappinger Creek. There are no promulgated standards and guidance values for PFOA in Class B waterbodies. This PFOA data will therefore be assessed as a presence/absence.

3.4 Investigation Derived Wastes

Investigation derived wastes from the PCI may include soils from borings that could not be returned to their original location, water from well development and well purging, decontamination water from manual tool cleaning, and disposable items such as bailers, nitrile gloves, plastic, wipes, et cetera.

Soil from soil borings will be drummed unless they can be returned to their origins per the conditions outlined in DER-10-3.3(e). Any drummed excavated soils will be labeled and staged at a secure location within the Site pending profiling and off-site disposal.

Decontamination water from manual tool cleaning will be transferred into holding tank(s) or drums pending on-site granular activated carbon (GAC) treatment during the RI (as necessary), or for future characterization and off-site disposal. If contaminants are not detected above SCGs by laboratory analysis, this water may be returned to the ground surface for infiltration.

Disposable items such as nitrile gloves, plastic, wipes, etc. will be disposed of off-site as solid waste.

The following C.T. Male SOPs, included in Appendix A, will be followed by C.T. Male field personnel during management of investigation derived wastes.

3.4.1 Decontamination

A decontamination program will be employed. Equipment that comes into contact with Site soils including hand-augers and unprotected portions of the drilling rig will be decontaminated between boring locations and prior to demobilizing from the Site. Decontamination procedures will include removal of soil adhered to tools and portions of the drill rig at the location of excavation, before moving to a subsequent location or demobilization from the Site. The soil removed from the equipment will be returned to the bore hole of origin. The equipment will then be washed via high pressure wash and/or wash with a non-phosphate environmental detergent (e.g., Alconox) followed by a rinse. Liquinox will not be used for decontamination, due to potential 1-4 Dioxane cross contamination. *Water used for decontamination washing and rinsing will be PFAS-free.* All fluids generated during decontamination of equipment will be captured and transferred into 55-gallon drums on a daily basis, at minimum. Drums of decontamination water will be staged within a secure area of the site pending characterization and off-site disposal at a permitted treatment/disposal facility, or on-site treatment through GAC if required. If contaminants are not detected above SCGs by laboratory analysis, this water may be returned to the ground surface for infiltration. Water misting (PFAS-free water) will be used to prevent generation of dust during the decontamination process as required.

3.5 Subcontractors

Subcontractors will be retained to aid in the completion of the PCI. These may include a GPR/private utility locator subcontractor to locate underground utilities at the proposed soil borings, a drilling subcontractor to perform soil borings and install groundwater monitoring wells, an environmental laboratory for laboratory analyses of the media samples; and a data validation company to provide independent third-party validation of the laboratory data. The following subcontractors will be utilized to assist in this investigation.

-The GPR/private utility subcontractor has not yet been chosen.

-The drilling subcontractor has not yet been chosen.

-The laboratory analyses of media samples will be Pace Analytical, formerly Alpha Analytical, of Westborough, Massachusetts. Pace Analytical is certified by the NYSDOH Environmental Laboratory Approval Program (ELAP) to perform the specific analyses requested.

-Data validation of the laboratory data will be performed by Environmental Data Services, Inc. of Palm Beach Gardens, Florida.

4.0 SUPPLEMENTAL PLANS

4.1 Quality Assurance/ Quality Control Plan (QAPP)

The QAPP describes the quality assurance and quality control procedures to be followed from the time media samples are collected to the time they are analyzed by the environmental analytical laboratory and evaluated by a third party according to USEPA and NYSDEC DUSR guidelines. The QAPP prepared for this PCI WP is presented in Appendix B of this PCI Work Plan.

The QAPP will be followed by field personnel during the PCI activities and media sampling events to ensure the data collected and generated is representative and accurate. The laboratory results will be reported with NYSDEC ASP Category B deliverables, which will be subjected to USEPA and NYSDEC's DUSR guidelines to determine if the data is valid and usable.

4.2 Health and Safety Plan & Community Air Monitoring Plan

A Site-specific Health and Safety Plan (HASP) has been prepared for this PCI WP to address C.T. Male site worker health and safety. The PCI WP HASP is presented in Appendix C.

A stand-alone, site-specific Community Air Monitoring Plan (CAMP) has been prepared for this PCI WP, to be used during the PCI field activities in accordance with the New York State Department of Health Generic CAMP and Fugitive Dust and Particulate Monitoring DEC Guidance (DER-10 Appendix 1B), which is also included as Appendix D. All CAMP exceedances, if any, will be relayed to the Department and NYSDOH representative the same day as occurrence, along with reasoning and any mitigation actions taken.

Subcontractors will be required to develop their own HASP for the work they will perform.

4.3 Interim Site Management Plan

The ISMP will be provided to the NYSDEC under separate cover. The ISMP will define soil management practices, soil reuse, groundwater management, sediment and erosion control and other general construction practices that could apply to the hangar construction project.

4.4 Storm Water Pollution Prevention Plan

Erosion control measures proposed for construction are depicted on the Site/Utility Permit Design Drawings by Passero Associates dated March 2025, provided in Exhibit 1. Refer to drawing C-201 Grading and Erosion Control Plan and drawing C-531 MPT and Erosion Control Details. The general contractor for this project will be required to employ the erosion control measures depicted therein and will also provide a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the NYSDEC Multi Sector General Permit if proposed construction earthwork includes disturbance of 1 acre or more of the Site. This SWPPP will be included in IRM Work Plan, if needed, that will be prepared if contaminants are identified about applicable standards during this PCI. If contaminants are not identified above applicable standards, the SWPPP will be provided under separate cover or appended to the Interim Site Management Plan.

5.0 REPORTING AND SCHEDULE

5.1 Reporting

Upon completion of field activities and receipt and independent validation of the analytical laboratory data, a Draft PCI Report and IRM Work Plan will be prepared. The Draft PCI Report will summarize and discuss the investigation, summarize any NYSDEC-approved deviations to the work plan and present the findings in a manner that can be used for construction purposes. The report will present the investigations at the North Sky Harbour hangar site, analytical results of samples collected, and interpretations of the data.

If the PCI results indicated the need to address contamination at the north hangar site, the report will also contain an Interim Remedial Measures Work Plan that will define the remedial procedures that will be employed during construction of the hangar to address impacted soil, soil vapor, sediment, surface water and/or groundwater, as applicable during construction.

It will include reference to the site-specific Community Air Monitoring Plan (CAMP) as applicable. Any future construction activity will be protective of human health and the environment.

5.2 Schedule

The table on the following page provides the estimated schedule for completion of the proposed PCI activities. The overall progress of the project will be dependent upon a number of factors including, but not limited to, driller availability, laboratory turnaround time, NYSDEC review and approval timeframes, and weather conditions at the time the PCI investigations are initiated. The County may elect to expedite laboratory analysis (shorten laboratory turn around tie) at additional cost, which would accelerate the below schedule.

Hudson Valley Regional Airport, Anticipated PCI Project Schedule	
Investigation Milestone	**Anticipated Date**
Submittal of 1st Draft Pre-Construction Investigation Work Plan (PCI WP) to DEC for Review (completed)	7 October 2024
Receipt of DEC/DOH Comments on Draft PCI WP (completed)	24 November 2024
Submittal of Response to Comments and 2nd Draft of Revised PCI WP to DEC (completed)	16 January 2025
Submittal of Revised 3rd Draft of PCI WP to DEC for Review (completed)	2 April 2025
Receipt of DEC/DOH Comments on Draft PCI WP (completed)	2 May 2025
Anticipated Submittal of Revised 4th Draft of PCI WP to DEC for Review	19 May 2025
Receipt of DEC/DOH Comments on 4th Draft of Revised PCI Work Plan	13 June 2025
Anticipated Submittal of Revised 5th Draft of PCI WP to DEC for Review	19 June 2025
Anticipated DEC Approval of Final (5th Draft) of PCI WP	24 June 2025
Start of PCI Field Work (Contingent upon WP approval)	1 July 2025
Anticipated Completion of PCI Field Work	9 July 2025
Completion of PCI Laboratory Analysis	30 July 2025
Submittal of Draft PCI Report and IRM WP to DEC for Review	27 August 2025
Anticipated Receipt of DEC/DOH Comment on Draft PCI Report and IRM WP	8 October 2025
Submittal of Final (revised) PCI Report and IRM WP to DEC	5 November 2025
Anticipated DEC Acceptance of Final PCI Report and IRM WP	17 December 2025

TABLES

Table 1: Summary of Proposed Sampling- North Sky Harbour Hangar

Location ID	Media	Sampling to Characterize for Earthwork Associated With What Proposed Structures	Approximate Sampling Depth (b.g.s)	PFAS via EPA Method 1633	TCL VOCs with TICs	TCL SVOCs, with 1,4-dioxane and TICs	Pesticides	PCBs	TAL Metals	Cyanide	TO-15 VOCs
B1	Soil	Proposed spoils staging area.	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1	1	1	1	1	1	1	
B2	Soil	Silt fence, storm drainage pipe replacement. To be Hand Augured.	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
B3	Soil	Silt fence, sub base for asphalt paving, piping for electric, gas and stormwater, perimeter fencing	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	
B4	Soil	Drain piping/drainage structure	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1							
B5	Soil	Silt fence, perimeter fence, bioretention area and infiltration basin	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1							
B6	Soil	Storm water pipping and drainage structure, piping for electric and gas, sub-base for asphalt apron	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	

Table 1: Summary of Proposed Sampling- North Sky Harbour Hangar												
Location ID	**Media**	**Sampling to Characterize for Earthwork Associated With What Proposed Structures**	**Approximate Sampling Depth (b.g.s)**	**PFAS via EPA Method 1633**	**TCL VOCs with TICs**	**TCL SVOCs, with 1,4-dioxane and TICs**	**Pesticides**	**PCBs**	**TAL Metals**	**Cyanide**	**TO-15 VOCs**
B7	Soil	Subsurface disposal system (leach field), septic tank, bio-retention area, electrical line, telecommunications line, under drain piping	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	
B8	Soil	Bio-retention area, infiltration basin, oil & water separator, piping for electric, gas, drainage and underdrain	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1	1	1	1	1	1	1	
B9	Soil	Buffer area, retaining wall, hangar foundation, drainage piping, drainage structure, sub-base for asphalt apron	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	
B10	Soil	Hangar foundation wall, piping for electric, telecommunications, drainage, transformer pad, canopy structure, building demolition, sub-base for asphalt apron	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1							
B11	Soil	Hangar foundation wall, piping for telecommunications drainage, laterals for roof downspouts, canopy structure, sub-base for asphalt apron	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1	1	1	1	1	1	1	

Table 1: Summary of Proposed Sampling- North Sky Harbour Hangar											
Location ID	**Media**	**Sampling to Characterize for Earthwork Associated With What Proposed Structures**	**Approximate Sampling Depth (b.g.s)**	**PFAS via EPA Method 1633**	**TCL VOCs with TICs**	**TCL SVOCs, with 1,4-dioxane and TICs**	**Pesticides**	**PCBs**	**TAL Metals**	**Cyanide**	**TO-15 VOCs**
B12	Soil	Buffer area, proposed hangar foundation	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1							
B13	Soil	Hangar floor slab and foundation wall, drainage structure, piping for electric, gas, and drainage	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	
B14	Soil	Buffer area, proposed hangar foundation, proposed drainage piping and infiltration basin	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	
B15	Soil	Hangar floor slab, storm piping replacement, curtain drain	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	
B16	Soil	Hangar foundation, retaining wall, curtain drain, roof drainage piping, sub-base for asphalt apron	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1	1	1	1	1	1	1	

Table 1: Summary of Proposed Sampling- North Sky Harbour Hangar												
Location ID	**Media**	**Sampling to Characterize for Earthwork Associated With What Proposed Structures**	**Approximate Sampling Depth (b.g.s)**	**PFAS via EPA Method 1633**	**TCL VOCs with TICs**	**TCL SVOCs, with 1,4-dioxane and TICs**	**Pesticides**	**PCBs**	**TAL Metals**	**Cyanide**	**TO-15 VOCs**
B17	Soil	Proposed hangar foundation and floor slab, water line, piping for underdrain, backflow preventor, proposed curtain drain	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1							
B18	Soil	Hangar foundation and floor slab, curtain drain, underdrain piping, asphalt apron sub-base	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	
B19	Soil	Buffer area, hangar foundation, asphalt apron sub-base, drainage piping	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1							
B20	Soil	Piping for underdrain and stormwater, stormwater drainage structure, asphalt apron sub-base	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1							
B21	Soil	Piping for under drain and storm water drainage, drainage structure, and sub-base for asphalt apron	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1							

Table 1: Summary of Proposed Sampling- North Sky Harbour Hangar											
Location ID	**Media**	**Sampling to Characterize for Earthwork Associated With What Proposed Structures**	**Approximate Sampling Depth (b.g.s)**	**PFAS via EPA Method 1633**	**TCL VOCs with TICs**	**TCL SVOCs, with 1,4-dioxane and TICs**	**Pesticides**	**PCBs**	**TAL Metals**	**Cyanide**	**TO-15 VOCs**
B22	Soil	Piping for under drain and storm water, drainage structure, sub-base for asphalt apron	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1							
B23	Soil	Receiving pit for water line directional drilling, piping of underdrain, storm water, and electrical, electrical manhole, drainage structures, and sub-base of asphalt for apron	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	
B24	Soil	Buffer area, retaining wall, drainage structure, piping for drainage, sub-base for asphalt apron	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	
B25	Soil	Buffer area, piping for electrical lines and underdrain, sub-base for asphalt apron	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1	1	1	1	1	1	1	
B26	Soil	Buffer area, piping for underdrain, electrical, and stormwater	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	

Table 1: Summary of Proposed Sampling- North Sky Harbour Hangar												
Location ID	**Media**	**Sampling to Characterize for Earthwork Associated With What Proposed Structures**	**Approximate Sampling Depth (b.g.s)**	**PFAS via EPA Method 1633**	**TCL VOCs with TICs**	**TCL SVOCs, with 1,4-dioxane and TICs**	**Pesticides**	**PCBs**	**TAL Metals**	**Cyanide**	**TO-15 VOCs**
B27	Soil	Buffer area, piping for storm water, underdrain, and electrical, sub-base for asphalt apron	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1	1	1	1	1	1	1	
B28	Soil	Water line, directional drilling pit, piping for water and electrical	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)	1	1	1	1	1	1	1	
B29	Soil	Water pipe installation/directional drilling, silt fence	0-2" (Surface)	1							
			2"-12" (Near-Surface)	1							
			12-24" (Sub-Surface)	1							
			12" interval Above Water Table (Sub-Surface / Cap. Fringe)*	1	1	1	1	1	1	1	
PCI-MW4	Ground Water	Characterize GW	NA	1	1	1	1	1	1	1	
PCI-MW8	Ground Water	Characterize GW	NA	1	1	1	1	1	1	1	
PCI-MW12	Ground Water	Characterize GW	NA	1	1	1	1	1	1	1	
PCI-MW24	Ground Water	Characterize GW	NA	1	1	1	1	1	1	1	
SV-1	Soil Vapor	Office spaces	5' b.g.s.								1
SV-2	Soil Vapor	Hangar spaces	5' b.g.s.								1
SV-3	Soil Vapor	Office spaces	5' b.g.s.								1
SV-4	Soil Vapor	Hangar spaces	5' b.g.s.								1
S-1	Surface Water	Drainage Pipe Outflow Water	0"	1	1	1	1	1	1	1	
SED-1	Sediment	Drainage Pipe Outflow Sediment	0-6"	1	1	1	1	1	1	1	

Table 1: Summary of Proposed Sampling- North Sky Harbour Hangar											
Location ID	Media	Sampling to Characterize for Earthwork Associated With What Proposed Structures	Approximate Sampling Depth (b.g.s)	PFAS via EPA Method 1633	TCL VOCs with TICs	TCL SVOCs, with 1,4-dioxane and TICs	Pesticides	PCBs	TAL Metals	Cyanide	TO-15 VOCs
			Total Soil Samples by Parameter	115	19	19	19	19	19	19	0
			Total Soil Vapor Samples by Parameter	0	0	0	0	0	0	0	4
			Total Groundwater Samples by Parameter	4	4	4	4	4	4	4	0
			Total Surface water Samples by Parameter	1	1	1	1	1	1	1	0
			Total Sediment Samples by Parameter	1	1	1	1	1	1	1	0

Legend

b.g.s.: below ground surface

SVOCs: Semi-volatile organic compounds

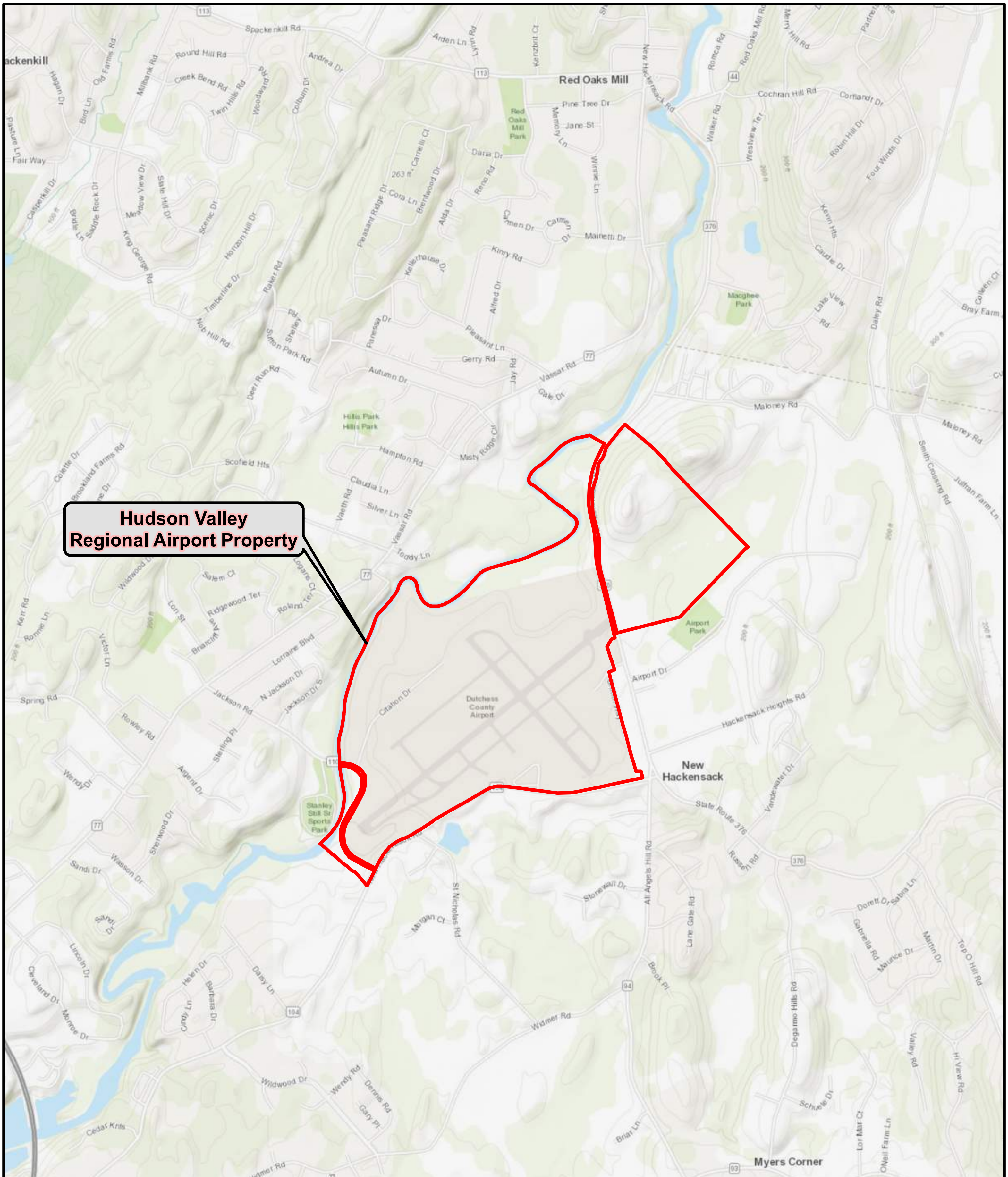
TICS: tentatively identified compounds

VOCs: volatile organic compounds

*Sample to be collected and held. Sample will only be analyzed for PFAS if the interval above exhibits a PFAS concentration exceeding protection of groundwater soil cleanup objective.

Grey shading indicate sample to be collected and held. Sample will only be analyzed for full suite analysis if field evidence of contamination is observed within boring. Only the discrete interval exhibiting FEC will be submitted for full suite analysis.

FIGURES



Legend

Dutchess County Property

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (feet)
Date: May 10, 2018
File: Fig1_HVRA_SiteLocationMap8x11.mxd
GIS: C Secor

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Figure 1: Site Location Map
Hudson Valley Regional Airport

Town of Wappinger | Dutchess County, NY

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(518) 786-7400 * FAX (518) 786-7299 * WWW.CTMALE.COM
FOUNDED IN 1916

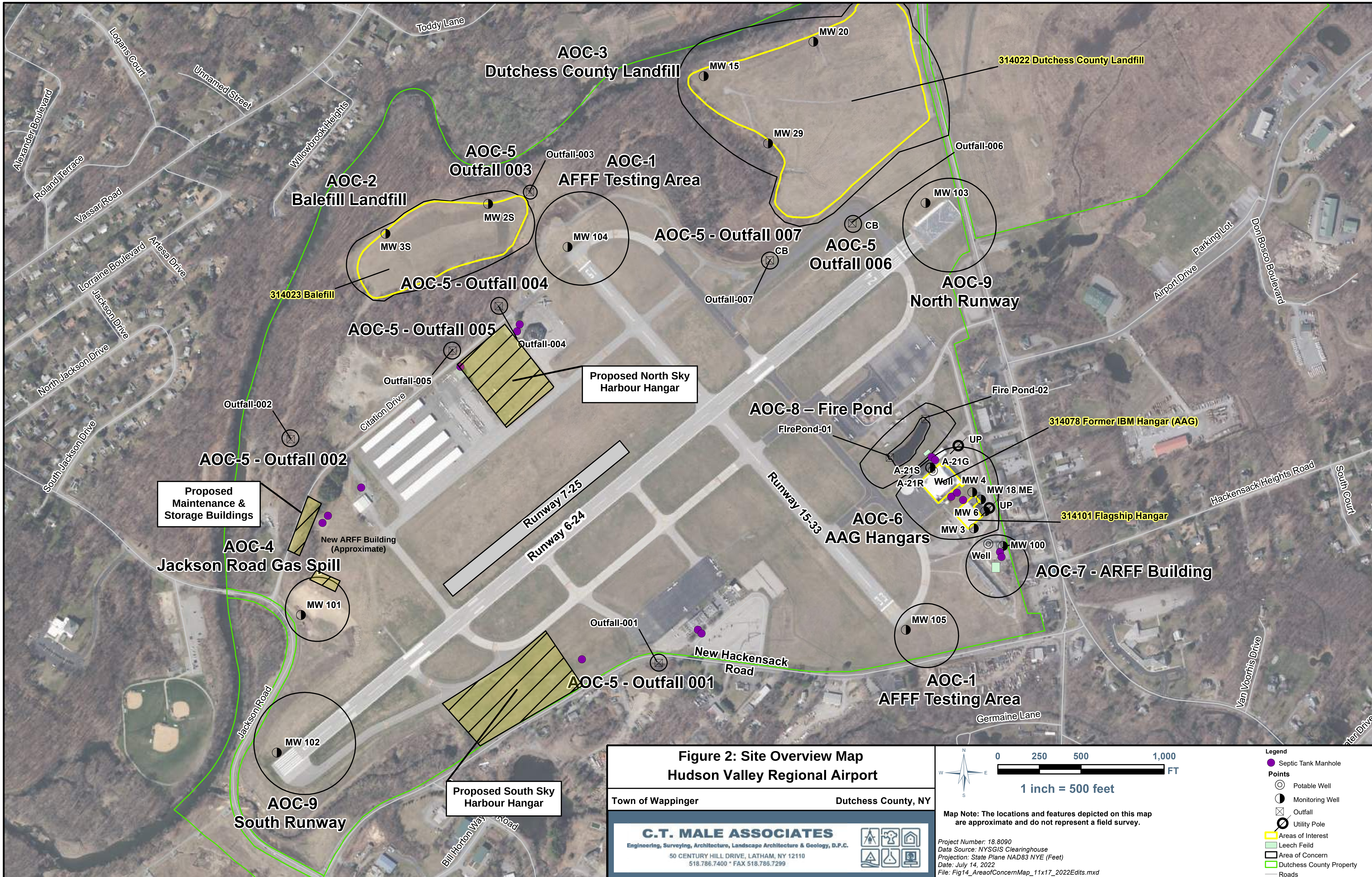

Figure 2: Site Overview Map
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 14, 2022
File: Fig14_AreaofConcernMap_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

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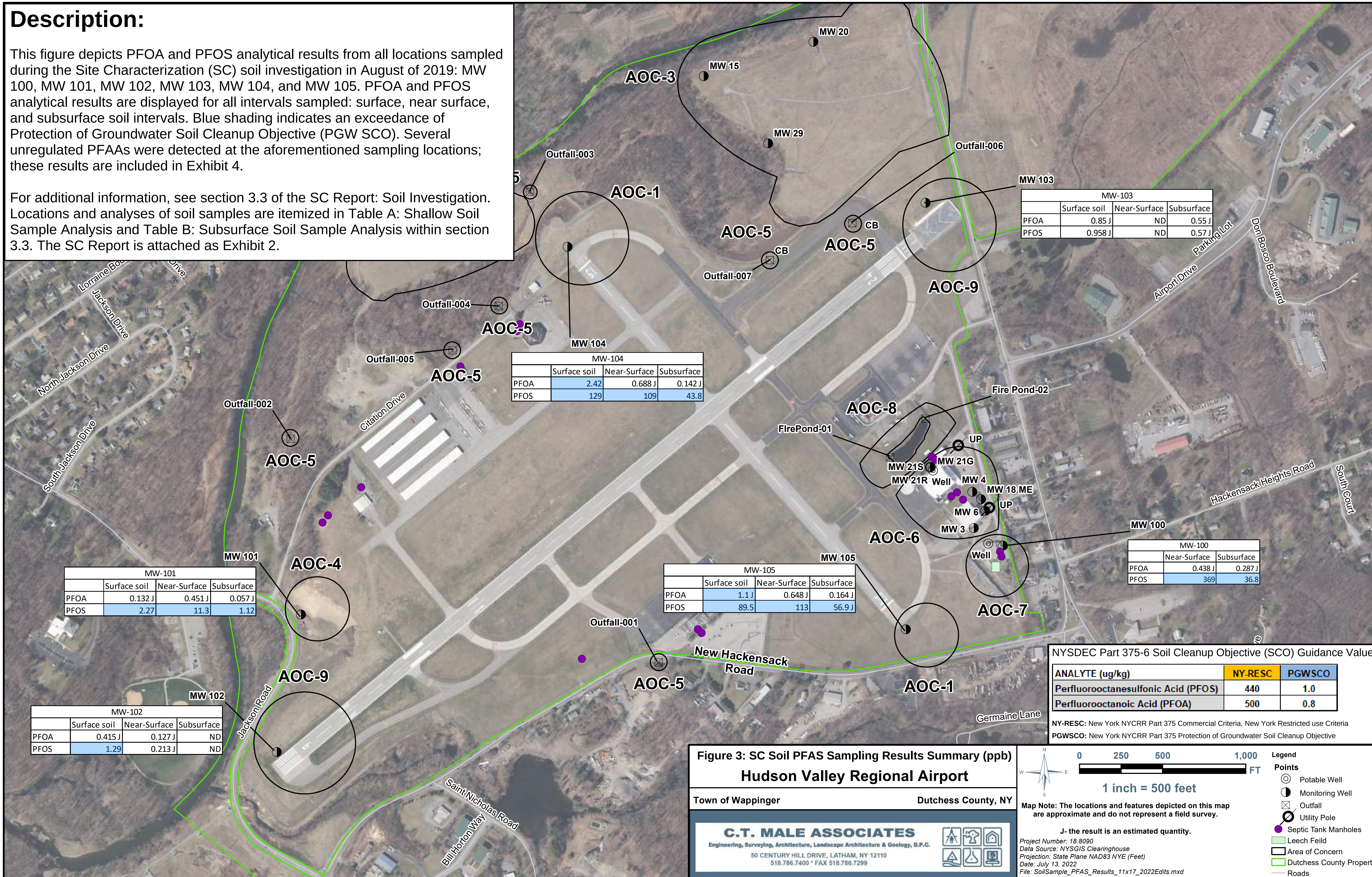
Description:

This figure depicts PFOA and PFOS analytical results from all locations sampled during the Site Characterization (SC) soil investigation in August of 2019: MW 100, MW 101, MW 102, MW 103, MW 104, and MW 105. PFOA and PFOS analytical results are displayed for all intervals sampled: surface, near surface, and subsurface soil intervals. Blue shading indicates an exceedance of Protection of Groundwater Soil Cleanup Objective (PGW SCO). Several unregulated PFAAs were detected at the aforementioned sampling locations; these results are included in Exhibit 4.

For additional information, see section 3.3 of the SC Report: Soil Investigation. Locations and analyses of soil samples are itemized in Table A: Shallow Soil Sample Analysis and Table B: Subsurface Soil Sample Analysis within section 3.3. The SC Report is attached as Exhibit 2.



MW-103			
	Surface soil	Near-Surface	Subsurface
PFOA	0.85 J	ND	0.55 J
PFOS	0.958 J	ND	0.57 J

MW-104			
	Surface soil	Near-Surface	Subsurface
PFOA	2.42	0.688 J	0.142 J
PFOS	129	109	43.8

MW-101			
	Surface soil	Near-Surface	Subsurface
PFOA	0.132 J	0.451 J	0.057 J
PFOS	2.27	11.3	1.12

MW-105			
	Surface soil	Near-Surface	Subsurface
PFOA	1.1 J	0.648 J	0.164 J
PFOS	89.5	113	56.9 J

MW-100		
	Near-Surface	Subsurface
PFOA	0.438 J	0.287 J
PFOS	369	36.8

MW-102			
	Surface soil	Near-Surface	Subsurface
PFOA	0.415 J	0.127 J	ND
PFOS	1.29	0.213 J	ND

NYSDEC Part 375-6 Soil Cleanup Objective (SCO) Guidance Values:

ANALYTE (ug/kg)	NY-RESC	PGWSCO
Perfluorooctanesulfonic Acid (PFOS)	440	1.0
Perfluorooctanoic Acid (PFOA)	500	0.8

NY-RESC: New York NYCRR Part 375 Commercial Criteria, New York Restricted use Criteria

PGWSCO: New York NYCRR Part 375 Protection of Groundwater Soil Cleanup Objective

Figure 3: SC Soil PFAS Sampling Results Summary (ppb)

Hudson Valley Regional Airport

Town of Wappinger **Dutchess County, NY**

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N W E S

0 250 500 1,000 FT

1 inch = 500 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

J- the result is an estimated quantity.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: SoilSample_PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend

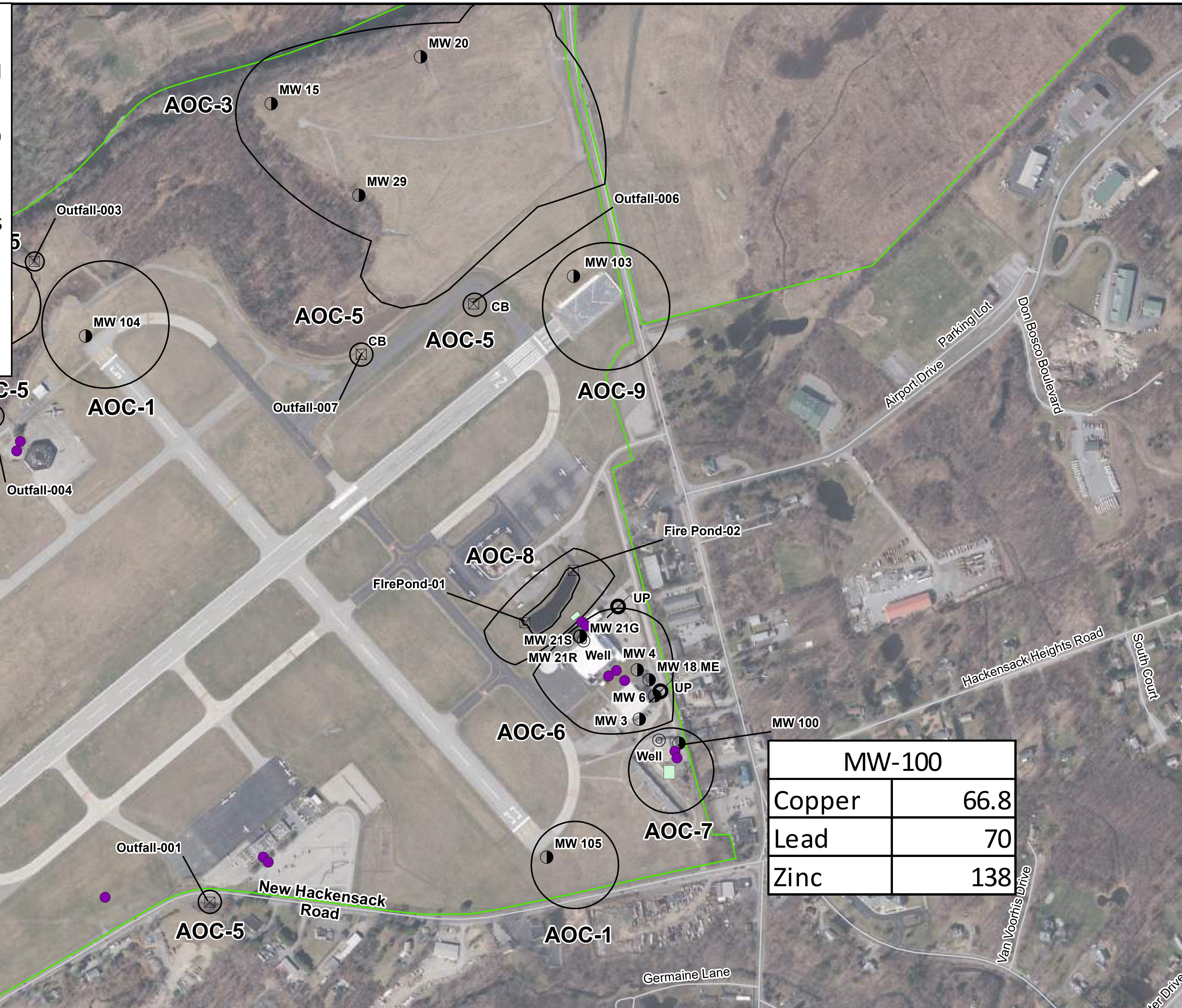
Points

- Potable Well
- Monitoring Well
- Outfall
- Utility Pole
- Septic Tank Manholes
- Leech Feild
- Area of Concern
- Dutchess County Property
- Roads

Description:

This figure depicts all analytical results exceeding Protection of Groundwater Soil Clean Up Objectives (PGW SCO) for locations sampled during the Site Characterization (SC) soil investigation in August of 2019. No sampling locations exhibit analytical results exceeding PGW SCO. However, it is noted that MW 100 does exceed unrestricted use standards. MW 101, MW 102, MW 103, MW 104, and MW 105 were sampled, but no exceedances were detected. Several analytes were detected below PGW SCO at the aforementioned sampling locations; these results are included in Exhibit 4. It is noted that PFOA and PFOS analytical results are displayed on a separate figure.

For additional information, see section 3.3 of the SC Report: Soil Investigation. Locations and analyses of soil samples are itemized in Table A: Shallow Soil Sample Analysis and Table B: Subsurface Soil Sample Analysis within section 3.3. The SC Report is attached as Exhibit 2.



MW-100	
Copper	66.8
Lead	70
Zinc	138

ANALYTE	Unrestricted Use SCG	PGW SCO	Commercial Use SCG
Copper	50	1720	270
Lead	63	450	1000
Zinc	109	2480	10,000

Figure 4: SC Non-PFAS Soil Sampling Results Summary (mg/kg)

Hudson Valley Regional Airport

Town of Wappinger **Dutchess County, NY**

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N E S W

0 250 500 1,000 FT

1 inch = 500 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: SoilSample_Non-PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

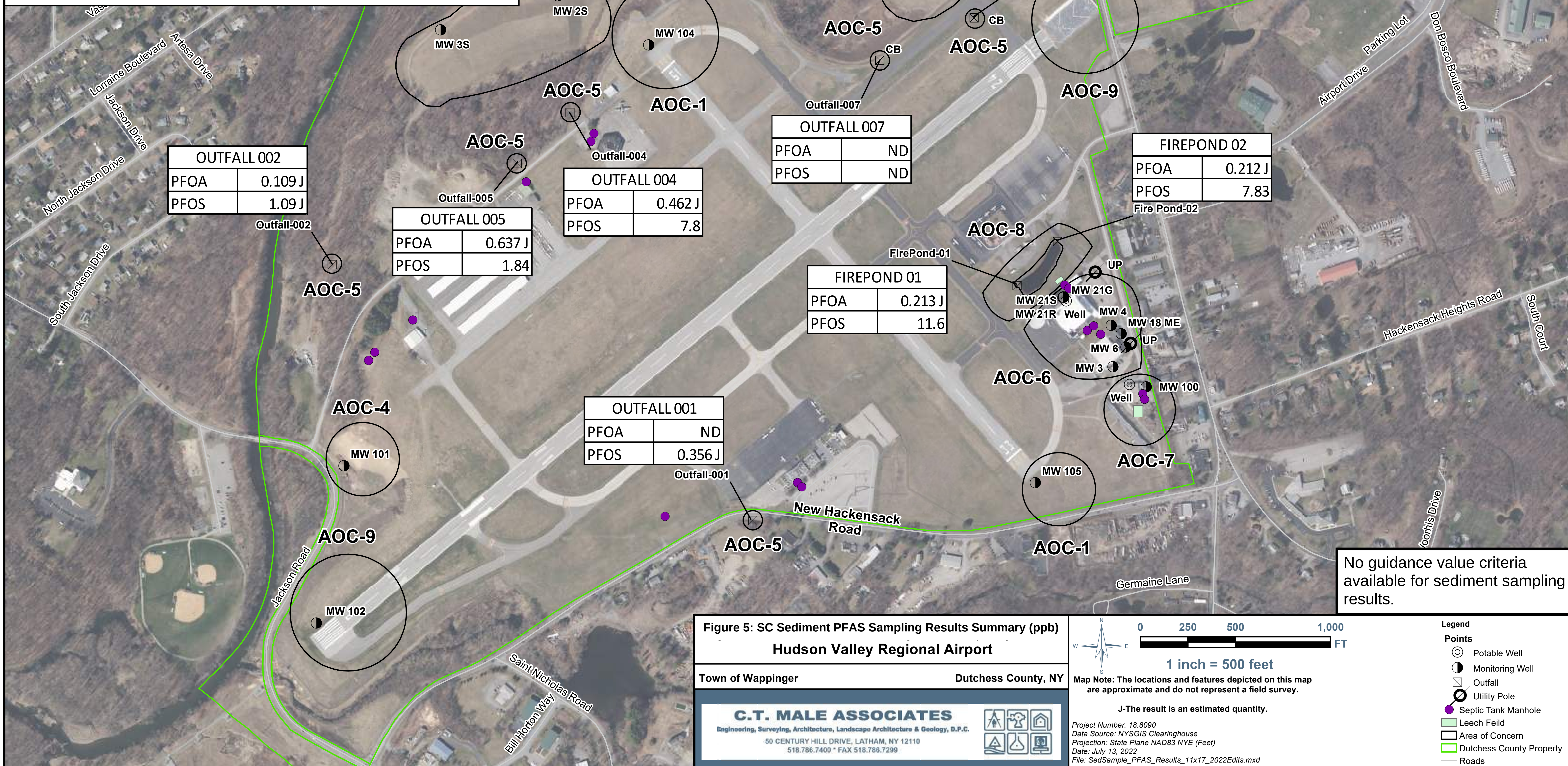
Legend

Points
- Potable Well
- Monitoring Well
- Outfall
- Utility Pole
- Septic Tank Manhole
- Leech Feild
- Area of Concern
- Dutchess County Property
- Roads

Description:

This figure depicts PFOA and PFOS analytical results from all locations sampled during the Site Characterization (SC) sediment investigation in August of 2019: Firepond 01, Firepond 02, Outfall 001, Outfall 002, Outfall 003, Outfall 004, Outfall 005, Outfall 006, and Outfall 007. Several unregulated PFAAs were detected at the aforementioned sampling locations; these results are included in Exhibit 4.

For additional information, see section 3.5 of the SC Report: Surface Water and Sediment Investigation. The SC Report is attached as Exhibit 2.



OUTFALL 003	
PFOA	0.085 J
PFOS	7.57

OUTFALL 006	
PFOA	0.137 J
PFOS	0.36 J

OUTFALL 007	
PFOA	ND
PFOS	ND

OUTFALL 002	
PFOA	0.109 J
PFOS	1.09 J

OUTFALL 004	
PFOA	0.462 J
PFOS	7.8

OUTFALL 005	
PFOA	0.637 J
PFOS	1.84

FIREPOND 02	
PFOA	0.212 J
PFOS	7.83

FIREPOND 01	
PFOA	0.213 J
PFOS	11.6

OUTFALL 001	
PFOA	ND
PFOS	0.356 J

No guidance value criteria available for sediment sampling results.

Figure 5: SC Sediment PFAS Sampling Results Summary (ppb)

Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

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0 250 500 1,000 FT

1 inch = 500 feet

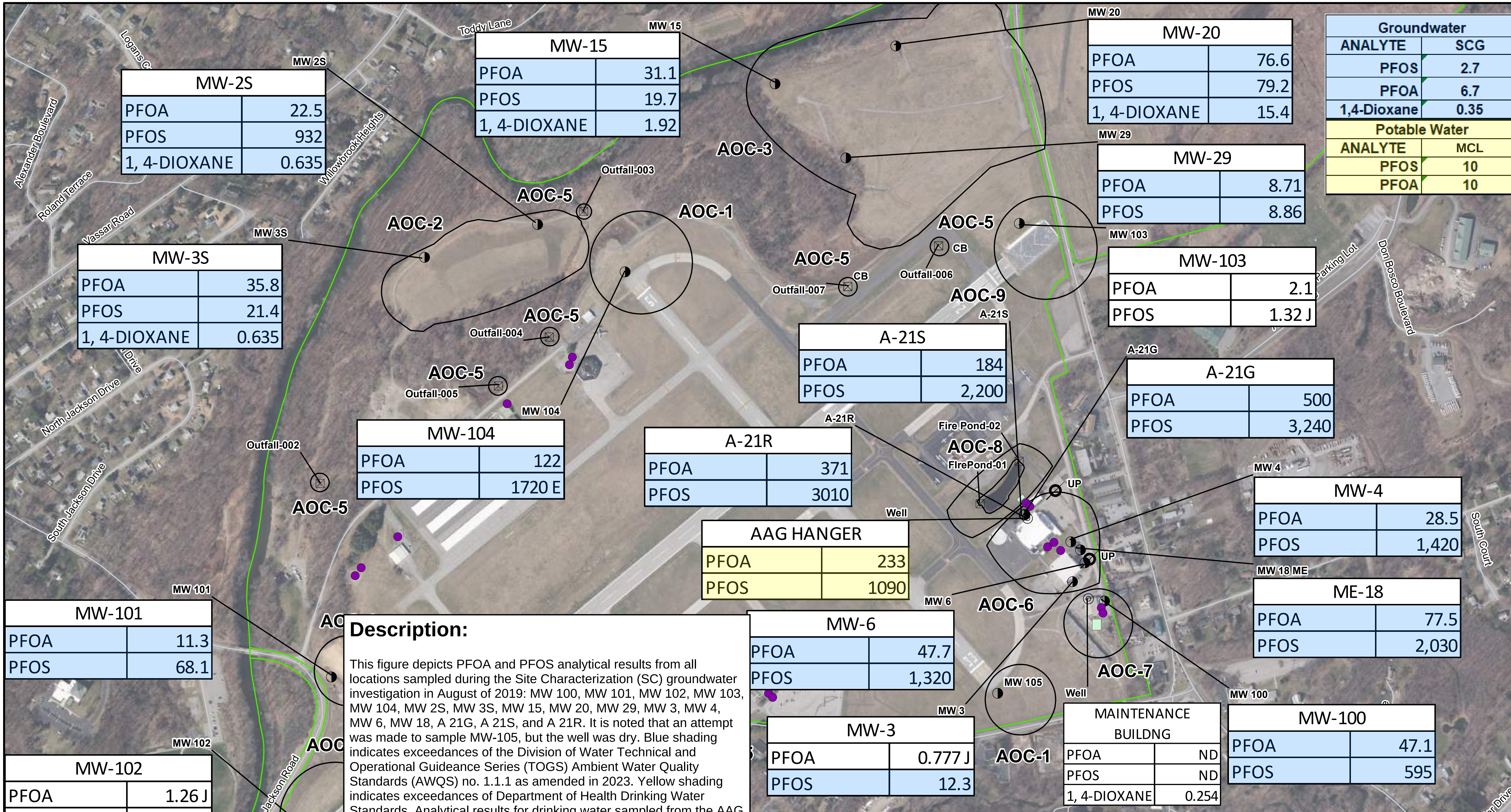
Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

J-The result is an estimated quantity.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: SedSample_PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend

Points
- Potable Well
- Monitoring Well
- Outfall
- Utility Pole
- Septic Tank Manhole
- Leech Feild
- Area of Concern
- Dutchess County Property
- Roads



Groundwater	
ANALYTE	SCG
PFOS	2.7
PFOA	6.7
1,4-Dioxane	0.35

Potable Water	
ANALYTE	MCL
PFOS	10
PFOA	10

MW-2S	
PFOA	22.5
PFOS	932
1, 4-DIOXANE	0.635

MW-15	
PFOA	31.1
PFOS	19.7
1, 4-DIOXANE	1.92

MW-20	
PFOA	76.6
PFOS	79.2
1, 4-DIOXANE	15.4

MW-29	
PFOA	8.71
PFOS	8.86

MW-3S	
PFOA	35.8
PFOS	21.4
1, 4-DIOXANE	0.635

MW-103	
PFOA	2.1
PFOS	1.32 J

A-21S	
PFOA	184
PFOS	2,200

A-21G	
PFOA	500
PFOS	3,240

MW-104	
PFOA	122
PFOS	1720 E

A-21R	
PFOA	371
PFOS	3010

MW-4	
PFOA	28.5
PFOS	1,420

AAG HANGER	
PFOA	233
PFOS	1090

ME-18	
PFOA	77.5
PFOS	2,030

MW-101	
PFOA	11.3
PFOS	68.1

MW-6	
PFOA	47.7
PFOS	1,320

MW-3	
PFOA	0.777 J
PFOS	12.3

MAINTENANCE BUILDNG	
PFOA	ND
PFOS	ND
1, 4-DIOXANE	0.254

MW-100	
PFOA	47.1
PFOS	595

MW-102	
PFOA	1.26 J
PFOS	1.17 J

Description:

This figure depicts PFOA and PFOS analytical results from all locations sampled during the Site Characterization (SC) groundwater investigation in August of 2019: MW 100, MW 101, MW 102, MW 103, MW 104, MW 2S, MW 3S, MW 15, MW 20, MW 29, MW 3, MW 4, MW 6, MW 18, A 21G, A 21S, and A 21R. It is noted that an attempt was made to sample MW-105, but the well was dry. Blue shading indicates exceedances of the Division of Water Technical and Operational Guideance Series (TOGS) Ambient Water Quality Standards (AWQS) no. 1.1.1 as amended in 2023. Yellow shading indicates exceedances of Department of Health Drinking Water Standards. Analytical results for drinking water sampled from the AAG Hangar and all exceedances of 1,4-Dioxane are also displayed on this figure. Several unregulated PFAAs were detected at the aforementioned sampling locations; these results are included in Exhibit 4.

For additional information, see section 3.4 of the SC Report: Groundwater Investigation. Groundwater elevation and analytical data are itemized in Table C: Groundwater Elevation Summary and Table D: Groundwater Sample Summary within section 3.4. The SC Report is attached as Exhibit 2.

Figure 6: SC Groundwater PFAS (ppt) & 1,4-Dioxane (ppb) Sampling Results Summary

Hudson Valley Regional Airport

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0 250 500 1,000 FT
1 inch = 500 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

J- the result is an estimated quantity.

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

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: GroundWaterSample_PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend
Points
- Potable Well
- Monitoring Well
- Outfall
- Utility Pole
- Septic Tank Manhole
- Leech Feild
- Area of Concern
- Dutchess County Property
- Roads

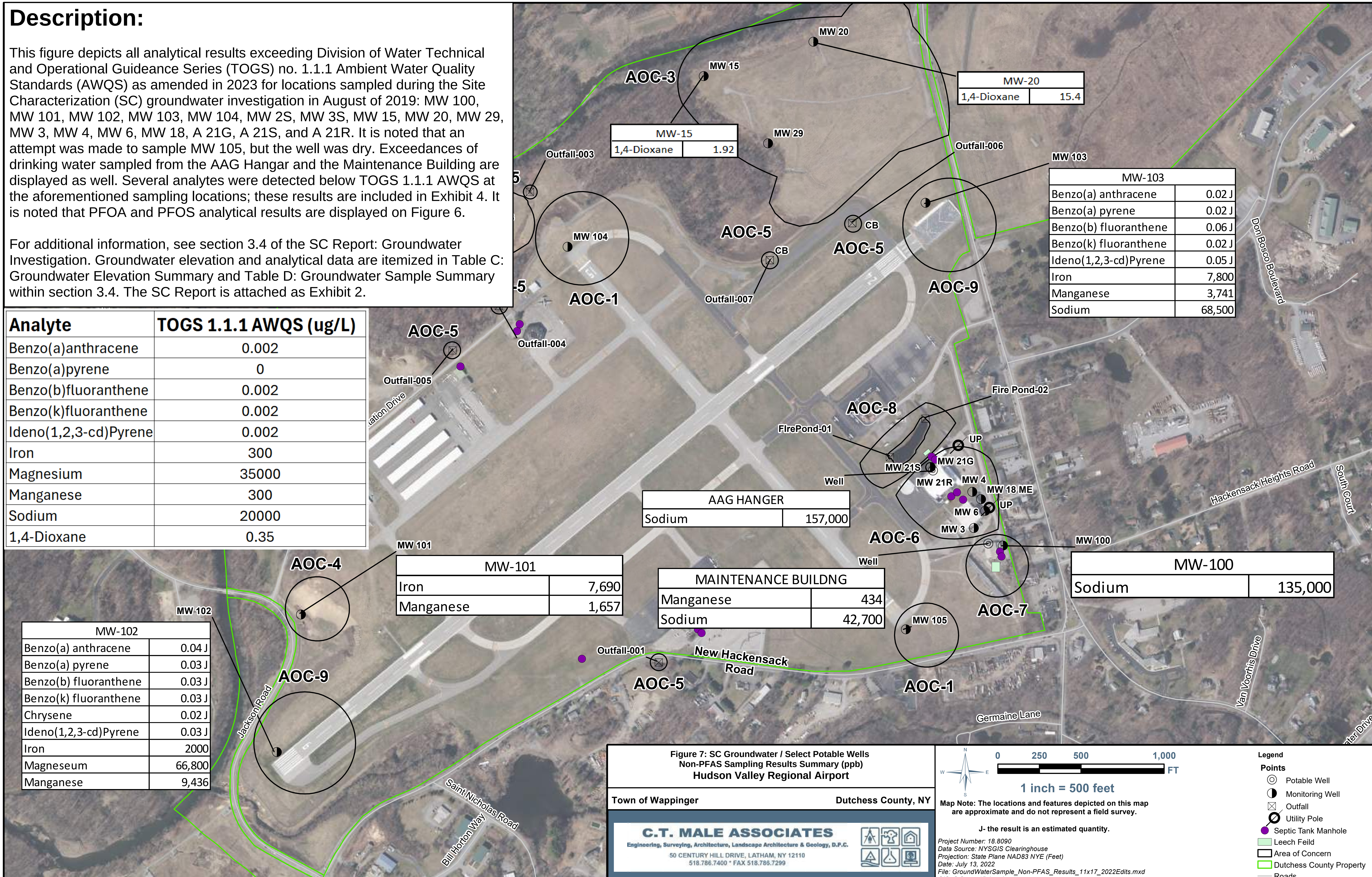
N E S W

Description:

This figure depicts all analytical results exceeding Division of Water Technical and Operational Guideance Series (TOGS) no. 1.1.1 Ambient Water Quality Standards (AWQS) as amended in 2023 for locations sampled during the Site Characterization (SC) groundwater investigation in August of 2019: MW 100, MW 101, MW 102, MW 103, MW 104, MW 2S, MW 3S, MW 15, MW 20, MW 29, MW 3, MW 4, MW 6, MW 18, A 21G, A 21S, and A 21R. It is noted that an attempt was made to sample MW 105, but the well was dry. Exceedances of drinking water sampled from the AAG Hangar and the Maintenance Building are displayed as well. Several analytes were detected below TOGS 1.1.1 AWQS at the aforementioned sampling locations; these results are included in Exhibit 4. It is noted that PFOA and PFOS analytical results are displayed on Figure 6.

For additional information, see section 3.4 of the SC Report: Groundwater Investigation. Groundwater elevation and analytical data are itemized in Table C: Groundwater Elevation Summary and Table D: Groundwater Sample Summary within section 3.4. The SC Report is attached as Exhibit 2.

Analyte	TOGS 1.1.1 AWQS (ug/L)
Benzo(a)anthracene	0.002
Benzo(a)pyrene	0
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
Ideno(1,2,3-cd)Pyrene	0.002
Iron	300
Magnesium	35000
Manganese	300
Sodium	20000
1,4-Dioxane	0.35



MW-20	
1,4-Dioxane	15.4

MW-15	
1,4-Dioxane	1.92

MW-103	
Benzo(a) anthracene	0.02 J
Benzo(a) pyrene	0.02 J
Benzo(b) fluoranthene	0.06 J
Benzo(k) fluoranthene	0.02 J
Ideno(1,2,3-cd)Pyrene	0.05 J
Iron	7,800
Manganese	3,741
Sodium	68,500

AAG HANGER	
Sodium	157,000

MW-100	
Sodium	135,000

MW-101	
Iron	7,690
Manganese	1,657

MAINTENANCE BUILDNG	
Manganese	434
Sodium	42,700

MW-102	
Benzo(a) anthracene	0.04 J
Benzo(a) pyrene	0.03 J
Benzo(b) fluoranthene	0.03 J
Benzo(k) fluoranthene	0.03 J
Chrysene	0.02 J
Ideno(1,2,3-cd)Pyrene	0.03 J
Iron	2000
Magneseum	66,800
Manganese	9,436

Figure 7: SC Groundwater / Select Potable Wells Non-PFAS Sampling Results Summary (ppb)
Hudson Valley Regional Airport

Town of Wappinger — **Dutchess County, NY**

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50 CENTURY HILL DRIVE, LATHAM, NY 12110
518.786.7400 * FAX 518.786.7299

0 250 500 1,000 FT

1 inch = 500 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

J- the result is an estimated quantity.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: GroundWaterSample_Non-PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend
Points
- Potable Well
- Monitoring Well
- Outfall
- Utility Pole
- Septic Tank Manhole
- Leech Feild
- Area of Concern
- Dutchess County Property
- Roads

Surface Water	
ANALYTE	SCG (ng/l)
PFOS	160
PFOA	NA

Catch Basin Underdrains	
ANALYTE	SCG (ng/l)
PFOS	2.7
PFOA	6.7

SW-1	
PFOA	0.765
PFOS	0.964
PFOA/PFOS, Total	1.73

OUTFALL 003	
PFOA	8.3
PFOS	339

SW-2	
PFOA	0.808
PFOS	2.53
PFOA/PFOS, Total	3.34

OUTFALL 006	
PFOA	6.16
PFOS	2.68

B-1 Collected Offsite	
B-1	
PFOA	0.761
PFOS	0.92
PFOA/PFOS, Total	1.68

OUTFALL 002	
PFOA	2.39
PFOS	13.4

OUTFALL 007	
PFOA	10.5
PFOS	4.23

FIREPOND 02	
PFOA	23.8
PFOS	195

OUTFALL 004	
PFOA	2.75
PFOS	12.7

OUTFALL 005	
PFOA	14.9
PFOS	9.24

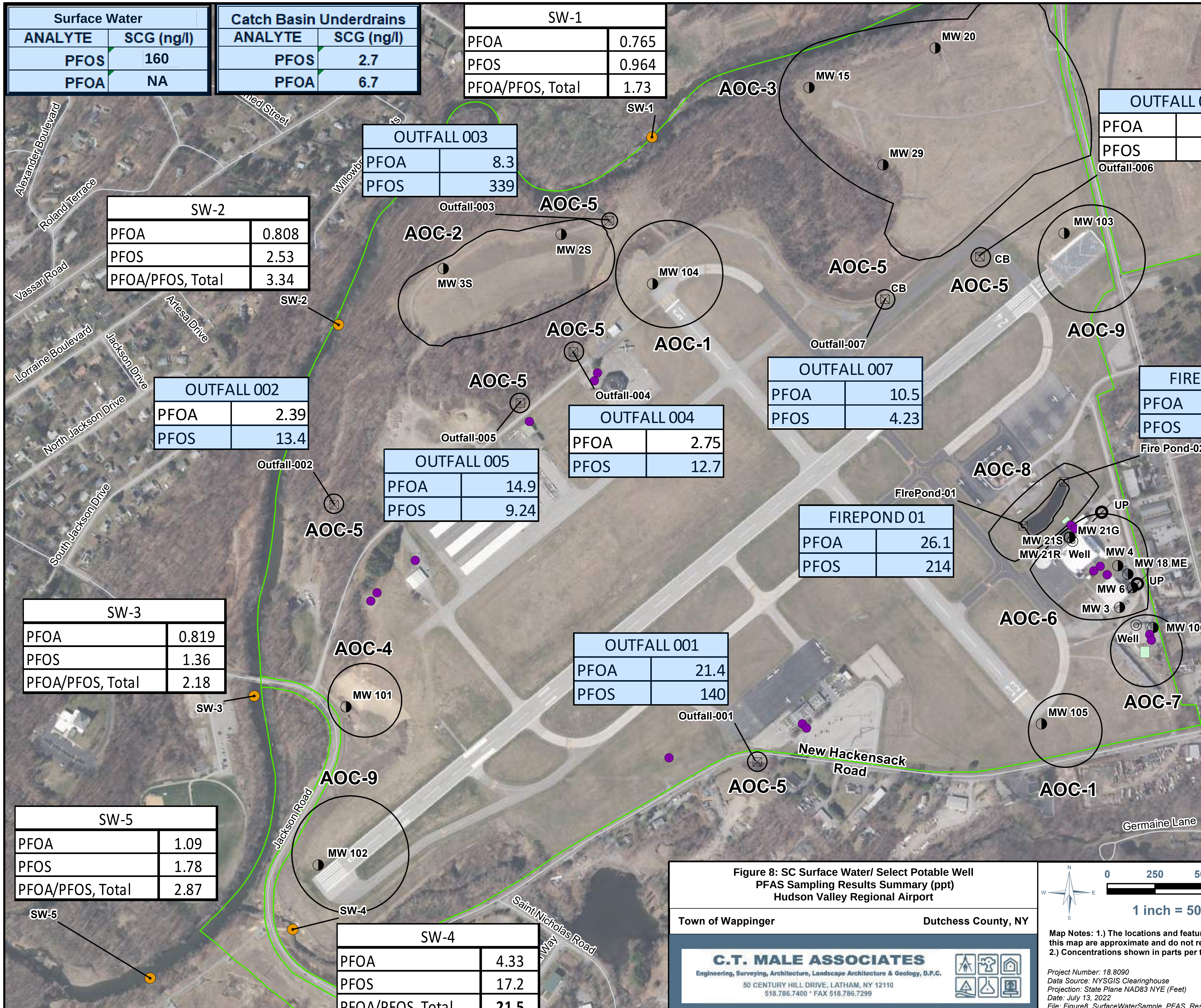
FIREPOND 01	
PFOA	26.1
PFOS	214

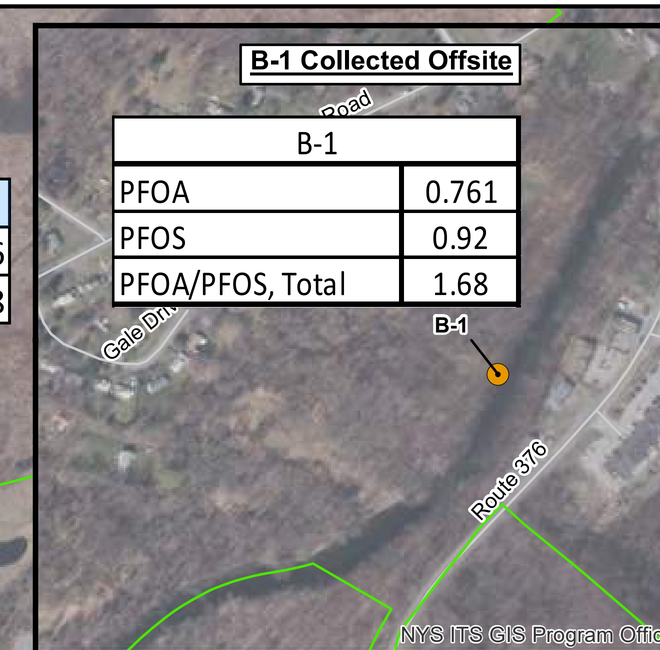
SW-3	
PFOA	0.819
PFOS	1.36
PFOA/PFOS, Total	2.18

OUTFALL 001	
PFOA	21.4
PFOS	140

SW-5	
PFOA	1.09
PFOS	1.78
PFOA/PFOS, Total	2.87

SW-4	
PFOA	4.33
PFOS	17.2
PFOA/PFOS, Total	21.5





Description:

This figure depicts PFOA and PFOS analytical results from all locations sampled during the Site Characterization (SC) Surface Water investigation in August of 2019: Firepond 01, Firepond 02, Outfall 001, Outfall 002, Outfall 003, Outfall 004, Outfall 005, Outfall 006, and Outfall 007. Surface water and catch basin underdrains were sampled and compared to their respective standards defined by Division of Water Technical and Operational Guideance Series (TOGS) Ambient Water Quality Standards (AWQS) no. 1.1.1 as amended in 2023. Several unregulated PFAAs were detected at the aforementioned sampling locations; these results are included in Exhibit 4.

For additional information, see section 3.5 of the SC Report: Surface Water and Sediment Investigation. The SC Report is attached as Exhibit 2.

Figure 8: SC Surface Water/ Select Potable Well PFAS Sampling Results Summary (ppt) Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

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518.786.7400 * FAX 518.786.7299

0 250 500 1,000 FT

1 inch = 500 feet

Map Notes: 1.) The locations and features depicted on this map are approximate and do not represent a field survey. 2.) Concentrations shown in parts per trillion (ppt)

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: Figure8_SurfaceWaterSample_PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend

Points

- Potable Well
- Monitoring Well
- Outfall
- Utility Pole
- Septic Tank Manhole
- Surface Water Sample Approximate Location
- Leech Feild
- Area of Concern
- Dutchess County Property
- Roads
- Exceeds Applicable Standards

Description:

This figure depicts all analytical results exceeding applicable regulatory standards for locations sampled during the Site Characterization (SC) Surface Water investigation in August of 2019: Firepond 01, Firepond 02, Outfall 001, Outfall 002, Outfall 003, Outfall 004, Outfall 005, Outfall 006, and Outfall 007. Several analytes were detected below Division of Water Technical and Operational Guideance Series (TOGS) no. 1.1.1 Ambient Water Quality Standards (AWQS) as amended in 2023 at the aforementioned sampling locations; these results are included in Exhibit 4. It is noted that PFOA and PFOS analytical results are displayed on Figure 8.

For additional information, see section 3.5 of the SC Report: Surface Water and Sediment Investigation. The SC Report is attached as Exhibit 2.

Analyte	TOGS 1.1.1 AWQS (ug/L)
Benzo(a)anthracene	0.002
Benzo(a)pyrene	0
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
Chrysene	0.002
Antimony	3
Iron	300
Manganese	300
Sodium	20000

OUTFALL-001	
Benzo(a) anthracene	0.04 J
Benzo(a) pyrene	0.02 J
Benzo(b) fluoranthene	0.04 J
Benzo(k) fluoranthene	0.02 J
Chrysene	0.04 J
Antimony	16 J
Iron	588
Manganese	712
Sodium	81,300

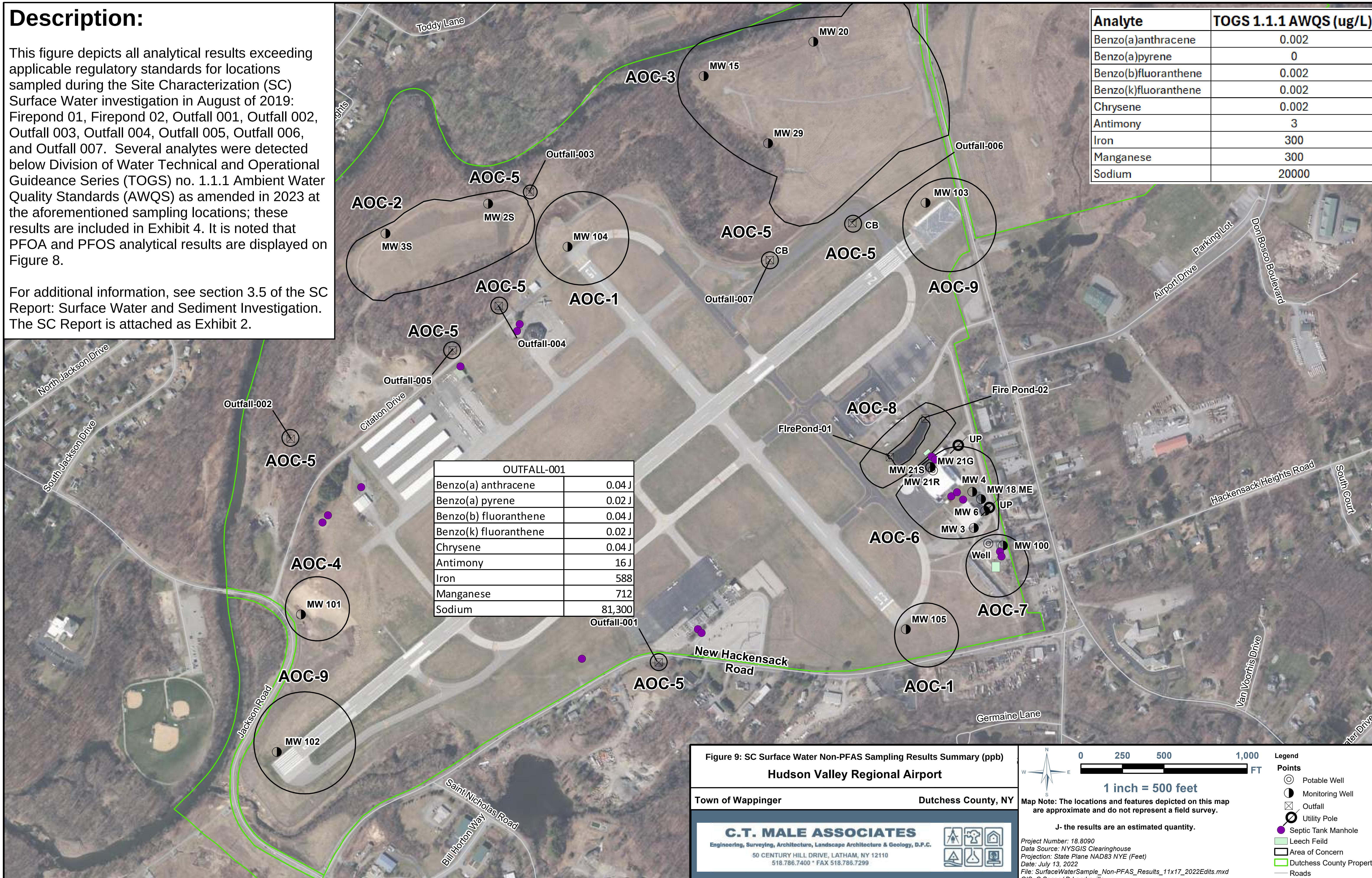

Figure 9: SC Surface Water Non-PFAS Sampling Results Summary (ppb)

Hudson Valley Regional Airport

Town of Wappinger | Dutchess County, NY

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518.786.7400 * FAX 518.786.7299

0 250 500 1,000 FT

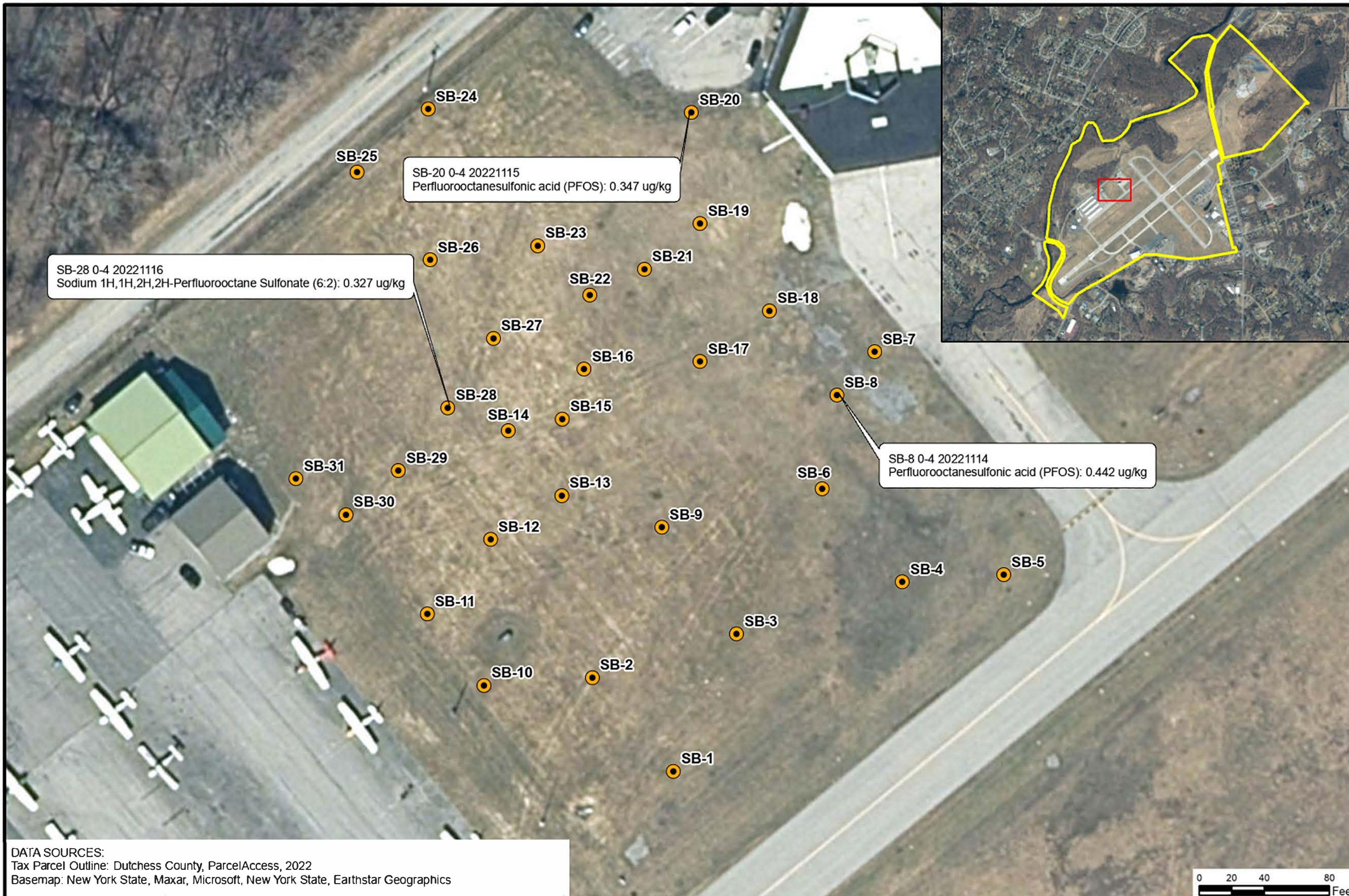
1 inch = 500 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

J- the results are an estimated quantity.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: SurfaceWaterSample_Non-PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend
Points
Potable Well
Monitoring Well
Outfall
Utility Pole
Septic Tank Manhole
Leech Feild
Area of Concern
Dutchess County Property
Roads



DATA SOURCES:
Tax Parcel Outline: Dutchess County, ParcelAccess, 2022
Basemap: New York State, Maxar, Microsoft, New York State, Earthstar Geographics

PVE
48 Springside Avenue
Poughkeepsie, NY 12603
Office: 845.454.2544
Fax: 845.454.2655

Figure 10: PVE Soil PFAS Sampling Results Summary North Sky Harbour Hangar

DUTCHESS COUNTY AIRPORT
263 NEW HACKENSACK ROAD WAPPINGERS FALLS, NEW YORK

LEGEND
SOIL BORING

ANALYTE	UU SCG
PFOS	0.88
PFOA	0.66

PROJECT NO. 20220641

DATE: 11/17/2022
SCALE: AS INDICATED
PROJECTION: STATE PLANE NAD83 NY EAST
ALL LOCATIONS APPROXIMATE

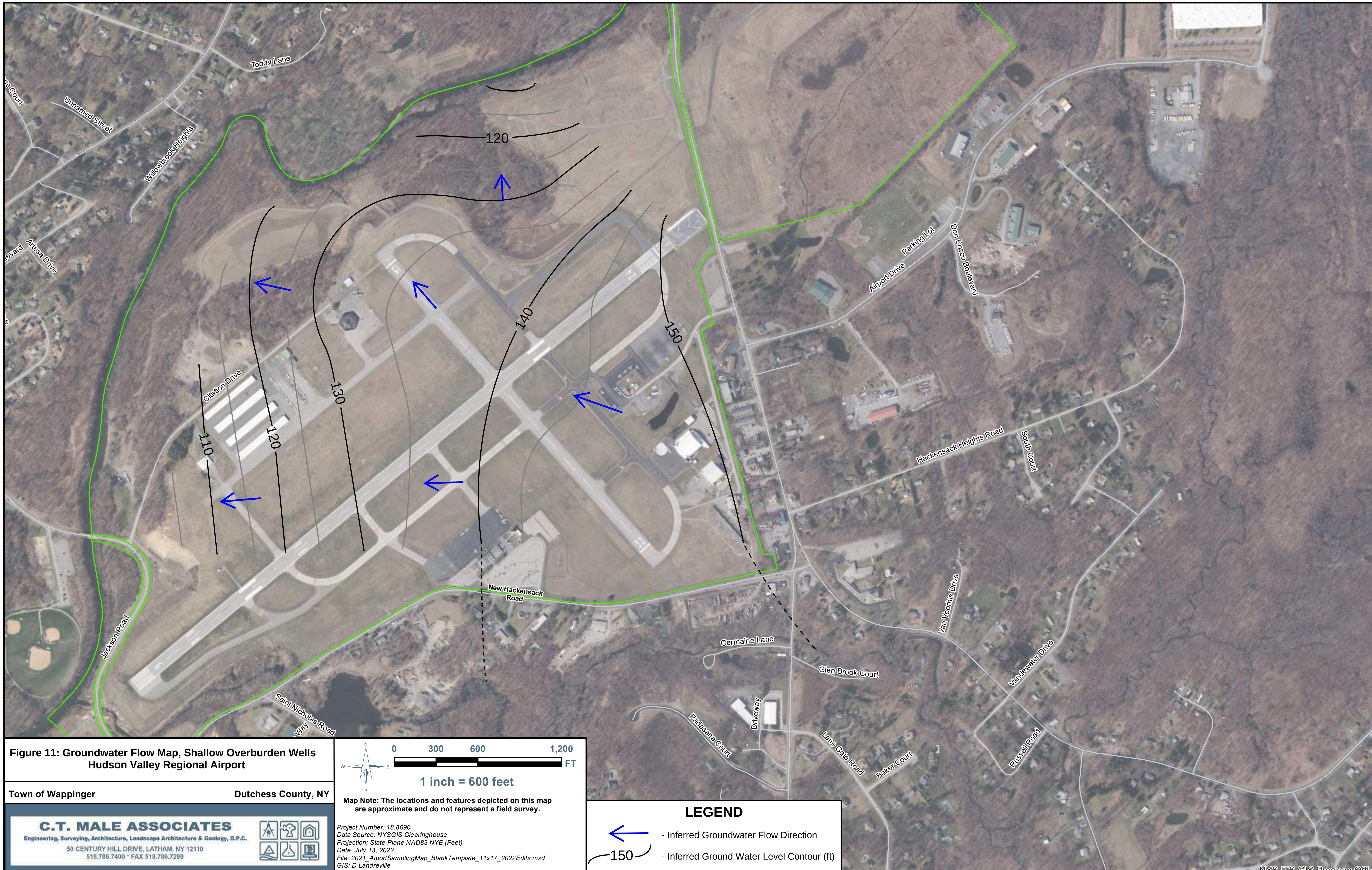


Figure 11: Groundwater Flow Map, Shallow Overburden Wells
Hudson Valley Regional Airport

Town of Wappinger — **Dutchess County, NY**

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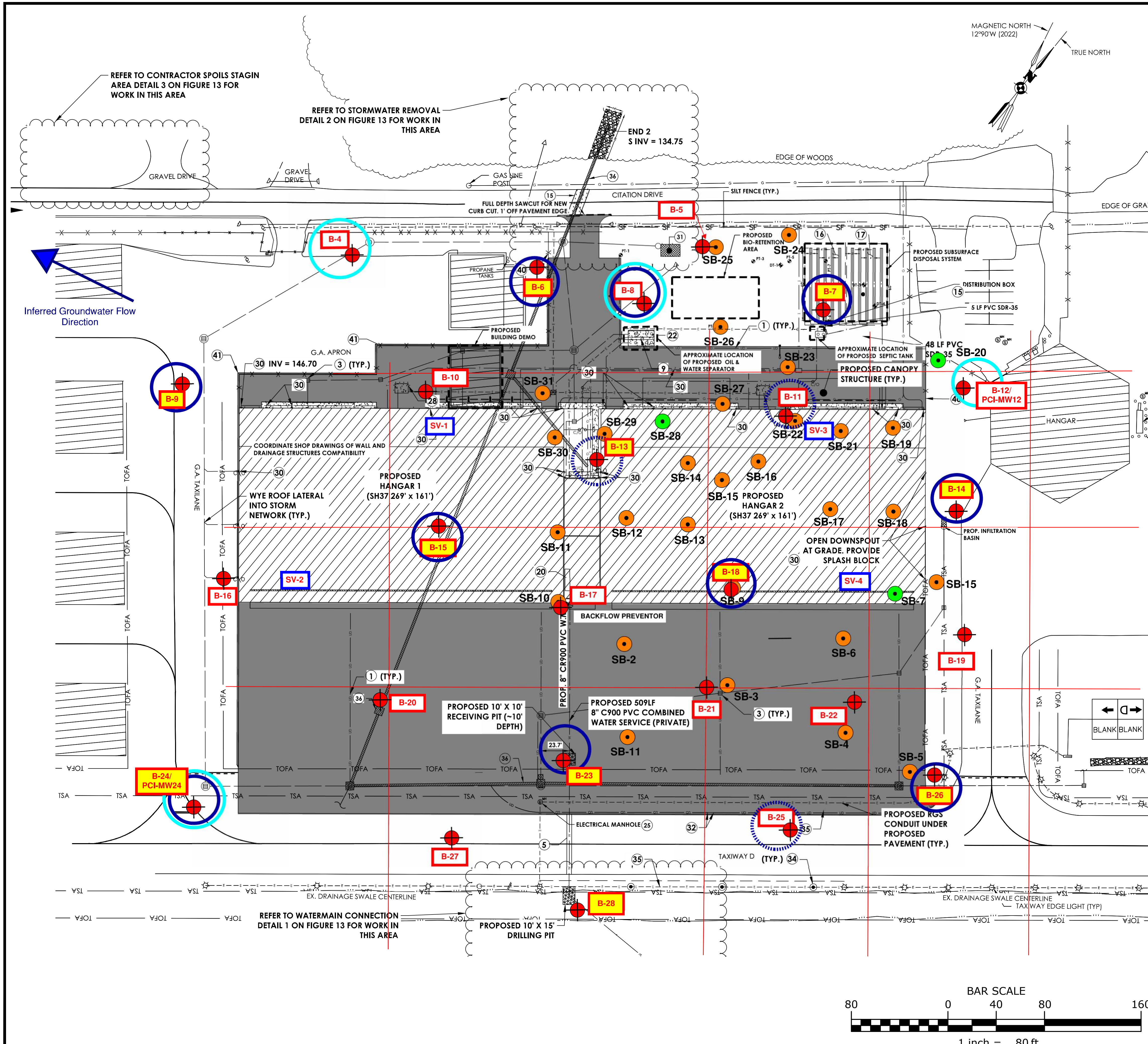
1 inch = 600 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: 2021_AiportSamplingMap_BlankTemplate_11x17_2022Edits.mxd
GIS: D Landreville
PDF Edits: A Malamet

LEGEND

- Inferred Groundwater Flow Direction
- Inferred Ground Water Level Contour (ft)



KEYNOTES:

1. 6 INCH UNDERDRAIN, SEE DETAIL 2 ON DRAWING C-501
3. PROPOSED 24 INCH SQUARE CATCH BASIN, SEE DETAIL 6 ON DRAWING C-501
4. CONNECT TO EXISTING WATER VALVE WITH PROPOSED WATER SERVICE LINE AND CONNECTION TO HANGAR. COORDINATE WITH UTILITY COMPANY FOR PROPOSED SERVICE. SEE SHEET C-122
5. DIRECTIONAL DRILL FOR PROPOSED WATER LINE
9. GAS LINE, SEE DETAIL 4 ON DRAWING C-101.
15. DISTRIBUTION BOX, SEE DETAIL 3 ON SHEET C-121.
16. SANITARY SUBSURFACE DISPOSAL SYSTEM . SEE SHEET C-513.
17. SANITARY SUBSURFACE DISPOSAL SYSTEM FUTURE EXPANSION/REPLACEMENT AREA. NOT IN CONTRACT.
20. PROPOSED BACKFLOW PREVENTION DEVICE WITHIN BUILDING SEE PLUMBING PLANS.
22. 3000 GALLON OIL/WATER/SEPARATOR WITH VENTED COVERS. SEE DETAIL 7 ON SHEET C-521. NOTE: NOT PART OF DCDOH APPROVAL.
25. 24" DIAMETER ELECTRICAL MANHOLE LOAD RATED, SEE DETAIL 3 ON DWG C-515.
28. PAD MOUNTED TRANSFORMER AND BOLLARDS, REFER TO E-SERIES SHEETS FOR TRANSFORMER PAD. A-SERIES FOR BOLLARD DETAILS.
30. ROOF DOWNSPOUTS WITH UNDERGROUND DRAINAGE LATERAL. SEE DETAIL 10 ON SHEET C-501.
31. INFILTRATION BASIN GREEN INFRASTRUCTURE, SEE C-550 SERIES SHEETS.
32. CONNECT EXISTING UNDERDRAIN PIPE TO PROPOSED UNDERDRAIN. C-121
34. PROPOSED RELOCATED LED TAXIWAY EDGE LIGHT, CONCRETE BASE, AND TRANSFORMER. SEE DETAIL 1 ON DWG C-515.
35. PROPOSED 1/C, #8 AWG, 5KV, L-824, TYPE "C" CABLE IN NEW 2" PVC ELECTRICAL CONDUIT IN TURF AND IN NEW 2" RGS CONDUIT UNDER PAVEMENT. SEE DETAILS 2 AND 4 ON DWG C-515.
36. REMOVE STORM PIPING AND ASSOCIATED DRAINAGE STRUCTURES
40. INSTALL 8' HIGH CHAIN LINK FENCE WITH BARBED WIRE, SEE DETAIL 1 ON DRAWING C-512
41. PROPOSED RETAINING WALL. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL BY CIVIL ENGINEER OF RECORD (E.O.R.) & ARCHITECT. SEE SHEET C-541 FOR ADDITIONAL RETAINING WALL NOTES.

REFER TO FIGURE 13 FOR CIVIL AND ENVIRONMENTAL LEGENDS.

Drawing adapted from Site / Utility Permit Drawings for Commercial Hangar Development, Hudson Valley Regional Airport (POU), by Passero Associates, dated March, 2025.

Figure 12 - Proposed Sampling Location Map 1 of 2
SKY HARBOUR NORTH HANGAR
18 Griffith Way
DATE: June 19, 2025
SCALE 1" = 80'

TOWN OF WAPPINGER — DUTCHESS COUNTY, NEW YORK

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JOHNSTOWN, NY • SYRACUSE, NY
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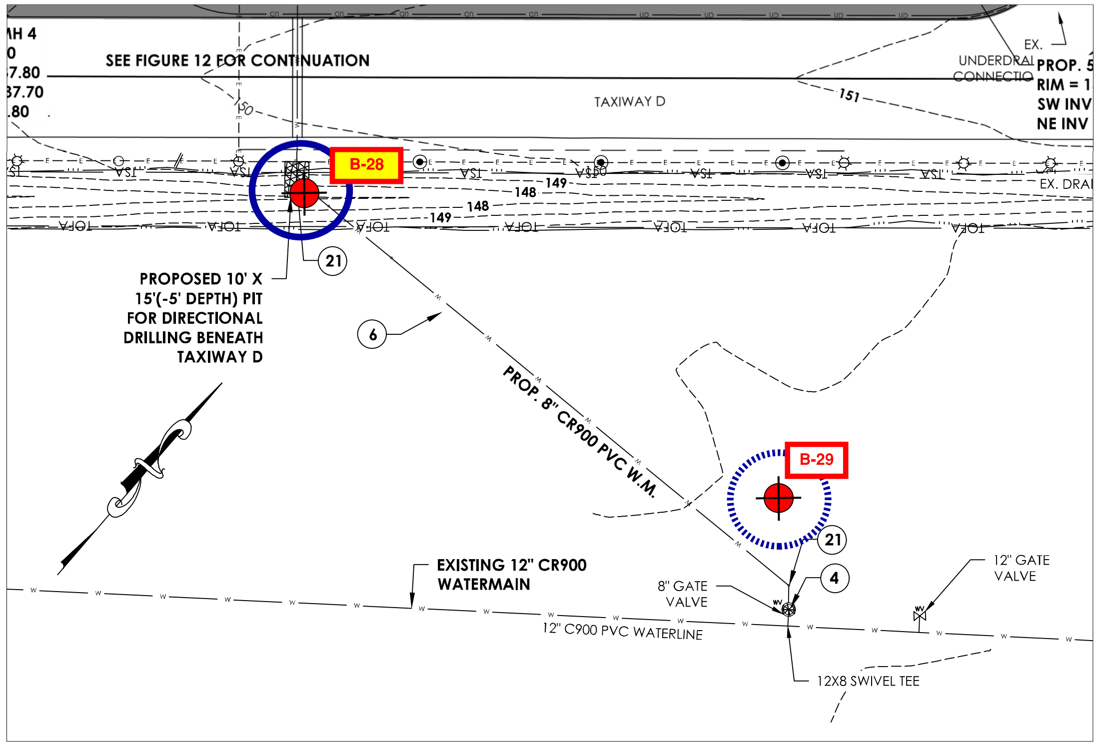


1 WATERMAIN CONNECTION - WORK AREA 2

SCALE: 1" = 80'

WATERMAIN KEYNOTES:

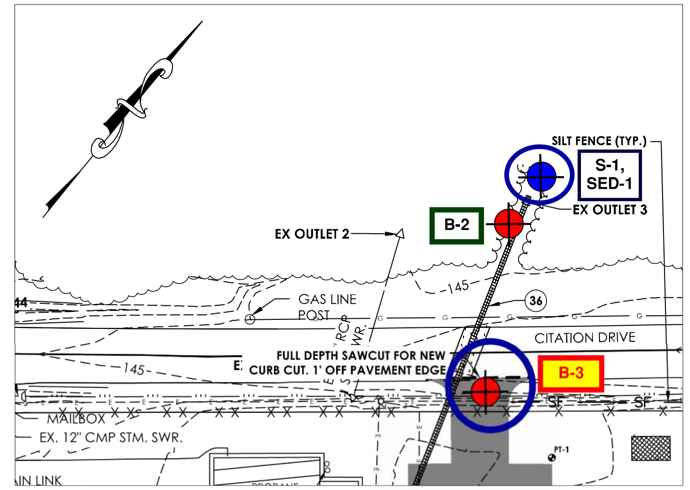
4. CONNECT TO EXISTING WATER VALVE WITH PROPOSED WATER SERVICE LINE AND CONNECTION TO HANGAR. COORDINATE WITH UTILITY COMPANY FOR PROPOSED SERVICE.
6. 8 INCH C900 PVC WATER LINE
21. INSTALLATION OF THRUST BLOCKS

SEE FIGURE 12 FOR CONTINUATION

BAR SCALE

80 0 40 80 160

1 inch = 80 ft.



2 STORM LINE REMOVAL

SCALE: 1" = 80'

STORM LINE KEYNOTES:

36. REPLACE STORM PIPING AND ASSOCIATED DRAINAGE STRUCTURES

SEE FIGURE 12 FOR CONTINUATION

BAR SCALE

80 0 40 80 160

1 inch = 80 ft.

ENVIRONMENTAL SAMPLING LEGEND

- 2022 PVE Soil Boring Location. No PFAS detected above UU SCOs.
- 2022 PVE Soil Boring Location with PFAS detection. No PFAS detected above PG SCOs.
- SV-X — Proposed Soil Vapor Monitoring Point, 5' b.g.s.
- B-XX — Proposed Soil Boring Location. Discrete PFAS samples will be analyzed from the 0-2", 2"-12", 12"-24", and lowest 12" interval above the water table within the capillary fringe
- B-XX — Proposed Geoprobe Soil Boring Location. Discrete PFAS samples will be analyzed from the 0-2", 2"-12" and 12"-24" intervals. The lowest 12" interval above the water table within the capillary fringe to be collected and only analyzed if upper interval exceeds PG SCOs.
- HB-XX — Proposed Hand Soil Boring Location. Discrete PFAS samples will be analyzed from the 0-2", 2"-12" and 12"-24" intervals.
- S-XX SED-X — Proposed Sediment Hand Boring Location. Discrete PFAS sample will be analyzed from the 0-6" interval. Proposed Sediment and Surface Water Sample.
- Full Suite analysis (TAL, TCL, CN) from interval exhibiting field evidence of contamination or interval within capillary fringe if no FEC is observed
- Full Suite analysis (TAL, TCL, CN) from discrete interval exhibiting field evidence of contamination. Sample will only analyzed for full suite if field evidence of contamination is observed.
- Proposed Groundwater Monitoring Well Location. Soil boring will be converted to well.

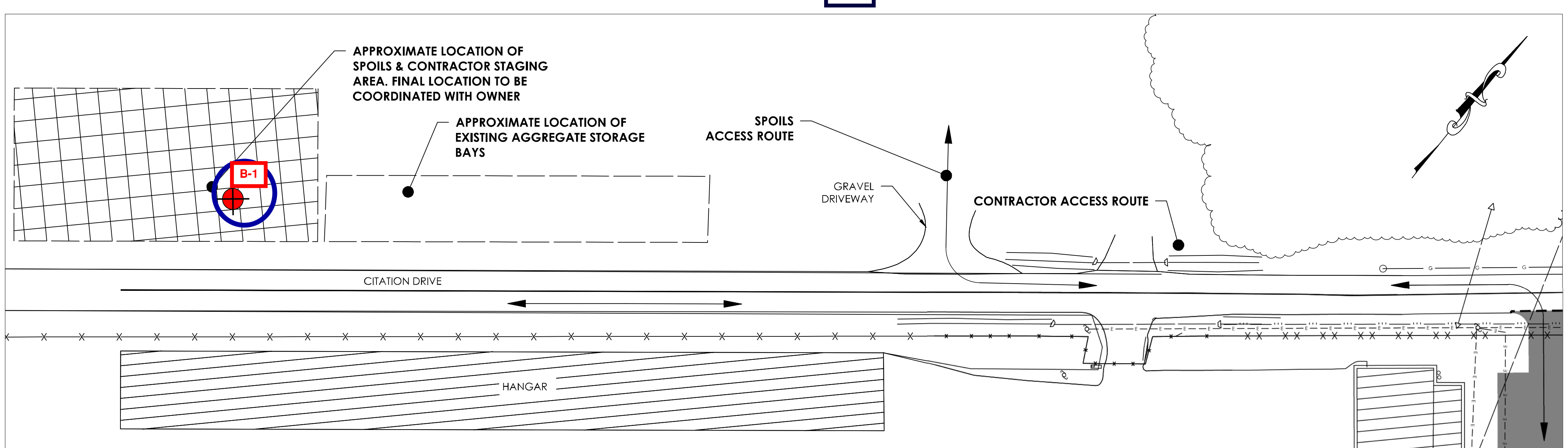
Groundwater is anticipated at depth of approximately 13' below grade.

CIVIL LEGEND

- TOFA — TAXIWAY OBJECT FREE AREA
- TSA — TAXIWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA
- RSA — RUNWAY SAFETY AREA
- EXISTING BUILDING
- PROPOSED PAVEMENT
- PROPOSED BUILDING
- EXISTING FENCE
- SF — SILT FENCE
- EXISTING EDGE OF TREES / BRUSH
- EXISTING TAXIWAY EDGE LIGHT
- E — EXISTING ELECTRICAL
- PROPOSED ELECTRICAL
- G — EXISTING GAS MAIN
- PROPOSED GAS SERVICE
- EXISTING DUCT BANK
- PROPOSED TELECOMMUNICATIONS LINE
- EXISTING WATERMAIN, HYDRANT, AND VALVE
- PROPOSED WATERMAIN, HYDRANT, VALVE, AND DISINFECTION/SAMPLING TAP
- EXISTING STORM DRAINAGE PIPE W/ END SECTIONS
- PP — EXISTING POWER POLE
- EXISTING LIGHT POLE
- EXISTING CATCH BASIN
- EXISTING STORM MANHOLE
- HH — EXISTING HANDHOLE
- EXISTING JUNCTION CAN
- PROPOSED JUNCTION CAN
- PROPOSED NEW LIGHT POLE W/ OBSTRUCTION LIGHT
- PT-1 — PERC. TEST LOCATION W/ IDENTIFICATION NUMBER
- DT-1 — DEEP TEST W/ IDENTIFICATION NUMBER
- SURVEY CONTROL POINT

NOTES

1. REFER TO REVISED PRE-CONSTRUCTION INVESTIGATION WORK PLAN - PROPOSED SKY HARBOR HANGAR BUILDING EXHIBIT 1 FOR THE BID SET DESIGN DRAWING PACKAGE.



3 PROPOSED CONTRACTOR SPOILS STAGING AREA

SCALE: 1" = 80'

SEE FIGURE 12 FOR CONTINUATION

BAR SCALE

80 0 40 80 160

1 inch = 80 ft.

Figure 13 - Proposed Sampling Location Map 2 of 2

SKY HARBOUR NORTH HANGAR

18 Griffith Way

DATE: June 19, 2025

SCALE: AS NOTED

TOWN OF WAPPINGER — DUTCHESS COUNTY, NEW YORK

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GLENS FALLS, NY • POUGHKEEPSIE, NY
JOHNSTOWN, NY • SYRACUSE, NY
www.ctmale.com

APPENDICES

APPENDIX A

C.T. MALE'S STANDARD OPERATING PROCEDURES

C.T. MALE ASSOCIATES ENGINEERING, SURVEYING, ARCHITECTURE, LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

NOTE TAKING and FIELD LOGS

March 6, 2020

____________	____________________		________
Print	Technical Reviewer	Signature	Date
____________	____________________		________
Print	QA Manager	Signature	Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: NOTE TAKING AND FIELD LOGS

1.0 PURPOSE

This standard operating procedure (SOP) provides programmatic criteria for the content of field logs.

2.0 SCOPE

This procedure applies to all C.T. Male Associates field personnel engaged in note taking and data collection to be recorded on Environmental Services Field Logs.

3.0 GENERAL

An essential part of any environmental field project is proper documentation. The primary documentation used to record site data are Environmental Services Field Logs, which describe the history of field activities and summarize field measurements. This is necessary to demonstrate that the data are representative and have been obtained according to required procedures. The field logs may be used as evidence in legal proceedings to defend procedures and techniques employed during site investigations and remedial actions. Therefore, it is important that documentation be factual, complete, accurate, consistent, and clear.

4.0 DOCUMENT SOURCES

Field documents consist of the following hardcopy, printed on standard paper and placed in a non-waterproof resistant folder or aluminum clipboard, or electronic types:

- Environmental Services Field Logs.
- Soil Boring Logs.
- Test Pit Log Sheets.
- Organic Vapor Headspace Analysis Logs.
- Monitoring Well Construction Logs.
- Groundwater Services Field Log.
- Monitoring Well Water Level Logs.

- Monitoring Well Purging Logs.
- Monitoring Well Development Logs.
- Photographs and Photographic Logs.
- Laboratory Chain of Custody Forms.
- Shipping Waybill and Manifest Documents.
- Other field activity and/or field data documentation.

5.0 RESPONSIBILITIES

5.1 Project Manager

Field sampling personnel, in conjunction with the Project Manager are responsible for overall compliance with this technical procedure. The Project Manager, or designee, is responsible for verifying that the data entries made on the field logs comply with this technical procedure. The Project Manager will also provide copies of Environmental Services Field Logs to the Quality Assurance Officer for general review.

5.2 Site Personnel

All site personnel who make field log entries are required to read this procedure before engaging in this activity. The Project Manager, or designee, will inform personnel who will be responsible for field log entries, care, and maintenance.

6.0 PROCEDURE

6.1 Environmental Services Field Logs

Field logs will contain lined, consecutively numbered pages. Record the following information on the front page of Field Logs:

- Date.
- Time On-Site/Time Off-Site.
- Project name.

- C.T. Male Associates project number.
- Purpose (i.e., completion of test borings/soil sampling, etc.).
- Weather conditions.
- Personnel present at the site and site visitors.

Entry of field activities, events, data, and other relevant project task information will be documented daily (at minimum) throughout the course of field activities. The following minimum requirements must be followed when entering daily activities on the Field Logs:

- The field activity and date must be recorded at the top of each page.
- The top page corner of each page will be consecutively numbered.
- Entries on the field logs should be preceded with the time written in military units. The time should be recorded frequently and at the point of events or measurements that are representative of the activity being logged.
- Changes must be made with a single, strike-out line through the deletion. Changes must be initialed and dated. Scribbling or blotting out deletions is unacceptable.
- Entries should be made in waterproof ink unless inclement weather prevents pens from working. Except on site where samples are being collected for PFAS, then a non-waterproof pen will be used.
- Entries must be written clearly and legibly enough so that any reviewer can read and understand the entry.
- The bottom of each page should be signed and dated by the author.

Events and observations that should be recorded should include, but are not limited to, the following:

- The field activities/tasks with date and time.

- The location(s) and field conditions in which the field task will be conducted.
- The names and organization(s) of field task staff and/or visitors, including C.T. Male Associates' personnel, subcontractors, clients, and regulators.
- Site conditions (upon arrival and departure) and changes in site conditions.
- Current weather and changing weather conditions that might impact field activities.
- Relevant field observations, major task decisions, comments, or other valuable information will be documented throughout the course of site activities. Entries will be as specific and detailed as possible and practical.
- If field datasheets, soil boring log sheets, photographs, sample location coordinates, or other documentation types are specified by a procedure, the information need not be duplicated, but the relevant documentation type and/or forms must be referenced in the Field Logs and attached to the Field Logs, if applicable.
- Documentation of field instrument calibration or reference to appropriate field calibration sheets.
- Field map sketches will be drawn with an approximate North arrow and, if possible, approximate scale. Boring or sample locations with measurements (swing ties) to at least two fixed objects to locate points for mapping.
- Changes and/or deviations from task protocols (such as sampling procedures) outlined in governing planning documents.
- Reason(s) for noted deviations, and whom the deviation was discussed with and authorized by.
- Problems, downtime, or delays and the reasons for the problem or delay.
- Upgrade or downgrade of personal protective equipment.

- Equipment make, model, and property numbers or serial numbers used at the site.
- Health and safety monitoring equipment, including calibration procedures and results and actual and background readings.
- Start and end times of sampling.
- Sampling steady-state parameters.
- Decontamination times and methods.
- Type, amount, and disposal methods used for investigation/remedial action derived wastes.

When samples are collected, the following should be recorded on the log sheets or laboratory Chain of Custody form:

- Sample location and depth.
- Sample identification number.
- Sample date and time.
- Sample methodology.
- Sample type and media.
- Field sampler initials.
- Sample analyses requested.
- Sample preservation type.
- Quality control sample numbers and types.
- Chain-of-custody number.
- Name of individual to whom the samples are relinquished.

- Laboratory service provider in which samples are to be relinquished.
- Shipping Service(s) or method(s) used for sample delivery.
- Date and time of shipment.
- Shipping Waybill or manifest number.

6.2 Field Datasheets and Forms

Other data documentation types (including Soil Boring/Test Pit Log Sheets, Photographic Logs, Laboratory Chain of Custody Forms, Shipping Waybill and Manifest Documents, and similar documents) are part of the field records. Generally, the use of these documentation types are task-specific and when used should be attached and referenced within the field logs. However, specific data entered on these types of documents will not typically be documented verbatim on the field logs, so document handling and archiving must be performed in the same manner as the field logs.

6.3 Electronic Data Documents

Electronic data documents may consist of photographs; GPS and survey coordinate data, field instrument data, and other electronic data files. Field instruments and tools such as digital cameras, GPS units, water-quality meters, photoionization detectors (PIDs), pressure-transducers, dust monitors and hand-held computers store data in electronic formats that can be later downloaded and stored electronically for future reference. Take care when retrieving, storing, and managing these electronic data. The Project Manager or designee will be consulted for electronic data management instruction before using unfamiliar electronic instrument or tool requiring electronic data retrieval and storage. At minimum, Electronic Data Documents will be managed as suggested below:

- Download electronic data without manipulation. Downloaded data should be in a format that can be reviewed by others that may not have the equipment specific software used to download it.
- After collection, retrieve (download) electronic data from the field instrument daily or as determined necessary by the Project Manager.

that will be generated and the cost. If a 4-inch diameter monitoring well is required, the inner auger diameter must be 6 to 8 inches.

Boreholes should be advanced using pre-cleaned and decontaminated augers and sampling equipment, according to SOP for Surface and Subsurface Soil Sampling. Boreholes that are not converted to wells should be abandoned by returning non-impacted soil cuttings to the borehole and filling remaining borehole space with a grout/bentonite mixture having an approximate ratio of 20:1.

5.2 Flush Joint Casing Drilling

Drilling with flush joint casing is similar to auger drilling and is most often advanced with the same drill rig. Typical casing diameters are 4, 6 and 8 inches, but can vary. Casing lengths are typically 5 and 10 feet. Casing sections are joined with flush thread fittings. The casing sections can be spun into the ground while applying downward pressure on the drill string while adding water to the casing to flush the drill cuttings Casing sections can also be advanced into the ground with either a 140 lbs. or 300 lbs. hammer with a casing drive head connected to the top of the drill string. A roller bit and water are then used to remove and flush soils from the casing.

Soil samples are collected in the same manner as when using auger casing. Installation of monitoring wells is essentially the same a using auger casing. Four- inch diameter casing is typically used for installing two-inch diameter monitoring wells, and six-inch casing when installing four-inch diameter wells.

Flush joint casing is also used to seal off the overburden soils when advancing the borehole into bedrock with a rock core barrel or roller bit.

Boreholes should be advanced using pre-cleaned and decontaminated augers and sampling equipment, according to the SOP for Surface and Subsurface Soil Sampling. Boreholes that are not converted to wells should be abandoned by returning non-impacted soil cuttings to the borehole and filling remaining borehole space with a grout/bentonite mixture having an approximate ratio of 20:1.

5.3 Direct Push System Drilling

Direct push system technologies involve a category of drilling equipment that hydraulically pushes or drives small-diameter, hollow steel rods into the subsurface without rotating the drill rods. Some drill rigs may be "combo rigs," capable of conducting both direct push and rotating hollow stem auger drilling operations. Direct push system drilling uses a combination of a hydraulically powered percussion hammer, a downward hydraulic push, and the weight of the vehicle on which the system is mounted to drive rods into the subsurface. Direct push system methods push a continuous tube sampler into the subsurface by laterally displacing soil to make a path for the sampler, so no cuttings are generated. Direct push system drilling is commonly used for shallow applications (less than 50 feet); however, depending on the lithologic conditions, it may be used as deep as 120 feet.

Direct push system technology is typically limited to unconsolidated formations that are relatively free of cobbles or boulders or dense glacial till. Refusal may occur if there are too many cobbles, boulders, or other consolidated formation materials. However, since direct push system drilling is relatively fast, drilling refusal at a desired location due to cobbles may be mitigated by abandoning the hole and relocating to an adjacent location.

Direct push system boreholes generally cannot be sampled deeper than the water table because unconsolidated materials cave in once the drive rods are removed. However, caving may be mitigated by advancing casing with an inner drill rod used for sampling, allowing for sampling and well installation below the water table.

Outside diameters of samplers and boring tools generally range from 0.75 to 3.5 inches. If installation of monitoring wells is planned, the inside diameter of the boring should typically ranges from 1.5 to 3.5 inches (for 1- to 2-inch diameter wells).

Direct push system technologies provide the following advantages over conventional drilling methods:

- Minimal ground disturbance, with a small-diameter boring that is easy to abandon.

- No cuttings, which eliminates the need for handling, containerizing, sampling, and disposing of potentially contaminated investigation-derived waste (unless samples are brought to the surface).
- Relatively faster boring advancement as compared to hollow stem auger drilling.
- Relatively faster monitoring well installation as compared to hollow stem auger drilling if small-diameter wells (0.75 to 1.25 inches in diameter).

Boreholes should be completed using pre-cleaned and decontaminated drive points, rods, and sampling equipment according to SOP for Surface and Subsurface Soil Sampling. Boreholes that are not converted to wells should be abandoned by returning non-impacted soil cuttings to the borehole and filling remaining borehole space with a grout/bentonite mixture having an approximate ratio of 20:1.

5.4 Rotosonic Drilling

Sonic drilling advances a borehole using resonant high frequency vibrations to fluidize the formation at the drill bit. Vibrations created in the sonic head at the top of the drill string move rapidly up and down the drill string with intense vibration at the drill bit; resonant frequencies of 50 to 200 Hertz. Sonic drilling could be used for continuous collection of soil samples and advancement into bedrock.

The installation of monitoring wells with a Rotosonic borehole is essentially the same as when employing either hollow stem augers or flush joint casing.

Boreholes should be advanced using pre-cleaned and decontaminated augers and sampling equipment, according to SOP for Surface and Subsurface Soil Sampling. Boreholes that are not converted to wells should be abandoned by returning non-impacted soil cuttings to the borehole and filling remaining borehole space with a grout/bentonite mixture having an approximate ratio of 20:1.

6.0 DRILLING AND SAMPLING PROCEDURES

6.1 Drilling Contractor Responsibilities

Working around drill rigs can be dangerous. As a result, increased consciousness and vigilant observation of drilling activities are necessary to reduce the risk of injury to workers involved with drilling. Safe work requires that good communication is maintained between the driller/helper and the Field Geologist/Environmental Scientist during drilling activities. Encourage the driller to notify the Field Geologist/Environmental Scientist routinely of the depth(s) at which changes in drilling rates become evident and immediately of other drilling observations that may indicate subsurface obstructions or utilities. The SOP for utilizing the machinery to drill the borehole(s) or well(s) onsite will be conducted by the drilling subcontractor, following their SOP.

At a minimum, the following activities should be conducted as part of the drilling program:

- Conduct a kickoff meeting prior to drilling. Describe tasks to be conducted and a tentative schedule. As the drilling progresses, discuss the remaining tasks and revised schedule with the drill crew daily. Communicate progress and issues with the Project Manager.

- Hold a health and safety tailgate meeting prior to the commencement of drilling activities, each day.

- Wear proper PPE at all times.

- Conduct air monitoring as specified in the project-specific HASP and according to SOP Organic Vapor Monitoring and Air Monitoring.

- Visit the site and drilling locations with the driller to identify potential site hazards and obstacles before mobilization and setup.

- Document that the drilling contractor has obtained underground and overhead utility clearance. Require driller to maintain proper clearance with aboveground utilities and obstructions.

- Set up proper traffic controls if working in an area where there are traffic hazards.
- Establish exclusion and decontamination zone using barriers, flagging tape, or other methods to prevent unauthorized access to the drilling location according to the site-specific HASP.
- Inspect the drill rig for leaking lines or other hazards and have the driller test safety switches and demonstrate that they work. No fluids should leak from the drill rig.
- Document that personnel working around the drill rig are trained and instructed, familiar with drill rig operation, and understand the task to be performed.
- Identify the locations of the fire extinguisher(s) and first aid kit(s), and verify that they are readily available for use.
- Maintain good housekeeping on and around the drill rig.
- Establish a staging area for storing investigation-derived waste and decontaminating augers and sampling equipment.
- Establish a core logging and sample collection area at a safe location within sight of the drill rig.
- Place sampling equipment and soil recovered from the subsurface on plastic sheeting or similar dedicated material to avoid potentially contaminating the ground surface.
- Log downtime that occurs because of drilling contractor equipment failure, weather, site access, or other issues, on the Environmental Services Field Log and/or Subsurface Exploration Log.

7.0 HEAVING AND FLOWING SOILS

Heaving and flowing soils within the saturated zone may complicate drilling procedures. When encountered, use appropriate drilling techniques to minimize potential impacts; these include using drilling fluids or a drill-stem plug. Minimize the use of drilling fluids if possible. However, when necessary, it is permissible to add potable water from a documented, clean source, or when sampling for PFAS the use of filtered water to the borehole to control heaving and flowing soils as long as identification of the saturated zones during drilling is not compromised and the drilling fluid can be removed during development so that representative water levels can be obtained. Drilling fluid volume added to a borehole must be developed from the well. If potable or filtered water is added to the borehole, develop an equal volume of water from the borehole, in addition to the standard well development volume. If a drill-stem plug is used, slowly release the plug from the end of the drill-string while at total borehole depth.

8.0 RECORDS

Record field activities and soil boring field data on the Environmental Services Field Logs and Subsurface Exploration Logs.

9.0 DEFINITIONS

- Auger section: A segment of hollow auger outer casing with helices (flights) welded around the exterior that conveys soil cuttings from the drill bit to the surface when rotated.
- Borehole: The downward hole in the subsurface lithology created by drilling activities.
- Combo drill rig: Drill rigs capable of conducting both direct push system and rotating hollow stem auger drilling operations.
- Cutting shoe: The cutting end of a direct push system drill string.
- Direct Push System (DPS): A drilling technology that hydraulically pushes or drives small diameter, hollow steel rods into the subsurface without rotating the drill rods.
- Down time: Non-productive time on the part of the drilling contractor or their subcontractors related to scheduling, breakdown, or other operational delays.
- Drill bit: The cutting end of a drill string that typically has cutting teeth.

- Drill string: Multiple auger or casing sections connected in series with a drill bit or cutting shoe connected at the driving end of the drill string.

- Flush Joint Casing: Lengths (usually 5 to 10 ft, casing diameters can be 4, 6 and 8 inches) of steel tubing provided with a box thread at one end and a matching pin thread on the opposite end. Coupled, the lengths form a continuous tube having uniform inside and outside diameters throughout its entire length.

- Heaving or Flowing Soils: Loose medium- and fined-grained soils in a confined, water bearing zone or aquifer that tend to rise up into the drill stem when the unit confining the aquifer is breached by the drill bit. This happens because the water in the aquifer has a pressure head great enough to cause upward flow into the drill stem with enough velocity to overcome the weight of the sand, creating a quicksand condition and carrying sand into the drill stem. Usually associated with hollow stem auger drilling.

- Hollow Stem Auger (HSA): A form of rotating auger, consisting of continuous-casing, segmented auger sections with helices (screw-flights) that are rotated into the subsurface under downward pressure.

- Investigation-derived waste (IDW): Contaminated waste generated during investigation and/or remedial activities, including wash water, purge water, personal protective equipment, sampling tools and supplies, and soil cuttings.

- Photoionization detector (PID): A detection tool that measures organic vapor concentrations in air using the photoionization potential of the contaminant.

- Probe drive string: The outer casing and drive string used during direct push system drilling.

- Sample shoe: A retaining device, typically made of polyethylene, that allows soils to enter a sampler but does not allow them to exit through the end of the sampler.

- Solid-point drive point: A solid point placed within the open, hollow end of a direct push system cutting shoe so that soil may not push up and into the probe drive string.
- Split- spoon sampler: A soil coring device that consists of a length of carbon or stainless steel tubing split longitudinally and equipped with a sample shoe and a drive head.
- Standard Penetration Test (SPT): A soil test used to evaluate the relative density of unconsolidated soil by counting the number of times a weighted hammer (typically 140 pounds) is repeatedly raised and dropped over a 30-inch height for every 6 inches of soil penetration.
- Unconsolidated formation: A subsurface soil formation that is unstable or loose with a low ability to remain cohesive without retainment. Soils that easily slough or erode back into an open borehole without an outer casing to keep the borehole open.

C.T. MALE ASSOCIATES ENGINEERING,
SURVEYING, ARCHITECTURE,
LANDSCAPE ARCHITECTURE &
GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

ORGANIC VAPOR MONITORING and AIR MONITORING

March 6, 2020

________________ __________________________ __________
Print Technical Reviewer Signature Date

________________ __________________________ __________
Print QA Manager Signature Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: ORGANIC VAPOR MONITORING AND AIR MONITORING

1.0 PURPOSE

This standard operating procedure (SOP) provides guidance for conducting organic vapor monitoring of environmental media, and air monitoring procedures to identify volatile organic compounds (VOCs) and airborne particulates (i.e., dust) during field activities. The project-specific Health and Safety Plan (HASP), submitted under separate cover, will specify the type(s) and frequency of vapor and air monitoring requirements at each work area.

2.0 SCOPE

- This SOP applies to C.T. Male Associates' personnel engaged in organic vapor or air monitoring activities.

There are many instruments available for organic vapor and air monitoring. This SOP focuses on the project-specific instruments and applications. Monitoring requirements that are not identified in this SOP will be discussed with the Site Health & Safety Officer before starting field activities, such that proper requirements, procedures, and monitoring instruments are identified. Should instrumentation or procedures be added to a project task that is not included in this SOP, they will be incorporated into the project-specific HASP and documented on the Environmental Services Field Log.

3.0 GENERAL

Organic vapor monitoring and air monitoring serve two primary functions:

1. To evaluate organic vapor concentrations in site media to assist site characterization.

2. To monitor potential airborne chemical contaminant exposures to C.T. Male Associates site workers and the surrounding community.

The use of field instrumentation for volatile organic compounds (VOCs) at field sites allows on-site analytical screening of air, water, sediment, and soils. Screening results can also be used to anticipate potential petroleum and other VOC contamination and particulate/moisture filter is recommended. Record the maximum detector reading as the final sample concentration on the Organic Vapor Headspace Analysis Log.

5.2.4 Soil Headspace Screening for Organic Vapors

Headspace organic vapor monitoring involves the measurement of organic vapors emitted from soil samples in a sealed container. The headspace of the container is typically warmed and then tested for volatile organic vapors using a PID or FID. The results generated by this method are qualitative to semi-quantitative and are limited to organic compounds that readily volatilize. Soil can be collected for headspace screening from various sources including lithologic soil cores during drilling, soil stockpiles, or from excavations and test pits. For soil cores, soil headspace should be screened from 2-foot intervals at zones of where contamination is expected.

The following procedures may be followed when conducting soil headspace screening for organic vapors:

- Calibrate the headspace screening instrument(s) according to the manufacturer’s specifications.

- Headspace screening will typically be analyzed using clean, re-sealable 1-quart Zip-loc™ (or similar) plastic bags. Bags are not to be reused.

- To begin collection of headspace screening samples, collect a small amount of soil (about the equivalent of a softball) and immediately place it inside a clean, re-sealable 1-quart Ziploc™ (or similar) plastic bag until the plastic bag is about one-third to one-half full; then immediately seal the bag completely. Larger plastic bags should not be used to prevent vapor diffusion and stratification effects that may significantly affect the sample. Samples from soil cores, excavations, or soil piles must be immediately transferred into the sample bag once the soil core is opened, or the soil sample is uncovered and exposed to the atmosphere.

- Shake the bag for 15 seconds and let it rest for at least 10 minutes but no longer than one hour. The temperature of the headspace must be warmed to at least 40 degrees Fahrenheit (°F) (5 degrees Celsius [°C]) before testing. If the soil and/or outdoor temperature is below 40°F, placing the headspace sample in a warm location at approximately room temperature (that is, indoors) may be necessary to slowly warm the sample to an acceptable temperature.

- Before testing, shake the bag for another 15 seconds to further assist volatilization.

- Insert the sample tip of the PID or FID into the bag at a point approximately one-half the headspace depth, taking care not to foul the sample tip with soil particulates or uptake water droplets. The sample bag insertion opening must be minimized to reduce the potential for vapors from escaping. The bag opening can be made with the probe tip.

- After probe insertion, record the maximum detector reading as the final sample concentration on the Organic Vapor Headspace Analysis Log. The maximum detector reading normally occurs between 2 and 5 seconds after probe insertion, but if reading is rapidly climbing, wait longer.

- If erratic instrument response occurs at high VOC concentrations or conditions of elevated headspace moisture are realized, record the instrument behavior along with the maximum detected reading(s). Under these conditions, headspace data may be discounted.

5.2.5 Screening for Organic Vapors in the Monitoring Well Casing

When conducting groundwater monitoring and/or sampling, the air inside the monitoring well casing will be screened for organic vapors using a PID. To screen for organic vapors inside or exiting the monitoring well casing, stand next to and not over the well approximately arms reach away from the well. Slowly open the well cap and immediately check for organic vapors in the well casing by positioning the tip of the PID at the top of the open well casing. Record this reading on the Groundwater Services Field Log.

5.3 Air Monitoring for Potential Contaminant Exposure

Air monitoring for potential exposure to airborne contaminants is typically conducted using a PID, FID, CGI (measuring oxygen level and explosive atmosphere), MultiRae

Plus meter (measuring oxygen level, explosive atmosphere, PID, and hydrogen sulfide), or dust/aerosol meter. Air monitoring is typically conducted at one or more of the following areas for the reasons given below:

- At the source. Monitoring at this location gives a worst-case assessment of the situation. If concentrations at the source are below the action levels, then a potential exposure problem is unlikely.

- In the employee breathing zone. Monitoring should be conducted in the employees' breathing zones to determine the actual conditions that they may potentially be exposed to. Since employees doing different tasks may have different potential exposures, monitoring should be conducted for the worst case scenario for each task.

- At the perimeter. Perimeter monitoring is used to document background condition and that the surrounding community is not being adversely affected by the operations. This type of monitoring is typically warranted as a means of documenting that no off site releases occur.

- Conduct monitoring before entering a potentially hazardous area, according to requirements in the project-specific HASP.

5.3.1 Monitoring of Oxygen, Combustible, Hydrogen Sulfide Gas, and Airborne Particulates

Instruments typically used to monitor oxygen levels, combustible atmosphere, hydrogen sulfide, or airborne dust include the MultiRAE plus meter (measuring oxygen level, explosive atmosphere, PID, and hydrogen sulfide), CGI (measuring oxygen level and explosive atmosphere), or dust/aerosol meter.

Depending on the requirements in the site specific HASP; oxygen, combustible, hydrogen sulfide gas, and airborne dust measurements may be made during field activities to ensure that breathing atmospheres do not become hazardous.

Entry into any confined space or any other area where hazardous atmospheres may possibly be a concern must be conducted under direct consultation with the site specific

HASP and work plan. Always consult the project PM and/or OHSM with any questions or concerns regarding instrument monitoring and work situations involving confined spaces and/or potentially hazardous atmospheres.

5.3.2 Monitoring of Oxygen Level

The oxygen level in a confined space or other area of little to no air circulation is of prime concern to anyone about to enter that space. Removal of oxygen by combustion, reduction reactions, or displacement by other gases or vapors may be a hazard. Likewise, elevated levels of combustible or toxic gases may also pose a hazard to health. Elevated levels of oxygen may also result in an explosive hazard.

MultiRAE Plus meters are commonly used to monitor oxygen levels. Perform operation, maintenance, and calibration of oxygen monitoring instruments according to the manufacturer specifications. Calibrate oxygen monitoring instruments before starting work each day. Document the calibration check on the Field Calibration Sheet.

Because some instruments do not operate properly without sufficient oxygen and others can cause explosions, the monitoring of oxygen will be the initial concern when working in an environment where there is potential for oxygen levels to be below 19.5% or greater than 23%. The normal oxygen concentration at sea level is 21%.

5.3.3 Monitoring for Explosive Atmosphere

The MultiRAE Plus meter is commonly used to monitor for a flammable and explosive atmosphere. Perform operation, maintenance, and calibration of explosive atmosphere monitoring instruments according to the manufacturer specifications. Calibrate explosive atmosphere monitoring instruments before starting work each day. Document the calibration check on the Field Calibration Sheet.

Conduct monitoring for flammable or explosive environments at the same locations as monitoring of oxygen levels. Work can proceed as normal if the air conditions are less than 10% of the LEL. If the air conditions are greater than 10% of the LEL or methane gas is less than 5% LEL, work is to stop immediately. Evacuate the site or implement engineering controls to reduce the LEL to acceptable levels.

5.3.4 Monitoring for Toxic Gases

The MultiRAE plus meter and Drager colorimetric tubes are commonly used to monitor for toxic gases. Perform operation, maintenance, and calibration of toxic gas monitoring instruments according to the manufacturer specifications and the HSP. Calibrate or inspect toxic monitoring instruments (as required) before starting work each day. Document the calibration check on the Field Calibration Sheet.

Toxic gases include organic and inorganic vapors and gases. The MultiRAE Plus meter is capable of monitoring the odorless and colorless toxic gas hydrogen sulfide, which is a common gas found at contaminated sites.

5.3.5 Monitoring of Airborne Particulates (Dust)

The instrument that should be used to measure airborne dust is the DustTrak™ II Aerosol Monitor (Model 8530). The monitor will be used during ground intrusive activities and is capable of measuring airborne particulate (dust) concentrations at the perimeter of the work area for protection of site workers and the surrounding community. . The aerosol monitor meter is typically used to monitor for airborne aerosol particles and dust. Perform operation, maintenance, and calibration of airborne dust monitoring instruments according to the manufacturer specifications and the project-specific HASP. Calibrate airborne dust monitoring instruments (as required) before starting work each day. Document the calibration check on the Environmental Services Field Log.

Non-volatile contaminants (such as metals or polychlorinated biphenyls [PCBs]) can become airborne as particulates and typically require monitoring at sites where there is a potential for dusty environments. Total dust action levels are discussed in the project-specific HASP.

6.0 RECORDS

Record PID field measurements on the Environmental Services Field Logs. Dust monitoring data is recorded electronically and is downloaded and stored in electronic format in C.T. Male Associates' project directory.

7.0 DEFINITIONS

- Combustible Gas Indicator (CGI): used to screen for flammable and explosive vapors and gases. Often combined with an oxygen level indicator.
- Continuing calibration verification: an analytical standard run periodically to verify the calibration of an instrument.
- Flame Ionization Detector (FID): detects organic gases and vapors. Determines relative total concentration of selected organic air contaminants, which is used to specify engineering controls and PPE requirements.
- Headspace Gases: The accumulated gaseous components found above solid or liquid layers in closed vessels.
- Initial Calibration: Analysis of standard gases at a series of different specified concentrations; used to define the linearity and dynamic range of the response of an instrument to the target compounds.
- Photoionization detector (PID): Detects total concentrations of many organic and some inorganic gases and vapors. Molecules are ionized using ultraviolet radiation. A current is produced in proportion to the number of ions present.
- Photoionization Potential (PIP): The potential difference through which a bound electron must be raised to free it from the atom or molecule to which it is attached. In particular, the ionization potential is the difference between the initial state, in which the electron is bound, and the final state, in which it is at rest at an indefinite distance from the molecule.
- Volatile Organic Compounds (VOCs): Organic compounds that evaporate when exposed to air (>100 millimeters of mercury [mm Hg]).

8.0 ATTACHMENTS

Attachment 1: MiniRae 3000 PID Specification Sheet.

Attachment 2: DustTrak™ II Aerosol Monitor (Model 8530) Specification Sheet.

ATTACHEMNT 1

MiNiRae 3000 PID SPECIFICATION SHEET

RAE SYSTEMS by Honeywell

MiniRAE 3000

Portable Handheld VOC Monitor

The MiniRAE 3000 is a comprehensive handheld VOC (Volatile Organic Compound) monitor that uses a third-generation patented PID technology to accurately measure more ionizable chemicals than any other device on the market. It provides full-range measurement from 0 to 15,000 ppm of VOCs.

The MiniRAE 3000 has a built-in wireless modem that allows real-time data connectivity with the ProRAE Guardian command center located up to 2 miles (3 km) away through a Bluetooth connection to a RAELink 3* portable modem or optionally via Mesh Network.

- **Highly accurate VOC maeasurements**
- **Patented PID sensor**
- **Low maintenance—easy access to lamp and sensor**
- **Low cost of ownership**
- **3-year 10.6eV lamp warranty**

KEY FEATURES

- Third-generation patented PID technology
- VOC detection range from 0 to 15,000 ppm
- 3-second response time
- Humidity compensation with built-in humidity and temperature sensors
- Six-month datalogging
- Real-time wireless built-in – Bluetooth (and optional RAELink3 portable modem) or Mesh Network support
- Large graphic display with integrated flashlight
- Multi-language support with 10 languages encoded
- IP- 67 waterproof design

APPLICATIONS

- Oil and Gas
- HazMat
- Industrial Safety
- Civil Defense
- Environmental and Indoor Air Quality

Workers can quickly measure VOCs and wirelessly transmit data via Bluetooth or optional Mesh radio.

*RAELink 3 modem is sold separately.

Wireless | AutoRAE 2 Compatible | ATEX | c CSA us | ISO 9001 CERTIFIED

MiniRAE 3000

Portable Handheld VOC Monitor

RAE SYSTEMS by Honeywell

SPECIFICATIONS

Instrument Specifications

Size	10" L x 3.0" W x 2.5" H (25.5 cm x 7.6 cm x 6.4 cm)
Weight	26 oz (738 g)
Sensors	Photoionization sensor with standard 10.6 eV or optional 9.8 eV or 11.7 eV lamp
Battery	• Rechargeable, external field-replaceable Lithium-Ion battery pack • Alkaline battery adapter
Running time	16 hours of operation (12 hours with alkaline battery adapter)
Display Graphic	4 lines, 28 x 43 mm, with LED backlight for enhanced display readability
Keypad	1 operation and 2 programming keys, 1 flashlight on/off
Direct Readout	Instantaneous reading • VOCs as ppm by volume (mg/m3) • High values • STEL and TWA • Battery and shutdown voltage • Date, time, temperature
Alarms	95dB at 12" (30 cm) buzzer and flashing red LED to indicate exceeded preset limits • High: 3 beeps and flashes per second • Low: 2 beeps and flashes per second • STEL and TWA: 1 beep and flash per second • Alarms latching with manual override or automatic reset • Additional diagnostic alarm and display message for low battery and pump stall
EMC/RFI	Compliant with EMC directive (2004/108/EC) EMI and ESD test: 100MHz to 1GHz 30V/m, no alarm Contact: ±4kV Air: ±8kV, no alarm
IP Rating	• IP-67 unit off and without flexible probe • IP-65 unit running
Datalogging	Standard 6 months at one-minute intervals
Calibration	Two-point or three-point calibration for zero and span. Calibration memory for 8 calibration gases, alarm limits, span values and calibration dates
Sampling Pump	• Internal, integrated flow rate at 500 cc/mn • Sample from 100' (30m) horizontally or vertically
Low Flow Alarm	Auto pump shutoff at low-flow condition
Communication & Data Download	• Download data and upload instrument set-up from PC through charging cradle or optional Bluetooth™ • Wireless data transmission through built-in RF modem
Wireless Network	Mesh RAE Systems Dedicated Wireless Network
Wireless Range (Typical)	EchoView Host: LOS > 660 ft (200 m) ProRAE Guardian & RAEMesh Reader: LOS > 660 ft (200 m) ProRAE Guardian & RAELink3 Mesh: LOS > 330 ft (100 m)
Safety Certifications	**US and Canada**: CSA, Classified as Intrinsically Safe for use in Class I, Division 1 Groups A, B, C, D **Europe**: ATEX II 2G EEx ia IIC T4
Temperature	-4° to 122° F (-20° to 50° C)
Humidity	0% to 95% relative humidity (non-condensing)

[1] Contact RAE Systems for country-specific wireless approvals and certificates.
Specifications are subject to change.

Attachments	Durable bright yellow rubber boot
Warranty	3 years for 10.6 eV lamp, 1 year for pump, battery, sensor and instrument
Wireless Frequency	ISM license-free band. IEEE 802.15.4 Sub 1GHz
Wireless Approvals	FCC Part 15, CE R&TTE, Others[1]
Radio Module	Supports Bluetooth or RM900

Sensor Specifications

Gas Monitor	Range	Resolution	Response Time T90
VOCs	0 to 999.9 ppm 1,000 to 15,000 ppm	0.1 ppm 1 ppm	< 3 s < 3 s

MONITOR ONLY INCLUDES:

- MiniRAE 3000 Monitor, Model PGM-7320
- Wireless communication module built in, as specified
- Datalogging with ProRAE Studio II Package
- Charging/download adapter
- RAE UV lamp, as specified
- Flex-I-Probe™
- External filter
- Rubber boot
- Alkaline battery adapter
- Lamp-cleaning kit
- Tool kit
- Operation CD-ROM
- Operation and Maintenance manual
- Soft leather case

OPTIONAL CALIBRATION KIT ADDS:

- 100 ppm isobutylene calibration gas, 34L
- Calibration regulator and flow controller

OPTIONAL GUARANTEED COST-OF-OWNERSHIP PROGRAM:

- 4-year repair and replacement guarantee
- Annual maintenance service

CORPORATE HEADQUARTERS

RAE Systems by Honeywell
3775 North First Street
San Jose, CA 95134 USA
RAE-InsideSales@honeywell.com

WORLDWIDE SALES OFFICES

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Asia Pacific +852.2669.0828

ATTACHEMNT 2

DustTrak™ ii Aerosol Monitor (Model 8530) Specification Sheet

HEALTH AND SAFETY

Exposure Monitoring

DustTrak™ II Aerosol Monitor

Models 8530, 8531, and 8532

Desktop or Handheld Units for Any Environment, Any Application

The new DustTrak II Aerosol Monitors are battery-operated, data-logging, light-scattering laser photometers that give you real-time aerosol mass readings. They use a sheath air system that isolates the aerosol in the optics chamber to keep the optics clean for improved reliability and low maintenance. Suitable for clean office settings as well as harsh industrial workplaces, construction and environmental sites and other outdoor applications. DustTrak II monitors measure aerosol contaminants such as dust, smoke, fumes and mists.

Features and Benefits

- Easy to program, easy to operate
- New graphical user interface with color touch-screen
- Perform in-line gravimetric analysis for custom reference calibrations
- Automatic zeroing (with optional zero module) minimizes the effect of zero drift
- Measure aerosol concentrations corresponding to PM_1, $PM_{2.5}$, PM_{10}, or Respirable size fractions

Applications

- Industrial/occupational hygiene surveys
- Indoor air quality investigations
- Outdoor environmental monitoring
- Baseline trending and screening
- Point source monitoring
- Engineering control evaluations
- Engineering studies
- Remote monitoring
- Process monitoring
- Emissions monitoring
- Aerosol research studies

TSI™ TRUST. SCIENCE. INNOVATION.

Easy to Program and Operate

The new graphical user interface with color touch-screen puts everything at your fingertips. The easy-to-read display shows real-time mass concentration and graphical data as well as other statistical information along with instrument pump, laser and flow status, and much more. Perform quick walk-through surveys or program the instrument's advanced logging modes for long-term sampling investigations. Program start times, total sampling times, logging intervals, alarm setpoints and many other parameters. You can even set up the instrument for continuous unattended operation.

Desktop Models: Ideal for Long-Term Surveys and Remote Monitoring Applications

Manual and programmable data logging functions also make DustTrak II desktop monitors ideal for unattended applications. They come with USB (device and host), Ethernet, and analog and alarm outputs allowing remote access to data. User adjustable alarm setpoints for instantaneous or 15-minute short-term excursion limit (STEL) are available on desktop models. The alarm output with user-defined setpoint alerts you when upset or changing conditions occur.

All DustTrak II desktop monitors have three unique features:

- Gravimetric sampling capability using a 37-mm filter cassette which can be inserted in-line with the aerosol stream allowing you to perform an integral gravimetric analysis for custom reference calibrations.
- They can be zeroed automatically using the external zeroing module. This optional accessory is used when sampling over extended periods of time. By zeroing the monitor during sampling, the effect of zero drift is minimized.
- STEL alarm feature for tracking 15-minute average mass concentrations when alarm setpoint has been reached for applications like monitoring fugitive emissions at hazardous waste sites.

Handheld Models: Perfect for Walk-Through Surveys and Single-Point Data Collection Applications

DustTrak II handheld models are lightweight and portable. They're perfect for industrial hygiene surveys, point source location monitoring, indoor air quality investigations, engineering control evaluations/validation, and for baseline trending and screening. Like desktop models, they have manual and programmable data logging functions. In addition, they have single-point data logging capability. Single-point data collection is used for walk-through industrial hygiene surveys and indoor air quality investigations.

New Software Makes Monitoring Easier than Ever

TrakPro™ Data Analysis Software allows you to set up and program directly from a PC. A new feature is the ability for remote programming and data acquisition from your PC via wireless (922 MHz or 2.4 GHz) communications or over an Ethernet network. As always, you can print graphs, raw data tables, and statistical and comprehensive reports for recordkeeping purposes.

DustTrak II Aerosol Monitor Features

All Models

- Li-Ion rechargeable batteries
- Internal and external battery charging capabilities
- Outlet port for isokinetic sampling applications
- User serviceable sheath flow and pump filters
- Logged test pause and restart feature
- Logged test programming
  – Color touch screen—either manual mode or program mode
  – TrakPro™ Data Analysis Software via a PC
- User adjustable custom calibration settings
- Instantaneous alarm settings with visual and audible warnings
- Real-time graph display
- View statistical information during and after sampling
- On-screen instrument status indicators: FLOW, LASER and FILTER
- Filter service indicator for user preventative maintenance

All Desktop Models

- Hot swappable batteries
- Gravimetric reference sample capability
- Long life 10,000-hour internal pump
- TrakPro Data Analysis Software
- Auto zeroing module (optional accessory)
- STEL alarm setpoint

All Handheld Models

- Long life 2,500-hour internal pump
- Single-point data collection for walk through surveys
- TrakPro Data Analysis Software

Battery Performance

Models 8530/8531 (typical) 6600 mAH Li-Ion Battery Pack (P/N 801680)	**1 Battery**	**2 Batteries**
Battery Runtime (hours)	up to 6	up to 12
Charge Time * (hours) in DustTrak	4	8
Charge Time* (hours) in external battery charger (P/N 801685)	4	8

Model 8532 (typical) 3600 mAH Li-Ion Battery Pack (P/N 801681)	**Battery**
Battery Runtime (hours)	up to 6
Charge Time * (hours) in DustTrak	4
Charge Time* (hours) in external battery charger (P/N 801686)	4

*of a fully depleted battery

Specifications

Models 8530, 8531, and 8532
DustTrak™ II Aerosol Monitor

Sensor Type
90° light scattering

Particle Size Range
0.1 to 10 µm

Aerosol Concentration Range

8530 Desktop	0.001 to 150 mg/m³
8531 Desktop High Conc.	0.001 to 400 mg/m³
8532 Handheld	0.001 to 150 mg/m³

Resolution
±0.1% of reading or 0.001 mg/m³, whichever is greater

Zero Stability
±0.002 mg/m³ per 24 hours at 10 sec time constant

Flow Rate
3.0 L/min set at factory, 1.40 to 3.0 L/min, user adjustable

Flow Accuracy
±5% of factory set point, internal flow controlled

Temperature Coefficient
+0.001 mg/m³ per °C

Operational Temp
32 to 120°F (0 to 50°C)

Storage Temp
-4 to 140°F (-20 to 60°C)

Operational Humidity
0 to 95% RH, non-condensing

Time Constant
User adjustable, 1 to 60 seconds

Data Logging
5 MB of on-board memory (>60,000 data points)
45 days at 1 minute logging interval

Log Interval
User adjustable, 1 second to 1 hour

Physical Size (HWD)

Handheld	4.9 x 4.8 x 12.5 in. (12.5 x 12.1 x 31.6 cm)
Desktop	5.3 x 8.5 x 8.8 in. (13.5 x 21.6 x 22.4 cm)

Weight

Handheld	2.9 lb (1.3 kg), 3.3 lb (1.5 kg) with battery
Desktop	3.5 lb (1.6 kg), 4.5 lb (2.0 kg)–1 battery, 5.5 lb (2.5 kg)–2 batteries

Communications

8530/31	USB (host and device) and Ethernet. Stored data accessible using flash memory drive
8532	USB (Hose and device). Stored data accessible using flash memory drive

Power–AC
Switching AC power adapter with universal line cord included, 115–240 VAC

Analog Out

8530/31	User selectable output, 0 to 5 V or 4 to 20 mA User selectable scaling range

Alarm Out

8530/31	Relay or audible buzzer Relay Non-latching MOSFET switch User selectable set point –5% deadband Connector 4-pin, Mini-DIN connectors
8532	Audible buzzer

Screen

8530/31	5.7 in. VGA color touchscreen
8532	3.5 in. VGA color touchscreen

Gravimetric Sampling

8530/31	Removable 37 mm cartridge (user supplied)

CE Rating

Immunity	EN61236-1:2006
Emissions	EN61236-1:2006

Specifications are subject to change without notice. TSI, the TSI logo, DustTrak, and TrakPro are trademarks of TSI Incorporated. Microsoft and Windows are trademarks of Microsoft Corporation.

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C.T. MALE ASSOCIATES ENGINEERING,
SURVEYING, ARCHITECTURE,
LANDSCAPE ARCHITECTURE &
GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

SURFACE and SUBSURFACE SOIL SAMPLING

December 28, 2017

_______________ _______________________ __________
Print Technical Reviewer Signature Date

_______________ _______________________ __________
Print QA Manager Signature Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: SURFACE AND SUBSURFACE SOIL SAMPLING

1.0 PURPOSE

This standard operating procedure (SOP) provides the methodology for collecting discrete surface and subsurface soil samples to characterize the nature of soil contamination, the areal and vertical extent of contaminated soil, to determine the geotechnical, physical, and chemical properties of the soil, and for remedial action confirmatory and/or documentation sampling.

2.0 SCOPE

This SOP applies to all C.T. Male Associates personnel and sub consultants engaged in collecting or otherwise handling surface or subsurface soil samples.

This SOP focuses on the most commonly used soil sampling tasks and applications and should be used in conjunction with other applicable project SOPs, including the following:

- SOP: Note Taking and Field Logs.
- SOP: Organic Vapor Monitoring and Air Monitoring
- SOP: Drilling and Associated Sampling Methods.
- SOP: Equipment Decontamination Procedures.
- SOP: Field Screening Soil Samples
- SOP: Collection of Quality Control Samples
- SOP: Documentation on a Chain-of-Custody
- SOP: Domestic Transport of Samples to Laboratories in USA

3.0 GENERAL

Selecting the proper methods and tools for surface and subsurface soil sampling is a critical part of field investigations and remedial actions. This SOP describes the methods generally used for surface and subsurface soil sampling, as well as the tools commonly used.

Soil sample collection activities should adhere to the note-taking, decontamination, labeling, packaging, shipping, storage, and chain-of-custody requirements applicable to the soil sampling activities being conducted according to the site-specific QAPP.

Personnel who collect or handle the soil samples should wear, at a minimum, disposable nitrile gloves to prevent cross-contamination and provide personal protection. New gloves should be donned for sample collection at each location, or whenever gloves are torn or otherwise compromised. The project-specific Health and Safety Plan (HASP) provides information on site-specific personal protective equipment (PPE) requirements.

4.0 RESPONSIBILITIES

4.1 Project Manager

The Project Manager is responsible for providing adequate resources and ensuring that field staff have adequate experience and training to successfully comply with and execute project-specific SOPs and implement the project health, safety, and environment (HS&E) program. The Project Manager will solicit the appropriate technical expertise to identify suitable sampling methods and technology for the job given the current understanding of the site and project goals.

4.2 Health & Safety Officer

The Health & Safety Officer is assigned to oversee site-specific HS&E and ensure overall compliance with project HS&E requirements. The Health & Safety Officer conducts PPE evaluations, selects the appropriate PPE for the project, lists the requirements in the site-specific HASP, coordinates with the Field Team Leader to complete and certify the PPE program, and conducts project Health & Safety audits on the effectiveness of the HS&E program.

4.3 Site Health and Safety Officer

The role of Site Health and Safety Officer is delegated to the Field Team Leader by the Project Manager to assist in implementing the project HASP. The Project Manager and/or Health & Safety Officer assists the Site Health and Safety Office /Field Team Leader with the health and safety program, implements the PPE requirements described in the project HASP and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

4.4 Field Team Leader

The Field Team Leader should ensure that soil samples are collected according to this procedure and other SOPs identified in Section 2.0. The Field Team Leader should also be required to make rational and justifiable decisions when deviations from this procedure are necessary because of field conditions or unforeseen problems. The Field Team Leader should consult the Project Manager if deviations from the site-specific QAPP are necessary because of field conditions. The Field Team Leader should document that the applicable requirements the site-specific HASP are followed.

5.0 PROCEDURES

5.1 General Guidelines

The following procedures should be used to collect soil samples for laboratory analysis:

- Unless otherwise specified, laboratory soil samples must be discrete samples and may not be composited before analysis.
- Soil samples must be collected according to the method specifications appropriate for the laboratory parameters to be analyzed.
- Soil samples must be collected with disposable or clean tools that have been decontaminated as outlined in SOP, Equipment Decontamination Procedures.
- Disposable nitrile gloves (at a minimum) must be worn and changed between sample collections.
- Soil samples must be placed in containers quickly and in the order of volatility; for example, volatile organic aromatic samples must be taken first, gasoline range organics next, heavier range organics next, and soil classification samples last.

- Sample containers must be quickly and adequately sealed, and rims must be cleaned before tightening lids; tape may be used only if known not to affect sample analysis.

- Sample containers must be labeled and handled as outlined in the site specific QAPP.

- Samples must immediately be preserved according to the method specifications appropriate for the laboratory parameters to be analyzed. And unless specified otherwise, at a minimum, the samples must be immediately chilled to 4 ±2 degrees Celsius (°C) and this temperature must be maintained through delivery to the laboratory for analysis.

- Sample holding times must conform to the method specifications of the required analytical methods.

- Alternative methods to obtain soil samples may be used only if the alternative methods have been approved by the Project Manager and documented in the site-specific QAPP and Environmental Services field Log.

- Soil samples collected for analysis of volatile organic compounds (VOCs), Per & Poly-fluoroalkyl substances (PFAS), and gasoline range organics (GROs) will be collected with special precautions as detailed below in Section 5.7.

- Each soil sample fraction collected for analyses other than VOCs, PFAS, GRO, or VPH will be thoroughly homogenized using a sampling spoon or trowel. The homogenized material will then be divided equally among the appropriate sample containers. The sample containers will then be sealed tightly. Care should be taken so that the sampling tools and containers (such as spoons and bowls) used for sample collection and homogenization does not interfere with the analytes of interest.

- Multi-incremental samples (MIS) should be collected by placing equal amounts (or aliquots) of soil collected from multiple locations into a decontaminated, dedicated collection container. The aliquots will then be homogenized using a sample collection tool such as a scoop or spoon. The homogenized material will be divided equally among the appropriate sample containers, and the sample containers will be sealed tightly.

5.2 Sampling Tools and Equipment

Equipment that may be used to facilitate the collection of surface or subsurface soil samples includes, but is not limited to, the following items:

- Photoionization detector (PID) devices.
- Stainless-steel trowel, scoop, or spoon.
- Stainless-steel hand (bucket) auger.
- Stainless-steel or carbon steel split spoon, split barrel, or macro-core sampler.
- Shovels, pickaxes, pick mattocks, or similar excavating tools.
- Soil core samplers (En Core® sampler, TerraCore®, or equivalent), except for PFAS.
- Stainless-steel bowls or pans.
- Paper towels.
- Decontamination equipment (buckets, brushes, Alconox, etc.).
- High-density polyethylene (HDPE) sheeting.
- PPE.
- Sample cooler.
- Ice.
- Sample jars and labels.
- Chain-of-custody forms.
- Soil classification charts.

- Ziploc® (or similar) re-sealable bags.
- Survey stakes or flags.
- Hammer.

5.3 Decontamination

Before collecting soil samples, reusable, non-disposable sampling equipment should be decontaminated. Decontamination supplies must be on hand so that equipment can be decontaminated in the field if sampling equipment is to be reused. Each piece of reusable sampling equipment should be decontaminated between each sample location or sampling interval. Procedures presented in SOP Equipment Decontamination Procedures, shall be followed for decontamination of re-usable field equipment and for personnel decontamination.

Disposable sampling equipment will be used whenever feasible to minimize decontamination and the potential for cross-contamination. Disposable sample equipment will be observed before use to document that it is clean and free of potential contaminants.

5.4 Surface Soil Sampling

Surface soil sample will be collected using a stainless steel scoop, spoon, or other appropriate tools. Samples for VOC and PFAS analysis will be collected directly from the soil column at the specified sampling depth interval if possible. For non-VOC samples (i.e., PCBs), the sampler, wearing clean disposable nitrile gloves, will remove materials, including pebbles and roots, from the mixture as the sample is collected. Each non-VOC sample will be collected by thoroughly homogenizing material from the appropriate depth interval from the respective sampling location. A clean, decontaminated stainless-steel scoop or spoon will be used to collect the soil sample and fill all laboratory-supplied analytical sample containers.

5.5 Subsurface Soil Sampling

Before subsurface soil sampling, each sample location should be checked and cleared for buried utilities before intrusive activities begin.

5.5.1 Shallow Subsurface Soil Sampling with Hand Tools

Shallow subsurface soil samples can be collected by hand using a variety of sampling equipment and devices. Common equipment used to collect shallow subsurface soil samples include soil coring devices, various types of hand augers (bucket-type, continuous-flight, and posthole), and other common hand tools such as shovels and pickaxes. Depending on field conditions or sampling objectives, several types of sample collection equipment may be used to collect soil samples at a single location. Of the equipment listed, only soil coring devices collect an undisturbed soil sample and thus are recommended for sampling of VOCs. Bucket augers and other common hand tools are not recommended when an undisturbed soil sample for volatile organics is desired. Sampling personnel should choose the sampling equipment that is best suited for project requirements and task needs.

Using a decontaminated hand auger (or similar equipment), the soil borehole will be advanced to the depth immediately above the sampling interval, and cuttings will be removed from the borehole. Before advancing a borehole, remove unnecessary rocks, twigs, and other non-soil materials from the selected sampling location. Assemble the sampling equipment, if necessary, per the manufactures specifications and place the sampler in position with the bit or cutting shoe touching the ground. Begin turning the auger with a clockwise motion or driving the soil core device with the slide hammer until the desired sampling depth is obtained. During advancement of the auger or coring device, cuttings from within and around the borehole will be periodically removed and placed next to the borehole. If the sample is to be collected using the same hand auger or soil coring device, the auger bucket or core sampler will be decontaminated (or replaced with a decontaminated bucket or sampler) before collecting the soil sample. The discrete sample will then be collected by advancing the sampling equipment to the appropriate depth interval and retrieving the soil sample. When collecting samples at depths greater than 12 inches, it is advisable to discard approximately the upper 1 inch of material in the top portion of the auger or sampler because of borehole slough and cave-in. The sample will then be promptly transferred into laboratory-cleaned sample containers using a decontaminated stainless steel spoon or trowel.

5.5.2 Deep Subsurface Soil Sampling

Deep subsurface soil samples are typically collected using split-spoon and/or macro-core samplers. A split-spoon sampler is a soil coring device that consists of a length of carbon or stainless-steel tubing, split longitudinally and equipped with a sample shoe and a drive head. A macro-core sampler is a soil coring device that consists of a length of stainless steel tubing equipped with a screw-on sample shoe and drive head. Split-spoon samplers and macro-core samplers are used in conjunction with a power auger drill rig or direct-push vehicle, and are usually either hammered or hydraulically pushed into the interval to be sampled. The interval(s) to be sampled may be either predetermined or determined according to criteria observed during advancement of the drilling equipment as specified in the site-specific QAPP. The following procedures focus on sampling soil for chemical analysis, using a split-spoon or direct push system continuous macro-core sampler. Soil samples obtained for physical characterization are typically collected using similar procedures.

Drilling Method

Using hollow stem auger or advancing flush joint casing, the soil borehole will be advanced to the depth immediately above the sampling interval as described in SOP for Drilling and Associated Sampling. Utilize a split-spoon sampler to collect a relatively undisturbed, representative soil sample during the drilling activities. Standard Penetration Test blow counts for that sample, as well as the interval from which the sample was obtained, will be recorded on the Subsurface Exploration Logs. Depending on the size of the split-spoon employed, typically 18 to 24 inches of soil should be recovered in advance of the drill bit. The split-spoon sampler will then be removed from the borehole and opened exposing the soil core for sample collection and examination. Soil samples for laboratory analysis should be collected from the undisturbed, middle portion of the soil core and soil from the very ends of the soil core must be discarded as they often contain disturbed soils. The sample will then be immediately and quickly transferred into clean, laboratory sample containers using a decontaminated stainless steel spoon or scoop as described in Section 5.1. The soil core will be examined by the field geologist, screened for VOCs using a PID (see SOP Organic Vapor Monitoring and Air Monitoring), and logged for lithology on the Subsurface Exploration Log.

Direct Push System Drilling Method

Direct push system soil samples are typically collected using a continuous macro-core sampler with acetate liners using the direct push system drilling procedures described in SOP for Drilling and Associated Sampling. At the top of each sample interval, the macro-core sampler will be driven into the substrate to a depth equal to the length of the sampler. After the sampler has been advanced, it is retrieved from the borehole and the acetate liner containing the soil core is placed on a firm, horizontal surface, for opening, inspection, and sampling. The acetate liner for each sample core is then cut open to expose the soil sample core for soil sampling and examination. Samples for laboratory analysis will be immediately transferred into clean laboratory sample containers using a decontaminated stainless-steel spoon or scoop, as described in Section 5.1. The soil core will then be examined by the field geologist, screened for VOCs using a PID, and logged for lithology. Special attention must be given to labeling and storage of individual core samples when continuous soil samples are collected from a single boring. In many instances, soil cores can be produced faster than they can be opened, logged, screened and sampled by a Field Geologist/Environmental Scientist. In those instances when a backlog of cores is being generated, protect the cores from direct sunlight, excessive ambient temperatures, and rain. These conditions may have an adverse effect on highly sensitive volatile organics within the core or the instruments used for screening. Keep the cores labeled so that the up/down orientation is not lost. If necessary, log soils for lithology information after sample collection.

5.6 Excavation and Stockpile Sampling

Soil sampling of excavations and stockpiles should be conducted using similar techniques as described in Sections 5.4 and 5.5.1.

5.6.1 Excavation Sampling

When collecting soil samples from excavations including test pits, soil samples should generally be collected from freshly uncovered soil. Remove 4 to 6 inches of soil promptly before sample collection. If the excavation has been open for longer than 1 hour, remove at least 12 inches of soil immediately before collection. Do not collect samples from disturbed soil that has fallen into the bottom of the excavation pit. If the depth of the excavation (i.e., greater than 4 feet) is such that sampling cannot be safely conducted within the excavation, soil samples may be collected directly from the excavator bucket. When collecting soil samples from an excavator bucket, samples should be collected from the center of the bucket and away from the bucket sides. Refer to the project-specific HASP and/or consult with the Project Manager and/or Health & Safety Officer regarding excavation safety before entering open excavations.

5.6.2 Stockpile Sampling

Stockpiled soil must be field screened before sample collection. Field screening and analytical soil samples must be collected at least 18 inches beneath the exposed surface of the stockpile, unless additional shallower field screening samples are needed to represent soil contaminant heterogeneity. Contamination can be persistent near the bottom of long-term stockpiles, so some samples shall be collected near the base. Soil samples from the surface, within, and near the bottom of a stockpile will be collected using the methods previously discussed in Sections 5.4 and 5.5.1.

5.7 Volatile Organic Soil Sampling

If VOCs are among the analytes to be investigated at a particular site, discrete soil samples will be collected following opening of the soil core. Soil samples for VOC analysis should be collected in a way that minimizes sample volatilization through excessive atmospheric exposure, mixing, and/or other disturbance. It is recommended that VOC samples be collected using core-type samples such as split-spoons, macro-core samplers, and soil coring devices that reduce the loss of volatiles during sampling. Soil core samplers must be constructed of non-reactive materials that will minimize the loss of volatile organics from the sample.

VOC soil samples analyzed using U.S. Environmental Protection Agency (EPA) Method SW8260B will be collected as follows:

- To collect a sample, have ready a pre-weighed, pre-preserved, and labeled 40 mL VOC vial containing methanol (MeOH) supplied by the laboratory. Place 10 grams of soil into the VOC vial containing 10 mL of MeOH. Interim storage/containers (such as resealable plastic bags) are not allowed.

- After sealing, gently agitate the sample so that entire sample is submerged.

- Do not place tape, including evidence tape, on the container directly.
- Samples collected shall be placed inside coolers to maintain the samples at 4°C ± 2 degrees Celsius (°C).
- Collect a sample of the same material from the same location in an unpreserved jar for percent moisture determination.
- Collect appropriate field and laboratory quality control samples including field duplicates and matrix spike/matrix spike duplicate (MS/MSD) samples.
- Analytical samples should be collected in the following order:
  - VOCs, GRO, VPH, and BETX
  - Semi-volatile organic compounds (SVOCs); including pesticides, herbicides, diesel range organics (GRO) , residual range organics (RRO), and polychlorinated biphenyls (PCBs)
  - Total Organic Carbon
  - Metals
- VOC samples should be accompanied by an appropriate trip blank from the time of the collection until analysis at the project laboratory.

VOC soil samples analyzed using U.S. Environmental Protection Agency (EPA) Method SW-846 Method 5035A will be collected as follows:

- Discrete soil samples can be collected using a 5-gram soil core sampler with a new, dedicated, and disposable sample syringe or tip as described in American Society for Testing and Materials (ASTM) standard D6418-09. These devices are used to collect a specific soil sample mass for volatile organic analysis in a manner that minimizes loss of contaminants because of volatilization or biodegradation. Frequently accepted discrete soil core samplers are listed below.
  - En Core® sampler

  - TerraCore® sampler
  - EasyDraw Syringe® with PowerStop Handle® sampler
  - Core N' One™ sampler
  - Lock N' Load™ sampler

- Soil samples will be collected from a specified location and soil depth as determined by field screening or as determined in the project-specific HASP. After determining the sample location, the soil core sampler will be plunged into the soil core to collect a sample.

- To collect a sample, have ready a pre-weighed, pre-preserved, and labeled 40 mL VOC vial containing sodium bisulfate/water preservative. With the syringe or plunger seated in the handle, push the soil core sampler into freshly exposed soil until the sample chamber is filled. Do not pull the syringe or plunger back before use.

- Wipe soil or debris from the outside of the soil core sampler and remove excess soil that extends beyond the end of the sampler, so that the soil plug is flush with the end of the sampler. A filled chamber will deliver approximately 5 grams of soil.

- Place the mouth of the soil core sampler into the 40-ml VOC vial containing sodium bisulfate/water preservative and extrude the 5-gram sample into the VOC vial by pushing the syringe or plunger down.

- Quickly seal the lid back on the 40-ml VOC vial.

- Take care not to leave soil grains along the threaded cap area of the VOC vial so that the lid can be screwed on tightly forming a tight seal. Be sure to remove soil or debris from the top and/or threads of the vial.

- Following collection, samples will be labeled with unique sample identification, and packaged appropriately.

- Samples collected shall be placed inside coolers to maintain the samples at 4°C ± 2 degrees Celsius (°C).

- VOC containers should be padded so that the glass walls of the containers do not come into direct contact with ice or other samples, thereby reducing the risk of cracking the glass containers.

5.8 PFAS Soil Sampling

If PFAS are among the analytes to be investigated at a particular site, discrete soil samples will be collected following the surface or subsurface investigation activity. Soil samples for PFAS analysis should be collected in a way that minimizes sample volatilization or degradation through excessive atmospheric exposure, mixing, and/or other disturbance. PFAS samples shall be collected using split-spoons, macro-core samplers, and hand tools.

PFAS soil samples analyzed as specified in the site specific work plan and site specific QAPP. Samples should be collected as follows:

- Soil samples will be collected from a specified location and soil depth as determined by field screening or as determined in the project-specific work plan.

- To collect a sample, place soil into a laboratory supplied container specifically required for PFAS media samples. Ensure non-PFAS containing PPE is used.

- Wipe soil or debris from the outside of the sample container and place lid on container.

- Following collection, samples will be labeled with unique sample identification, packaged appropriately, and kept at a temperature of approximately 4 degrees Celsius inside a cooler for preservation.

- Containers should be padded so that the glass walls of the containers do not come into direct contact with ice or other samples, thereby reducing the risk of cracking the glass containers.

5.9 Diesel Range Organics (DRO) / SVOC / General Chemistry / Metals

Using either a composited sample or a homogenized, discrete sample, fill the remaining containers in the order listed in the QAPP. Unless aliquot weights are listed, pack the soil into the sample jars leaving no headspace. If allowed by applicable regulations, the WIDRO sample may be weighed directly into the sample container by placing the pre-weighed sample container on the field balance, taring the field balance, then adding the appropriate amount of soil to the container to reach the desired sample weight (~25 g).

Wipe the container lip and screw threads to remove soil and provide a good sealing surface, and immediately screw on the lid.

5.10 Quality Assurance/Quality Control Procedures and Samples

Quality Assurance/Quality Control (QA/QC) samples will be collected during soil sampling according to the site-specific QAPP and will include duplicate (replicate), matrix spike, matrix spike duplicate, trip blank and equipment (field) blank samples. One set of QA/QC samples will be collected per 20 field samples per media (i.e., soil, groundwater, etc.).

QA/QC samples will be assigned unique sample identifications and handled and submitted to the laboratory the same as field samples.

5.10.1 Equipment Blanks

An equipment blank sample is collected in the field by running ASTM Type II Reagent-Grade water (or deionized water with less than 15 microSiemens conductivity) across the surface of re-usable, decontaminated sampling equipment and into appropriate sample containers.

5.10.2 Field Duplicate Samples

Field duplicate samples will be collected simultaneously or in immediate succession to the normal samples using identical sampling techniques.

5.10.3 Matrix Spikes and Matrix Spike Duplicates

Matrix spike/matrix spike duplicate samples will be collected simultaneously or in immediate succession to the normal samples using identical sampling techniques.

5.10.4 Trip Blanks

A trip blank is a sample of analyte-free water prepared by the laboratory, taken to the sampling site along with the sample bottles, and returned to the laboratory for analysis, to measure possible cross contamination of containers/samples during shipping to and from the site. Typically, there is only one trip blank per chain of custody per sample cooler, except when trip blanks require different preservatives for different methods.

6.0 HANDLING

After collection, all samples should be handled as few times as possible. Samplers should use extreme care to ensure that samples are not contaminated. Immediately after samples are collected, they are bubble wrap or bagged and placed in a cooler containing bagged ice. Samples will be kept cold (≤ 6 °C, but not frozen) until receipt at the laboratory, where they are to be stored in a refrigerated area. Keep samples secure to prevent tampering. If sample coolers are left in a vehicle or field office for temporary storage, the area will be locked and secured.

6.1 Shipment/Delivery

Once the cooler is packed to prevent breaking of containers, the proper COC documentation is relinquished by the sampler, placed into a plastic bag, and included in the cooler. Custody seals may be used, and the coolers should be taped shut if not hand delivered.

7.0 DISPOSAL

Waste generated by this process will be disposed of in accordance with Federal, State and Local regulations and SOP 'Investigative Derived Waste'. Where reasonably feasible, technological changes have been implemented to minimize the potential for environmental pollution.

8.0 RECORDS

Records should be documented on the Environmental Services Field Logs and Subsurface Exploration Logs.

9.0 DEFINITIONS

Discrete soil sample: A discrete aliquot from a distinct sampling interval (of a specific sample size) that is representative of one specific location at a specific point in time.

Surface soil: Generally considered to be the top 6 inches of a soil horizon profile (that is, soil from 0 to 6 inches bgs), soil down to depths of 2 feet bgs may be considered surface and/or near-surface soil.

Subsurface soil: The soils below surface soil.

C.T. MALE ASSOCIATES ENGINEERING,
SURVEYING, ARCHITECTURE,
LANDSCAPE ARCHITECTURE &
GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

MONITORING WELL INSTALLATION

March 6, 2020

________________ __________________________ __________
Print Technical Reviewer Signature Date

________________ __________________________ __________
Print QA Manager Signature Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: MONITORING WELL/PIEZOMETER INSTALLATION

1.0 PURPOSE

This standard operating procedure (SOP) provides the methodology for installing and constructing groundwater monitoring wells and piezometers.

2.0 SCOPE

This SOP applies to all C.T. Male Associates personnel and subcontractors engaged in installation and construction of groundwater monitoring wells and piezometers.

This SOP focuses on the most common monitoring well installation tasks and should be used in conjunction with other applicable project SOPs, including the following:

- SOP: Note Taking and Field Logs.
- SOP: Organic Vapor Monitoring and Air Monitoring.
- SOP: Drilling and Associated Sampling Methods.
- SOP: Equipment Decontamination Procedures.
- SOP: Groundwater Sampling Procedures.

3.0 GENERAL

PFCs (including PFOA) are found in several everyday items. As a check for cross-contamination, quality control samples will be collected from Investigative related materials/ supplies and equipment that are anticipated to be used for the investigation. These include water used by the drilling contractor for drilling and equipment decontamination; augers, rods, split-spoon sampling barrels, totes and tanks used by the drilling contractor; filter sand used as monitoring well sand pack; monitoring well construction materials (PVC riser and screen); and bottled water used as final decontamination rinse water. The samples will be collected and analyzed for PFCs. Analytical results will be reviewed prior to Site mobilization. Mobilization to the Site will only be permitted if analytical results depict PFCs below detection limits or at concentrations that are not expected to cross-contaminate environmental samples. The types of investigative related materials/supplies for quality control samples to be collected, and the sampling method and rationale are detailed in the site-specific work plan and QAPP. Investigative related materials/supplies that have been sampled for PFAS, including equipment such as driller augers, rods, split-spoon sampling barrels, totes and tanks will be segregated and will not be used for any other purpose by the drilling contractor from the time that the samples are collected to the time that the equipment is mobilized to the Site for the investigation.

Data collected from monitoring wells and piezometers at investigation sites support various site characterization objectives, including delineation of the nature and extent of contaminant plumes, development of a conceptual model of the subsurface lithology, assessment of aquifer properties, and development of a long-term monitoring network to detect trends in site groundwater elevations and contaminant concentrations. Wells installed for each of these purposes must satisfy different requirements, and may require different strategies for well design and installation. Representative groundwater samples and groundwater level measurements depend upon proper monitoring well design and construction, which should reflect anticipated contaminant types and concentrations, project objectives, and site conditions. Selection of monitoring well type, construction materials, and drilling method is commonly a site-specific determination and often site logistics, economics influence well design, installation choices, and State regulations. Well design and installation must prevent the introduction of surface contaminants into the groundwater and prevent the transfer of groundwater or contaminants between stratigraphic intervals within the well borehole or along the well annulus. Do not install monitoring wells in locations where they are subject to periodic or seasonal inundation by floodwaters, unless the well has special watertight construction. Protect monitoring well integrity from soil erosion, soil settlement, shrink-swell soil conditions, frost heaving of soils, damage by vehicles or heavy equipment, or other site specific hazards.

Drilling techniques commonly used for monitoring well installation include hollow-stem auger, flush joint casing direct push, and Rotosonic (sonic) systems:

- Hollow stem auger and flush joint casing drilling is typically used to install 2- to 4-inch diameter (or greater) permanent groundwater monitoring wells or when consolidated geologic conditions are expected. The drill rig is typically mounted on a heavy-duty truck or self propelled by an all-terrain mechanized track system.

- Direct push system drilling is typically used for soil sampling in unconsolidated lithologies and to install 0.75- to 1.0-inch-diameter micro-wells or piezometers.

The drill rig is typically mounted on a heavy duty truck or is self propelled by an all-terrain mechanized track system.

- Sonic system drilling is typically used for soil sampling in the deep overburden or the installation of deep wells and/or bedrock wells 200-500 foot depth (or more). The wells are typically 4-inch diameter (or greater) permanent groundwater monitoring wells. The sonic rig is a standalone motorized drilling vehicle.

Micro-wells and piezometers will have a 0.75- to 1.25-inch-diameter casing with an attached screen; they are used primarily to temporarily monitor the static water level or obtain a finite number of water samples for water quality or contaminant screening purposes. Micro-wells can use pre-packed or non-pre-packed screens for installations in small-diameter direct push system boreholes.

Successful installation of a well requires that the procedures for installing each component of the well are followed and well documented. There are nine essential components of a well installation:

- Well casing.
- Well screen.
- Filter pack.
- Annular seals (lower and upper surface seals).
- Surface completion.
- Well protection.
- Field logs (including description of soil lithology and water level observations).
- Monitoring Well Construction Logs.
- Records Management.

Definitions are provided in Sections 7.0. Figure 1 on the following page illustrates the design of a typical groundwater monitoring well.

4.0 RESPONSIBILITIES

4.1 Project Manager

The Project Manager verifies that monitoring well and piezometer installation procedures comply with this SOP and the requirements of the enforcing agencies. Alternate installation requirements and procedures required by local agencies or other modifications must be documented and approved by the Project Manager.

4.2 Health & Safety Officer

The Health & Safety Officer oversees site-specific health, safety, and environment (HS&E) protocols and overall compliance with project HS&E requirements. The Health and Safety Officer conducts personal protective equipment (PPE) evaluations, selects the appropriate PPE, lists the requirements in the Project-specific Health and Safety Plan (HASP), coordinates with the Project Manager and Field Manager to certify the PPE, and conducts project health and safety audits to evaluate the effectiveness of the HS&E program.

4.3 Site Safety and Health Officer

The role of Site Safety and Health Officer is delegated to the Field Team Leader by the Project Manager to assist in implementing the project HASP. The Project Manager and/or Health & Safety Officer assists the Field Team Leader with the health and safety program, implements the PPE requirements described in the project HASP and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

4.4 Field Team Leader

The Project Manager will develop or direct the development of a sampling plan that includes the specifics of the well design and installation, particularly the materials and procedures to be used. The Field Team Leader should know the requirements for well installations and should maintain adequate documentation of the installation process and materials used to demonstrate that the well has been properly installed.

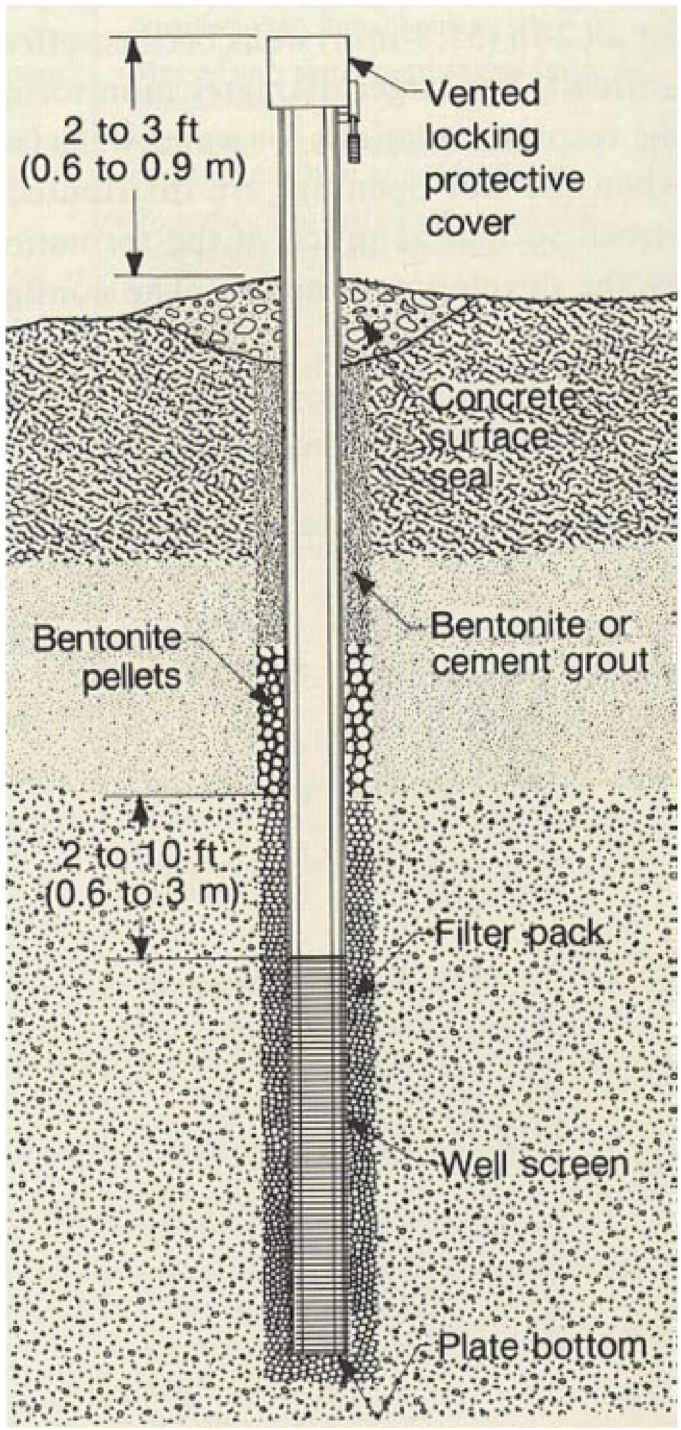

Figure 1. Typical Monitoring Well (Driscoll, 1986)

5.0 PROCEDURE

Installation of monitoring wells will be performed under the direct supervision of a qualified geologist, engineer, or other professional. Permanent monitoring wells should be constructed in accordance with ASTM Standard D5092: Standard Practice for Design and Installation of Groundwater Monitoring Wells.

A monitoring well is generally composed of a well casing, well screen, filter pack, and sanitary or grout seal. Permanent monitoring wells will be installed in open boreholes advanced by a hollow stem auger drill rig. Soil borings should be advanced until the desired depth is obtained and the subsurface soil demonstrates saturated soil conditions. Once the desired borehole depth is obtained, all drill tooling will be removed from the borehole and the monitoring well will be installed. The diameter of the hollow stem auger boreholes will be at least 4 inches larger than the outside diameter of the blank casing and screen. This allows for proper installation of materials within the annular space to create an adequate annular seal.

The following general guidelines will be followed to properly complete each monitoring well to the desired depth:

1. Properly decontaminate well construction materials before installation.

2. Prevent contamination when joining casings and attaching the screen.

3. Pour the filter pack into the annulus to a minimum of 2 feet above the top of the screen and 1 foot beneath the well end cap.

4. Use bottom caps or end plugs.

5. Use permanent or temporary surface casing if contamination or sloughing is a potential issue.

6. Apply filter packs with a tremie pipe or similar method (unless using a pre-packed filter).

7. After installation, "sound" the filter pack for proper placement.

8. Place a fine-grain sand filter 0.5 to 2 feet thick at the top of the filter pack and below the annular seal to help prevent infiltration of bentonite into the filter pack.

9. Apply bentonite pellets or granules to seal the annular space by pouring them freely or through a tremie pipe.

10. If the well is 40 feet or greater in depth, pump grout or slurry into the annular space by using a tremie pipe.

11. For wells less than 40 feet deep, pour grout or slurry freely into the annular space, with or without the use of a tremie pipe.

12. If more than 10 feet of standing water is present, use a tremie pipe to install neat cement and bentonite-cement grouts.

13. Submerge the end of the tremie pipe in the sealing material when installing a slurry or grout.

14. When using a slurry or grout, allow 24 hours between installation of the annular space seal and installation of the protective pipe cover. Fill any settlement in the annular space seal before installing the protective cover.

15. Install a cement surface seal at the ground surface.

5.1 Well Casing and Well Screen

5.1.1 Well Casing

The well casing allows access to groundwater from the ground surface. To eliminate the introduction of contaminants when sampling, join casing sections together with threaded couplings rather than glues, in order to eliminate the introduction of adhesive contaminants into the groundwater. Threaded couplings should have not O-rings to complete the seal, and the well casing should be flush, on the inside.

The inside diameter of the well casing should be at least 1.9 inches, with the exception of micro-wells and piezometer installations. Monitoring wells are commonly constructed using nominal 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) casing. Deeper wells, or wells that need large, dedicated pumps or tubing, may require 4-, 6-, or 8-inch-diameter casing. However, most monitoring wells will use a smaller casing (2 or 4-inch-diameter) to minimize the amount of water generated during sampling events.

5.1.2 Well Screen

The well screen is the part of the well that allows groundwater to enter into the monitoring well and allows access to the aquifer. Determining the slot size and well screen length characteristics of a well screen depends on the purpose of the monitoring well and aquifer characteristics. The proper slot size of the well screen should be determined based upon the filter pack selected for the monitoring well and the formation material. Monitoring wells typically installed within unconsolidated soil use a 20-slot (0.020-inch) well screen with a No. 10-20 silica sand pack, or 10-slot (0.010-inch) well screen with a No. 20-40 silica sand pack. Screen slots will be sized to prevent 90% of the filter pack from entering the well.

The standard screen slot size anticipated for the newly installed wells is 10-slot (0.010-inch), unless field conditions indicate otherwise and approval of the Project Manager has been obtained. Monitoring wells will be constructed of commercially manufactured, machine-slotted well screens.

The type of well screen and slot size controls the amount of open area in a well intake. In addition, the depth of the screened interval and the well screen length can affect the water quality and hydraulic characteristic results. Minimize the length of the well screen to avoid dilution during sampling. Increased open area in the monitoring well screen allows effective development and easy flow of water from the formation into the well. The well screen depth and length are determined on a site-specific basis in consideration of water table variations, site stratigraphy, expected contaminant behavior, and groundwater flow.

Typically, well screens are 1 to 10 feet in length, but sometimes equal or exceed 20 feet. Conventional monitoring well screens are typically 5 or 10 feet long and are installed with a portion of the screen above the high water table to allow for seasonal water table fluctuations.

5.1.3 Materials

A variety of construction materials are used for the well casings and well screens. The material used for well screens is generally selected based on the same guidelines used for selecting well casing. There are many different casing materials used in design of a monitoring well; thermoplastic materials (such as PVC) and stainless steel are the most widely used.

5.1.4 Installation Procedures

The following general procedures should be followed when installing well casings and well screens:

- Keep the well casing sealed in plastic until it is ready to be installed into the borehole.
- Carefully assemble and install well casings and screens to prevent damage to the sections and joints.
- Sections of well casing and screen must be mechanically connected, such as flush threading. Use of glue or solvents to connect or seal casing is prohibited.
- Secure an end cap at the bottom of the well screen before installing section(s) of well screen into the well boring.
- If using pre-pack well screens, take care to not tear or damage the outer fabric or screen holding the pre-pack filter sand to the well screen.
- Install the well casing and well screen straight and plumb and centered within the middle of the borehole.
- Install the filter pack from the bottom of the borehole to at least 2 feet (up to 5 feet) above the top of the well screen. At locations that have shallow groundwater, the filter pack can be placed to extend to at least 1 foot above the top of the screen.
- During installation, place a cap on top of the casing to prevent well materials from entering the well casing.

- A completed monitoring well should be sufficiently straight to allow passage of pumps or sampling devices.

- Document the calculated and actual quantities of materials used in the well installation and the condition of well materials on the Monitoring Well Construction Logs.

5.2 Filter Pack

The well screen of each monitoring well should be surrounded by a permeable, coarse-grained sand known as the filter pack. Fill the annular space surrounding the well screen with a filter pack of uniform-grain-size sand that is coarser and has a higher permeability than the natural, surrounding formation. The filter pack should allow groundwater to flow freely into the well from adjacent formation material and minimize or eliminate fine-grain material from entering the well. The filter pack should extend above the well screen to a length of 20 percent of the well screen length, but no less than 2 feet.

5.2.1 Materials

Filter pack materials must be poorly graded (well sorted) to provide good permeability and hydraulic conductivity of the materials near the screen. The filter pack material should be clean, chemically inert, and well-rounded siliceous material and should be slightly coarser than the surrounding formation. Using coarser material increases the effective well diameter.

The sand or gravel used for filter packs should be of uniform size, be hard and durable, and have an average specific gravity of 2.50 or greater. The filter pack material should be obtained from known clean sources and should be well washed and free of clay, dust, and organic matter. No more than 5 percent of the sand or gravel should be soluble in hydrochloric acid.

Filter pack material should meet the National Sanitary Foundation (NSF) standards and be packaged in properly sealed and marked packages. Record the NSF label information and any associated lot or identification numbers on the Monitoring Well Construction Logs. The filter pack is designed for the anticipated and tested grain size distribution in the screened formation and the size of well-screen openings. The filter pack should have a grain size distribution and uniformity coefficient compatible with the formation materials and the screen. The filter pack must not extend across more than one water-bearing unit (or aquifer). Install the filter pack in all wells (deep or shallow) in a manner that minimizes bridging and void spaces in the filter pack. Any open annular space outside of a pre-pack filter should be filled to the maximum extent practical with additional filter pack material, as previously described. Natural collapse can also be allowed to fill annular space around a pre-pack filter.

5.2.2 Installation Procedures

The following procedures should be followed to optimize the installation of the filter pack and the quality of the well:

- Calculate the volume of the well annulus (that is, the filter pack required), and document on the Monitoring Well Construction Log the type and volume of the filter pack material installed.

- Record on the Monitoring Well Construction Log the National Sanitary Foundation label information and any associated lot or identification numbers from the filter pack material.

- Document that the drilling contractor periodically measures the filter pack during installation by using a sounder or weighted measuring tape to confirm uniform placement and prevention of bridging.

- Document that the drilling contractor measures the depth of the top of the filter pack to verify the thickness of the pack and to confirm proper depth placement above the well screen (at least 2 feet above the screen.

- Document that the filter pack does not extend into any aquifer other than the aquifer to be monitored.

5.3 Annular (Bentonite) Seal

Annular seals prevent vertical movement of water or contaminants between the filter pack, the adjacent soil formation, and the natural backfill material above the screen. There should be two annular seals in standard monitoring wells, one above the filter pack (lower seal) and one at the ground surface (upper seal). All permanent monitoring wells should be constructed with a lower annular seal at the top of the filter pack to confine the well screen within the desired sampling interval. The lower annular seal should be installed at least 2 feet thick on the top of the filter pack to prevent seal material from leaching into the filter pack. Pelletized bentonite is preferred for this application; however, a bentonite slurry or similar material may also be used, if appropriate.

Install the upper annular seal near the ground surface to protect the well from infiltration of surface runoff and potential aboveground contaminants. The upper annular seal should be installed at least 2 feet thick and extend from approximately 1 to 2 feet below ground surface (bgs) to 3 to 4 feet bgs. This annular seal should be bentonite pellets, bentonite slurry, or similar material.

For shallow wells constructed with approximately only 5 to 6 feet between the top of the filter pack and the ground surface, it is acceptable to combine the upper and lower annular seals into a single annular bentonite seal approximately 3 to 4 feet thick from the top of the filter pack to approximately 1 to 2 feet bgs. For deeper wells, the annular space between the two seals should be filled with a bentonite slurry or coarse bentonite chips.

When using bentonite pellets to seal the filter pack, install the pellets in sequential, 1-foot thick layers. Hydrate each layer by pouring an approximately equal volume of clean, potable water into the borehole before placing the next layer of pellets. Continue this process until the required minimum 2-foot seal thickness is installed. Use a weighted tape measure, measuring rod, or similar measurement device to check that the filter pack seal is installed in the proper depth interval. Bentonite grout is suggested when freeze–thaw processes may affect the well.

5.3.1 Materials

Pelletized bentonite is preferred for this application; however, the following may also be used:

- Neat cement grout (not recommended for use with schedule 40 PVC well casing or where there might be shrinkage that would allow leakage along the casing).

- Sodium-based bentonite slurry with a mud weight of at least 10 pounds per gallon.
- Sodium-based bentonite granules.
- Sodium-based bentonite pellets.
- Bentonite-cement grout.

Measure the thickness of the bentonite before hydration. The permeability of the seal must be one to two orders of magnitude less than that of the surrounding formation. The seal must be chemically compatible with the anticipated contaminants and chemically inert so that it does not affect the quality of groundwater samples.

Use fine-grain bentonite, such as granules and powder, for seals placed above the existing water level. A bentonite slurry should be used for the bentonite seal below the existing water level. Coarse bentonite, such as pellets and chips, can also be used for bentonite seals located just below the groundwater water level.

5.3.2 Installation Procedures

The following procedures should be followed for placement of the annular seals:

- When installing an annular seal, determine the type and volume of annular seal material needed by referring to the information on the Monitoring Well Construction Log. Record the type, calculated volume, and actual volume of annular seal material used on the Monitoring Well Construction Log.
- Install at least 2 feet of lower annular seal material above the filter pack.
- Install at least 2 feet of upper annular seal material at least 1 to 2 feet bgs.
- At locations where there is shallow groundwater, the upper and lower annular seal may be combined so that there is 2 feet of filter pack above the well screen and 3 to 4 feet of annular seal. Document alternative procedures like this on the Monitoring Well Construction Log.

- Install the annular seal in 1-foot layers or less and hydrated with clean, potable water between layers.
- Water used for bentonite hydration or for mixing bentonite slurry should be from an approved potable source, of suitable quality, and free of pollutants and contaminants. Document the volume of water used on the Monitoring Well Construction Log.
- Document that the drilling contractor measures the depth to the seal by using a weighted tape measure, measuring rod, or similar measurement device to confirm that the thickness and depth of the seal meets the design requirements.
- Allow the bentonite to completely hydrate in accordance with the manufacturer's instructions before filling the remainder of the annular space with bentonite/cement grout.
- For deep wells, install the seal material by using a tremie pipe to prevent bridging. When using cased borehole drilling methods (such as hollow stem augers), the annulus between the monitoring well casing and drill stem may serve as the tremie pipe.
- Record the actual volumes of bentonite and grout used during well construction on the Monitoring Well Construction Log and explain any discrepancy between the calculated and actual volume.
- Record the details of the well construction including annular seal depth, thickness, seal material type, and installation methods on the Monitoring Well Construction Log.

5.4 Surface Completion and Well Protection

Two types of surface completions are typical to monitoring well installations: (1) aboveground completion and (2) flush-mounted completion. Surface completion and well protection prevent surface runoff from infiltrating the well annulus and protects the well from accidental damage or vandalism. Survey the well installation after completion and document the survey measurements.

5.4.1 Surface Seals

There should be a surface seal of concrete around the protective well casing at each well that fills the upper annular space. A surface seal is a separate upper annular seal installed above, but not connected to, the bentonite seal (except in very shallow monitoring wells). Because of the temporary nature of micro-wells, surface seals other than hydrated bentonite are not necessary.

5.4.2 Surface Completion and Monuments

Construct each monitoring well with a surface monument to protect the well casing from damage. Depending on site conditions, concrete may be used to create a secure monument foundation and provide an additional surface seal. Constructed concrete monument foundations (slabs) should be sloped away from the well so that it sheds rain and surface water. On a site-specific basis, alternative well construction designs may be used if approved by the Project Manager (for example, in areas of shallow groundwater). If an aboveground monitoring well monument is installed, construct the well monument with a protective casing, preferably made of steel. Extend the protective casing at least 6 inches above the top of the well casing, and at least 2 feet into the ground. Install the protective casing before the upper annular seal sets. Seal and immobilize the protective casing within the concrete monument foundation. To accommodate sampling equipment, make sure there is sufficient clearance, usually 6 inches, between the lid of the protective casing and the top of the riser. Drill an approximately ¼-inch-diameter weep hole in the protective casing approximately 6 inches above ground surface to permit water to drain out of the annular space between the protective casing and the riser. In winter, this hole will also prevent water freezing between the protective casing and the well casing. Place dry bentonite pellets, granules, or chips in the annular space from 3 to 4 inches below the weep hole within the protective casing. Place coarse sand or pea gravel (or both) in the annular space above the dry bentonite pellets and within 6 to 12 inches below the top of the well casing to allow water to drain from within the protective casing and prevent insect habitation.

If a flush-mount monitoring well monument is installed, construct the well monument with a steel protective cap with a subsurface casing that extends approximately 2 feet bgs. The top of the steel protective cap and protective casing must be flush with the ground. Drill an approximately ¼-inch-diameter weep hole in the protective casing approximately 18 to 24 inches from the top of the protective casing to permit water to drain out of the annular space between the protective casing and the well casing. Install the protective casing before the upper annular seal sets, making sure that the weep hole is above the top of the upper annular seal. Seal and immobilize the protective casing in a concrete, flush-mount foundation, if possible. To accommodate sampling equipment, make sure there is sufficient clearance, usually 6 inches, between the steel protective cap and the top of the well casing. Place coarse sand or pea gravel (or both) in the annular space within the protective casing to within 2 to 3 inches below the top of the well casing to allow water to drain from within the flush-mount monument and prevent insect habitation.

Regardless of the type of monument, each well should be fitted with a locking well casing cap that easily fits below the protective well monument cap. Install a leak-proof, locking well casing cap on the top of each well casing to prevent vandalism and to prevent water from entering the well casing. The protective well monument cap should be leak-proof and secured with multiple bolts for additional protection. Document all construction details and materials used on the Monitoring Well Construction Log. Clearly mark monitoring wells with a unique well identifier on the inside and outside of the protective casing.

Aboveground Completions

The following basic procedures will be followed for aboveground completions:

- Extend the well casing approximately 2 to 3 feet above the ground surface.
- Install a protective casing around the aboveground well casing. Install the protective casing in a plumb, vertical position. Place concrete (surface seal) above and around the base of the protective casing up to and becoming part of the surface concrete pad. The concrete seal should not extend below the base of the protective casing; this will allow trapped water during installation and sampling events to drain.
- The protective casing may be painted if requested by the client.

- Install a weatherproof, locking well monument cap on the top of the protective casing so there is adequate clearance between the top of the well casing cap and the bottom of the well monument cap.

- A concrete surface pad may be placed around the well protective casing. The pad should be approximately 3 feet square by 4 inches thick and sloped away from the protective casing.

- Install bollards around wells where traffic might threaten the integrity of the well.

- When possible, attach a stainless steel, well identification tag to the outside of the protective casing.

Flush-mounted Completions

The following procedures will be followed for flush-mounted completions:

- Cut off the well casing below grade, leaving enough space to install a leak-proof, locking well casing cap.

- Install a subgrade, protective casing with a steel protective cap around the top of the well casing. Install the protective casing to approximately 2 feet bgs. The top of the steel protective cap and protective casing must be flush with the ground.

- Drill an approximately ¼-inch-diameter weep hole in the protective casing approximately 18 to 24 inches from the top of the protective casing to permit water to drain.

- To accommodate sampling equipment, make sure there is sufficient clearance (typically 6 inches) between the steel protective cap and the top of the well casing.

- Place coarse sand or pea gravel (or both) in the annular space within the protective casing to prevent water infiltration and insect habitation.

- A concrete flush-mount foundation may be placed around the well protective casing. The concrete foundation must slope away from the protective casing.

- For flush-mounted completions located in high-traffic areas, follow the procedures outlined above except that traffic-rated cement or a steel vault should be used and cemented flush with the traffic surface.

- For flush-mounted completions, be careful to construct watertight bonds between the protective structure and the cement surface seal.

- Install a weatherproof, locking well monument cap on the top of the protective casing and weatherproof, locking well casing cap on top of the well casing.

- Where significant amounts of runoff occur, additional protection measures may be required.

- When possible, attach a stainless steel, well identification tag to the inside of the protective casing.

5.4.3 Well Protection

Monitoring wells can have either aboveground or flush-mount completions. If the well casing is composed of metal and completed above the ground surface, attach a lockable cap to the top of the protective well casing and lock the cap with a padlock. If the well is not cased with metal and is completed above the ground surface, install a metal protective casing around the well. For flush-mount wells, install a protective well monument vault (or equivalent) around the well with a lockable or bolt-on cover that has a waterproof seal. Install the cover level with the ground surface to help prevent the inflow of surface water.

Construct flush-mount well covers to withstand the maximum expected loadings (such as vehicular traffic or material staging). Install bollards around aboveground wells where traffic might threaten the integrity of the well. Install three or four bollards in a triangular or rectangular array at least 2 feet from the casing. Use 3-inch-diameter steel or wooden bollards that extend at least 4 feet above and 3 feet below the ground surface; the bollards must be tall enough to be easily visible to traffic. Bollards should not be placed in the concrete surface pads around the wells. In areas where there is a high probability of damage to the well (such as where there is high traffic, heavy equipment, or poor visibility), it may be necessary to also install posts, markers, signs, or other safety features. The level of protection should adequately mitigate the potential risk of damage to the well.

5.5 Installation of Micro-Wells

Micro-wells are small-diameter monitoring wells. Micro-wells are generally installed in boreholes driven by direct push systems and are typically less than 2 inches in diameter. Micro-wells installed by the direct push system method generally have the same installation requirements as conventional wells.

- Keep the well casing sealed in plastic until it is ready to be installed into the borehole.
- Carefully assemble and install well casings and screens to prevent damage to the sections and joints.
- Sections of well casing and screen must be mechanically connected, such as flush threading. Use of glue or solvents to connect or seal casing is prohibited.
- Secure an end cap at the bottom of the well screen before installing section(s) of well screen into the well boring.
- If using pre-pack well screens, take care to not tear or damage the outer fabric or screen holding the pre-pack filter sand to the well screen.
- Install the well casing and well screen straight and plumb and centered within the middle of the borehole.
- Install the filter pack from the bottom of the borehole to at least 2 feet (up to 5 feet) above the top of the well screen. At locations that have shallow groundwater, the filter pack can be placed to extend to at least 1 foot above the top of the screen.
- During installation, place a cap on top of the casing to prevent well materials from entering the well casing.

- Install an annular seal from the filter pack to the top of the well.

- The annular seal must prevent vertical migration of liquids into the borehole annular space.

6.0 RECORDS

All materials and procedures used during installation of wells should be documented in the Field Logs and Monitoring Well Construction Logs in accordance with SOP Field Note taking and Field Logs.

7.0 DEFINITIONS

Annular Space or Annulus: The space between the borehole wall and the well casing, or the space between the casing pipe and well casing.

Bentonite Seal: A seal with expansion potential that is placed above the filter pack to provide a positive seal above the filter pack.

Filter Pack: A chemically inert, uniform, well-rounded material (sand or gravel) that is placed in the annulus between the well screen and the surrounding formation to prevent formation material from entering the screen.

Monitoring Well: A well constructed to extract groundwater for physical, chemical, or biological testing, or for measuring water levels.

Piezometer/Micro-Well: A small diameter (typically well 0.75 to 1 inch) well installed to measure hydraulic head.

Surge Block: A plunger-like tool consisting of rubber or Teflon® discs sandwiched between steel discs that may be solid or valved; used to alternate flow from the well casing into the surrounding formation.

C.T. MALE ASSOCIATES ENGINEERING,
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LANDSCAPE ARCHITECTURE &
GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

MONITORING WELL DEVELOPMENT

January26, 2018

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Print Technical Reviewer Signature Date

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Print QA Manager Signature Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: MONITORING WELL DEVELOPMENT

1.0 PURPOSE

The purpose of this procedure is to describe how to develop new monitoring wells or redevelop existing monitoring wells that have just been installed or existing monitoring wells that may have become partially filled with sediment during use as a monitoring well. These procedures are performed with the objective of obtaining representative groundwater information and water quality samples from aquifers. These procedures may also be employed for development of fractured bedrock formation monitoring wells.

2.0 SCOPE

This SOP applies to all C.T. Male Associates personnel and subcontractors engaged in development and sampling of groundwater monitoring wells and piezometers. This SOP focuses on the most common monitoring well development tasks and should be used in conjunction with other applicable project SOPs, including the following:

- SOP: Note Taking and Field Logs.
- SOP: Organic Vapor Monitoring and Air Monitoring.
- SOP: Equipment Decontamination Procedures.
- SOP: Groundwater Sampling Procedures.

3.0 RESPONSIBILITIES

3.1 Project Manager

The Project Manager verifies that monitoring well development procedures comply with this SOP and the requirements of the enforcing agencies. Alternate well development requirements and procedures required by local agencies or other modifications must be documented and approved by the Project Manager.

3.2 Field Team Leader

The Project Manager will develop or direct the well development procedures to be used. The Field Team Leader should know the requirements for well development and should maintain adequate documentation of the development process and materials used to demonstrate that the well has been properly developed.

3.3 Health & Safety Officer

The Health & Safety Officer oversees site-specific health, safety, and environment (HS&E) protocols and overall compliance with project HS&E requirements. The Health and Safety Officer conducts personal protective equipment (PPE) evaluations, selects the appropriate PPE, lists the requirements in the Project-specific Health and Safety Plan (HASP), coordinates with the Project Manager and Field Manager to certify the PPE, and conducts project health and safety audits to evaluate the effectiveness of the HS&E program.

3.4 Site Safety and Health Officer

The role of Site Safety and Health Officer is delegated to the Field Team Leader by the Project Manager to assist in implementing the project HASP. The Project Manager and/or Health & Safety Officer assists the Field Team Leader with the health and safety program, implements the PPE requirements described in the project HASP and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

4.0 EQUIPMENT, REAGENTS, and SUPPLIES

The following items are applicable to this SOP:

- Pumps (e.g., submersible or peristaltic)
- Pump discharge hose/tubing
- Bailers
- Chemical resistant gloves
- Water level indicator or interface probe
- Surge block (optional)
- Water quality meter (optional)
- Turbidimeter (optional)

5.0 PROCEDURE

These procedures are used to remove the fine-grained materials from a well or well bore as a result of boring or well construction. Monitoring wells must be developed to provide water free of suspended solids and to yield representative samples. Well development should result in a well that yields visibly clear groundwater.

5.1 Calibration

If used, the water quality meter and turbidimeter will be calibrated as per the applicable CT Male SOP. The meters will undergo calibration checks, at a minimum, before and after sampling. The calibration check will be documented on a calibration form (as appropriate) and/or in the field notebook. Any significant issues found during the calibration check will be noted in the field notebook.

5.2 Development

Successful development methods include bailing, surging, pumping/over-pumping, and jetting with water. The basic principle behind each method is to create reversals of water flow into and out of the well screen (and/or bore hole) to break-down any potential mud cake or disturbed zones where fine-grained particles may be concentrated at the borehole-formation interface, and to draw the finer materials into the well or borehole for removal. This process also helps remove fine fraction formation materials in proximity to the borehole wall, leaving behind a "natural" pack of coarser-grained materials.

5.2.1 Bailing

In relatively clean, permeable formations where water flows freely into the borehole, bailing is an effective development technique. Let the bailer fall down the well until it strikes the surface of the groundwater which produces an outward surge. Rapidly withdraw the bailer to create a drawdown and/or after the bailer hits the groundwater lower it to the bottom of the well and agitate it with rapid short strokes. Continue bailing with repeated up and down "surging motions" until water bailed from the well is free from suspended particles.

Note: During this process, if the well goes dry, stop bailing and let the well recharge before continuing.

5.2.2 Surge Block

A surge block is a tool used to break up bridging of fine grained material by inducing agitation and inducing flow into and out of the well and aquifer formation. Bridging is the tendency for particles moving towards a well under unidirectional flow (pumping) to develop a blockage that restricts subsequent particles to move into a well. Surge block is used alternately with either a pump or bailer. Let the surge block fall down the well until it strikes the groundwater surface. This creates a vigorous outward surge; rapidly retrieve the surge block. Lower the surge block to the top of the well intake and begin a pumping action with a typical stroke of approximately 3 feet and gradually work downward through the screened interval. Remove the surge block at regular intervals to discard the loosened suspended particles by either bailing or pumping. Continue the cycle of surging/bailing/pumping until satisfactory development has been attained.

5.2.3 Pumping/Over-pumping

In both pumping techniques, the groundwater flow is induced to flow into the well and the fine particulate material moves into the well and is discharged by the pump. In the case of over-pumping, the pump is operated at a capacity that substantially exceeds the ability of the formation to deliver water. Once pumping has begun, start the surging action by lowering and raising the hose/pumping apparatus through the screened interval. Bailing or bailing and surging may be combined with pumping for efficient well development. Continue pumping until such time as satisfactory development has been attained based on field observation of visibly clear water produced. If an analytical measure is needed, use turbidity meter readings to document initial turbidity and final turbidity readings. Well stabilization parameters may also be measured and documented pre- and post-development.

If pumping/over-pumping is completed by air lifting, the air compressor must be of an oil-less type or fitted with an oil trap capable of removing compressor oil from the air stream to avoid contaminating the well or boring.

5.2.4 High Velocity Jetting

Development by high velocity jetting may be completed with either water or air. In practice, jetting with water is typically followed by or simultaneously occurring air-lift pumping/over pumping to remove the fine materials. The jetting procedure consists of operating a horizontal water jet(s) inside of the well screen so high velocity streams of water shoot through the screen openings into the sand pack/formation. The jetting tool is worked similar to a surge block. The jetting tool ideally will have four openings located 90 degrees apart and should be worked up and down the screened interval while being rotated. At a minimum, the amount of water introduced during jetting and, if feasible, an additional 10 well volumes of water should be purged from the well.

5.3 Data Reduction/Calculations

No data reduction or calculations are associated with this procedure.

5.4 Disposal

Waste generated by this process will be disposed of in accordance with Federal, State and Local regulations and CT Male's SOP 'Investigative Derived Waste'. Where reasonably feasible, technological changes have been implemented to minimize the potential for environmental pollution.

6.0 RECORDS

The field technician(s) will document the method of development, any deviations from this SOP, volume of water purged, and any volume of water introduced to the well (e.g., high velocity jetting, flushing).

Other CT Male SOP subjects referenced within this SOP: field water quality measurements and groundwater sampling.

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STANDARD OPERATING PROCEDURE

EQUIPMENT DECONTAMINATION PROCEDURES

December 28, 2017

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Print Technical Reviewer Signature Date

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Print QA Manager Signature Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
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SOP: EQUIPMENT DECONTAMINATION PROCEDURES

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide the step-by-step procedures for field decontamination of environmental sampling equipment and personal protective equipment (PPE). Decontamination of equipment and PPE is designed to document that sample cross-contamination, human-health exposure, and contamination transport are minimized.

2.0 SCOPE

This procedure applies to all C.T. Male Associates personnel engaged in collecting environmental samples or operating in environments in which hazardous or contaminating substances are suspected to be present.

3.0 GENERAL

Decontamination consists of physically removing contaminants from the surface of sampling equipment and materials potentially exposed to those contaminants. A decontamination plan should be based on conservative, worst-case scenario, using available information about the work area. The plan can be modified, if justified by supplemental information. Initially, the decontamination plan assumes that protective clothing and equipment which leave the exclusion zone are contaminated. Based on this assumption, a system is established to wash and rinse non-disposable equipment and dispose of disposable equipment.

The type of decontamination procedures and solutions needed at each site should be determined after considering the following site-specific conditions:

- The type of equipment to be decontaminated.
- The type of contaminant(s) present.
- Extent of contamination.
- Potential human, environmental and ecological risk scenarios.

4.0 RESPONSIBILITIES

4.1 Project Manager

The Project Manager is responsible for overall compliance with this procedure and for documenting that field staff are properly trained and meet project Health, Safety, and Environmental (HS&E) requirements.

4.2 Health & Safety Officer

The Health & Safety Officer is assigned to oversee site-specific HS&E and overall compliance with project HS&E requirements. The Health & Safety Officer conducts PPE evaluations, selects the appropriate PPE for the project, lists the requirements in the project-specific Health and Safety Plan (HASP), coordinates with the Field Team Leader to complete and document the PPE program, and conducts project health and safety audits on the effectiveness of the HS&E program.

4.3 Site Health and Safety Officer

The role of Site Health and Safety Officer is delegated to the Field Team Leader by the Project Manager and/or Health & Safety Officer to assist in implementing the project HASP. The Field Team Leader assists the Project Manager and/or Health & Safety Officer with the health and safety program, implements the PPE requirements described in the project HASP, and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

4.4 Field Team Leader

The Field Team Leader is responsible for following these procedures or delegating tasks to technicians to perform decontamination tasks. The Field Team Leader should document that subcontractors are taking necessary precautions to decontaminate field equipment before and throughout field activities. The Field Team Leader should also document that decontamination waste and PPE are disposed of properly.

5.0 PROCEDURE

Decontaminate non-disposable sampling equipment used at the site both before activities begin, after each sample is collected, and if needed when leaving the exclusion zone. Decontaminate drilling and excavation equipment both before activities begin, between each investigation/remedial action location, and leaving the exclusion zone.

Materials and solutions used for decontamination procedures will be non-hazardous and will not be used if they could potentially contaminate samples (i.e., acids and solvents).

5.1 Decontamination Area

Set up a decontamination zone adjacent to the exclusion zone for drill rigs, excavators, other sampling equipment, and personnel. Select and set up the decontamination area so that decontamination fluids and soil wastes can be managed in a controlled area with minimal risk to the surrounding environment. The decontamination area should be large enough to allow temporary storage of cleaned equipment and materials before use, as well as to stage drums of decontamination investigation/remediation-derived waste. In the case of large decontamination areas (for example, for hollow stem auger and excavator bucket decontamination), line each area with heavy-gauge plastic sheeting and include a collection system designed to capture potential decontamination investigation/remediation-derived waste. Decontamination areas will be constructed to mitigate overspray while performing decontamination activities.

Smaller decontamination tasks, such as sampling equipment (i.e., trowels, shovels, split-barrel sampler, macro-core sampler, etc.) decontamination, may take place at the sampling locations. In this case, required decontamination supplies and equipment should be mobilized to the site and smaller decontamination areas for personnel and portable equipment will be provided as necessary. These locations will include basins, buckets and/or tubs to capture decontamination investigation/remediation-derived waste, which will be transferred to larger containers as necessary.

5.2 Decontamination Equipment

The following is a list of equipment and materials that may be needed to perform decontamination:

- Concrete or synthetic material-lined decontamination pad.
- HDPE sheeting/membrane to serve as secondary containment for liquids.
- Brushes and flat-bladed scrapers.
- Garden-type water sprayers (without oil-lubricated, moving parts).

- High-pressure washer.
- Portable steam cleaner.
- Sump or collection system for contaminated liquid.
- Wash basins and buckets.
- Spray and rinse bottles.
- Potable PFAS free water, deionized water, laboratory-grade water and laboratory grade detergent (Liquinox or Alconox).
- Plastic waste bags.
- Leak-tight liquid waste containers (55-gallon drums or similar).
- Bulk solid waste containers (super-sacks, 55-gallon drums, or similar).

5.3 Decontamination Procedures

5.3.1 Personnel and Personal Protective Equipment

Decontamination of personnel and PPE reduces the potential for human-health exposure to contaminants via ingestion, absorption, and inhalation. Personnel and PPE will be decontaminated as outlined in the site-specific HASP. Concerns regarding personnel and PPE decontamination procedures may be addressed directly with the Project Manager, Health & Safety Officer, and/or Site Specific Health and Safety Officer.

5.3.2 Sampling Equipment

Conduct consistent decontamination of sampling equipment to maintain the quality of the samples collected. Decontaminate equipment that comes into contact with potentially contaminated samples. Disposable equipment intended for one-time use that is factory wrapped generally does not need to be decontaminated before use, unless evidence of contamination is present. Disposable equipment, such as disposable bailers, spoons is preferred over reusable equipment; use wherever appropriate. Decontaminate sampling equipment, including split-barrel and macro-core samplers, hand augers, reusable bailers, spoons, trowels, shovels, and pumps used to collect samples for chemical analyses before each use and before sampling at a new sampling location. Take the following steps to decontaminate non-dedicated sampling equipment:

- Decontamination personnel will wear the appropriate PPE as required by the site-specific HASP.
- The sequence of actual decontamination will be as follows:
    - Remove gross contamination (such as pieces of soil) from equipment at the sampling site.
    - If heavy petroleum residuals are encountered during sampling, an appropriate solvent such as methanol will be used to remove petroleum residues from sampling equipment, but should be kept to a minimum. If a solvent is used, it must be properly used, collected, stored, and disposed of according to the site-specific HASP. If heavy petroleum residuals are not encountered, this step should be omitted.
    - If PCB oils are observed on sampling equipment an appropriate solvent, such as Mycelx, will be used to remove liquid PCB residues from sampling equipment. If a solvent is used, it must be properly used, collected, stored, and disposed of according to the site-specific HASP.
    - Wash water-resistant equipment thoroughly and vigorously with potable water and laboratory-grade detergent such as Liquinox, or Alconox and use a bristle brush or similar utensil to remove remaining residual contamination. This shall be done within a containment tub or similar.
    - Rinse equipment thoroughly with potable water (1st and 2nd rinse).
    - Rinse equipment thoroughly with distilled or deionized water (3rd and 4th rinse).

- For sensitive field instruments, rinse equipment with distilled, deionized, or American Society for Testing and Materials (ASTM) reagent grade water (3rd rinse).
- Air dry at a location where dust or other fugitive contaminants may not contact the sample equipment. Alternatively, wet equipment may be dried with a clean, disposable paper towel to assist the drying process. Equipment should be dry before reuse.

- If the equipment is not used soon after decontamination, it should be covered or wrapped in new, HDPE sheeting to protect the decontaminated equipment from fugitive contaminates before reuse.
- Store decontaminated equipment at a secure, unexposed location out of the weather and potential contaminant exposure.
- Depending on site conditions and the number of samples collected at each location, rinse and detergent water may be replaced with new solutions between borings or sample locations.

5.3.3 Groundwater Sampling

Proper decontamination between wells is necessary to avoid introducing contaminants from the sampling equipment. For decontamination of peristaltic pumps, replace the pump head tubing after sampling each well. If sampling with pumps such a submersible, bladder, or similar pump in which mechanisms of the pump come in direct contact with contaminated water, or sampling with a reusable stainless steel bailer, decontaminate the pump or bailer. The following steps will be used for pumps and bailers contaminated with dissolved phase contamination only:

1. Wash the exterior of the pump or bailer and associated cable thoroughly and vigorously with potable water, of filtered water where PFAS is a contaminant of concern, containing the non-phosphate laboratory-grade detergent Liquinox or Alconox. Washing will be completed using a dedicated wash bristle brush or similar brush.

2. Place the pump into clean potable or filtered water wash basin/reservoir containing Liquinox or Alconox making sure that the pump intake is fully submerged and the pump outlet is allowed to flow directly back into the wash reservoir. It should be noted if the wash water and wash basin are not clean, the contaminants from previously used wash water including debris or soils would recirculate through the pump. Set the pump to a very low flow rate and turn the pump on, allowing the wash water to re-circulate through the pump mechanism for a minimum of 5 minutes. Disregard this step for reusable bailers.

3. Initially, rinse the pump or bailer by repeating Steps 1 and 2 using potable water, a dedicated rinse bristle brush, and a rinse basin/reservoir containing only potable water (1st and 2nd rinse).

4. Final rinse the pump or bailer by duplicating Step 3 using distilled, deionized, or ASTM reagent grade water (3rd and 4th rinse).

5. Dry off excess water with a clean, disposable paper towel and allow to air dry at a location where dust or other fugitive contaminants may not contact the sample pump or bailer.

If the pump or bailer is used to sample groundwater containing non-aqueous phase liquid (NAPL) or other heavy petroleum contamination, field-dismantle (field-strip) the equipment per the manufacturer's guidelines and decontaminate the interior and exteriors surfaces of the pump or bailer using the wash, double rinse, and dry steps outlined in the previous Steps 1, 3, 4, and 5 above. If significant heavy petroleum residue is encountered during decontamination, use an appropriate solvent such as methanol to remove petroleum residues from pump or bailer surfaces. This should be kept to a minimum. If a solvent is used, it must be properly used, collected, stored, and disposed of according to the project-specific HASP. If heavy petroleum residuals are not encountered, omit this step.

5.3.4 Measurement Devices and Monitoring Equipment

For water quality instruments, oil-water interface indicators, water level indicators, continuous water level data-loggers, and other field instruments that have the potential to come into contact with site media, at a minimum, wash with dilute laboratory-grade detergent (Liquinox or Alconox) and double rinse with potable and distilled/deionized water before and after each use using a similar procedure as discussed in Section 5.3.2. If heavy petroleum residuals are encountered during sampling, use an appropriate solvent such as methanol to remove petroleum residues per the manufacturer's maintenance guidelines.

5.3.5 Drilling and Subsurface Soil Sampling Equipment

Drilling equipment and associated materials will be decontaminated by the drilling contractor prior to drilling operations and between borings, or as outlined in the site specific work plan. Decontaminate tools used for soil sampling (i.e., split-barrel and macro-core samplers) before and between collecting analytical samples. Thoroughly clean external and internal surfaces of drilling equipment (that is, drill bits, auger, drilling stem, and hand tools) before beginning drilling operations and between borings using the following basic sequence:

- Remove as much gross contamination as possible off equipment at the sampling site.
- Wash equipment thoroughly and vigorously with high-temperature potable water using a high-pressure washer and/or steam cleaner, if possible. If steam cleaning is not going to be used it will be outlined in the site specific work plan. A bristle brush is also suggested to remove persistent gross contamination.
- Rinse equipment twice thoroughly with potable water (1st and 2nd rinse).
- Rinse equipment twice thoroughly with filtered water (3^{rd} and 4^{th} rinse), when PFAS are contaminants of concern or will be sampling at the site.
- Air dry at a location where dust or other fugitive contaminants may not contact the sample equipment. Equipment should be dry before reuse.
- Store decontaminated equipment at a location away from potential exposure from fugitive contamination.

5.3.6 Decontamination of Earthwork Equipment

Wash earthwork equipment (such as excavators, back-hoes, and trucks) with high-pressure potable water and/or filtered water, if possible, before leaving a contaminated area, using similar steps as outlined in Section 5.3.5.

Portable steam-cleaners and hand washing with a brush and detergent, followed by a potable water and filtered water rinse, can also be used. In some instances, tires and tracks of equipment may only need to be thoroughly brushed with a dry brush. Take particular care with the components in direct contact with contaminants, such as tires and backhoe buckets. Earthwork equipment (or localized part) that may come in direct contact with analytical samples (i.e., sample collection of soils in direct contact with the excavator bucket) must be thoroughly decontaminated before excavation activities and between sample locations.

5.3.7 Air Sampling Equipment

For non-laboratory manifold equipment, methanol soak manifold components for a minimum of two hours. Remove from the methanol bath and place in an oven pre-heat to 90 ° C and continue to heat manifold components for at least 3 hours or until interior and exterior surface inspections of the manifold components indicate that they are free of liquid methanol.

5.4 Investigation/Remediation-Derived Wastes

Depending on the contaminant, potentially hazardous investigation/remediation-derived wastes (such as wash water or rinsate solutions) will be contained in 55-gallon drums and staged in a designated waste storage area.

6.0 RECORDS

Sampling personnel will be responsible for documenting decontamination of sampling, excavation and drilling equipment. Record information on the Environmental Services Field Logs. The information entered on the Environmental Services Field Logs concerning decontamination should include the following:

- Decontamination personnel.
- Decontamination solutions used (i.e., Alconox, Liquinox, distilled water, etc.).

- Date and time (start and end).
- Location of decontamination.
- General decontamination methods, tools used, and observations.
- Manufacturer names and lot numbers of decontamination solutions.
- Location and amount of decontamination investigation/remediation-derived wastes collected, stored, and/or disposed.
- Identification number, date, sampling area, and information of stored decontamination investigation/remediation-derived wastes.
- Decontamination investigation/remediation-derived waste spills or releases and associated corrective actions.

7.0 DEFINITIONS

Decontamination Area: An area that is not expected to be contaminated and is upwind of suspected contaminants.

Decontamination Equipment: Equipment used during the process of decontamination of personnel or sampling equipment.

Drilling and Subsurface Soil Sampling Equipment: Equipment and tools used during the process of drilling or subsurface soil sampling.

Health and Safety Plan: A plan developed to require that hazards associated with a site are evaluated prior to site entry.

Measurement\Monitoring Equipment: Equipment used to check or evaluate site conditions.

Personal Protective Equipment (PPE): Personal health and safety equipment used to protect the individual from contaminant exposure, physical injury, or death.

Potable Water: Water acceptable for drinking and washing.

Sampling Equipment: Equipment used during the process of sample collection.

Earthwork Equipment: Heavy earthmoving equipment typically used for excavation and test pit investigations.

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STANDARD OPERATING PROCEDURE

GROUNDWATER SAMPLING

March 6, 2020

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Print	Technical Reviewer	Signature	Date
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Print	QA Manager	Signature	Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: GROUNDWATER SAMPLING PROCEDURES

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to describe the methodology for planning groundwater sampling events, well purging, and collection of groundwater samples through the use of positive displacement, submersible, and peristaltic pumps, and bailers.

2.0 SCOPE

This SOP applies to all C.T. Male Associate's personnel, subconsultants or subcontractors working for C.T. Male, engaged in groundwater sampling. This SOP focuses on the most commonly used monitoring well development tasks and should be used in conjunction with other applicable project SOPs, including the following:

- SOP: Note Taking and Field Logs.
- SOP: Organic Vapor Monitoring and Air Monitoring.
- SOP: Drilling and Associated Sampling.
- SOP: Equipment Decontamination Procedures.
- SOP: Monitoring Well Installation.
- SOP: Field Water Quality Measurements and Calibration
- SOP: Measuring Static Water Level, Immiscible Layers (DNAPL and LNAPL), Total Well Depth in Wells.
- SOP: Collection of Groundwater samples using low-flow purging and sampling.
- SOP: Collection of Quality Control Samples.
- SOP: Documentation on a Chain-of-Custody.
- SOP: Domestic Transport of Samples to Laboratories in USA.
- SOP: Filtering of Water Samples.

3.0 GENERAL

Groundwater sampling consists of collecting a water sample that is representative of the in situ conditions and chemistry of a specific aquifer, or portion of an aquifer. Four methods for well sampling are addressed in this SOP, including the no-purge method, the low-flow method, the well-volume method, and low-permeability formation method.

If multiple groundwater monitoring wells are to be sampled during the same sampling event, samples should be collected from the monitoring wells expected to be uncontaminated or to have only low levels of contamination first, progressing to wells expected to have higher levels of contaminant last. This practice helps reduce the potential for cross-contamination between monitoring wells.

Groundwater samples should be collected as close as possible to the vadose zone/saturated zone interface (water table) unless analysis indicates that contamination is at a different depth. If further vertical delineation of contaminant concentration(s) is necessary, groundwater samples should be collected at the interval(s) within the water column based on the physical characteristics of the contaminant. This should be a consideration especially for light, nonaqueous phase liquids (LNAPLs) (such as petroleum fuels) and dense nonaqueous phase liquids (DNAPLs) (such as chlorinated solvents). If multiple different contaminant analytes are to be sampled from the same well, samples will be transferred to sample containers in the order of volatility. Contaminant analytes should be collected in the following order:

1. In-field water quality parameters.
2. Polyfluoroalkyl Substances (PFAS)
3. Volatile organic compounds (VOCs) and volatile natural attenuation parameters.
4. Semi-volatiles organic compounds (SVOCs).
5. Total organic carbon (TOC).
6. PCBs and pesticides.
7. Inorganic compounds (such as total metals, dissolved metals, nitrate/nitrite, and sulfide).

3.1 Equipment and Materials

Groundwater sampling may be performed using several sampling devices including submersible pumps, peristaltic pumps, inertial pumps, and bailers. The choice of sampling device will be based on site-specific considerations including the well diameter, depth to groundwater, well yield and required sample analysis Groundwater sampling devices must compliment the intended data use and site decisions, and selected groundwater purging and sampling equipment should minimize increases in suspended sediment, sample temperature, water column agitation, and sample agitation.

Materials used during groundwater sampling must not absorb, desorb, or leach contaminants of concern from or into a potential groundwater sample. The materials used must be resistant to chemical and biological degradation. For bailer use, the bailer must be made of stainless-steel, other suitable materials. The use of disposable bailers shall be made out of materials such as silicone and HDPE. Bailers containing or made of Polyvinyl chloride (PVC) are not acceptable for sampling of VOCs. Bailers made of, polytetrafluoroethylene (PTFE), fluorinated ethylene propylene (FEP), ethylene tetrafluoroethylene (ETFE) or Teflon are not acceptable for sampling of or PFAS.

Sampling equipment used to obtain groundwater samples from wells need pre-assessed and shown through laboratory resting to be PFAS free.

3.2 Historical Groundwater Level Information

The initial step in developing a groundwater sampling plan for a particular site is to acquire historic groundwater elevation data from monitoring wells at the site, if available. Personnel shall refer to the CSM and site specific site work plans. If no monitoring wells currently exist, attempt to acquire groundwater level data for wells at or as close as possible to the site, if available. Evaluate the data to determine the range of seasonal water level fluctuations that occur at the site and the shallowest and deepest observed water levels over the period of record. This information defines the depth interval of the intermittently saturated zone that rises and falls with seasonal water level fluctuations.

4.0 RESPONSIBILITIES

4.1 Project Manager

The Project Manager is responsible for providing adequate resources and verifying that field staff have adequate experience and training to successfully comply with and execute project-specific SOPs and implement the project health, safety, and environment (HS&E) program. The Project Manager will solicit the appropriate technical expertise to verify that the project has identified the best sampling methods and technology for the job given the current understanding of the site and project goals. The Project Manager is also responsible for the coordination and scheduling of daily field activities, for verifying compliance with this SOP and that all field staff engaged in this activity are trained in this SOP.

4.2 Field Team Leader

The Field Team Leader should know the requirements for groundwater sampling and should maintain adequate documentation of groundwater sampling measurements and calibration activities.

4.3 Health & Safety Coordinator

The Health & Safety Coordinator is assigned to oversee site-specific HS&E and verify overall compliance with project HS&E requirements. The Health & Safety Coordinator conducts personal protective equipment (PPE) evaluations, selects the appropriate PPE for the project, lists the requirements in the Project-specific Health and Safety Plan (HASP), coordinates with the Project Manager to complete and certify the PPE program, and conducts project health and safety audits on the effectiveness of HS&E program.

4.4 Site Safety and Health Officer

The role of Site Safety and Health Officer is delegated to the Field Team Leader by the Project Manager and/or Health & Safety Officer to assist in implementing the project HASP. The Field Team Leader assists the Project Manager and/or Health & Safety Officer with the health and safety program, implements the PPE requirements described in the project HASP, and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

5.0 PROCEDURES

5.1 Pre-sampling Tasks

5.1.1 Planning Tasks

The Field Team Leader should work with the Project Manager to obtain historical information on which wells have historically had contaminants present, so that wells with the greatest concentrations may be sampled last to minimize potential cross contamination. Site background information including depth to water, well total depth, and water quality parameters from previous events (if available), should be obtained before the field sampling event to augment data quality and allow for verification of data consistency. Expected purge volumes should be estimated before field deployment such that proper pumps may be selected and purge water management may be planned.

5.1.2 Field Equipment Decontamination

Clean (and/or decontaminate) all equipment and materials used during groundwater sampling before use. Groundwater sampling equipment that typically requires decontamination before purging a well includes the water level or oil-water interface probe, water quality meters and probes, inside of flow-thru cells, and submersible pumps. Decontaminate submersible pumps between sampling at each well. Portable decontamination supplies (for example, decontamination water containers, spray bottles, Alconox, and deionized water containers) should be available during sampling so that all appropriate accessory equipment can be decontaminated in the field. Place used decontamination solutions in the purged well water containers and manage as investigation-derived waste. Refer to SOP Equipment Decontamination Procedures.

5.1.3 Field Equipment Calibration

Before going into the field, the Field Team Leader or designee should verify that field instruments are operating properly and that there are no obvious defects that could prevent proper operation. Calibrate all instruments before obtaining field data. Minimize field sampling time or data quality lost because of malfunctioning equipment through proper preventative maintenance, planning and by using adequate backup equipment, as necessary. Collect field measurements per the site-specific work plan and QAPP. Field measurements may include temperature, pH, turbidity, conductivity, dissolved oxygen, temperature, and oxidation-reduction potential (ORP). Refer to SOP Field Water Quality Measurements and Calibration.

5.1.4 Equipment Selection

Obtaining a representative sample is greatly dependant on the methodology and technology used to obtain the sample. Four methods for well sampling are addressed in this SOP, including the no-purge method, the low-flow method, the well-volume method, and low permeability formation method. Each method uses different sampling technology and equipment, as necessary to accommodate the appropriate well installation and construction, drilling and sampling methods (such as conventional or direct push system methods) employed, and project objectives. However, most sampling methods require physically withdrawing water from the aquifer by pumping or bailing.

The use of positive displacement pumps is highly encouraged to obtain the best sample and geochemical parameter data. These types of pumps include bladder, gear, and piston pumps. Bladder pumps are the simplest of these pumps (which makes them easiest to decontaminate) and have diameters as small as 0.625 inch, which can sample 3/4-inch inside diameter (ID) or greater wells. Submersible pumps are acceptable for most analytes; however, take care to select the proper submersible pump for the estimated sample depth so that the pump does not become overheated and alter the well chemistry.

For PFAS sampling, avoid using pumps, packers, transducers, tubing, liners, valves and wiring with polytetrafluoroethylene (PTFE), fluorinated ethylene propylene (FEP), ethylene tetrafluoroethylene (ETFE); Vitron; Niskin; GoFlo; Teflon; Teflon check balls; O-rings; compression fittings; and impellers.

Peristaltic pumps are generally not recommended for purging and sampling for the following analyses because of potential loss of the volatile fraction related to negative pressure gradients: VOCs, SVOCs, dissolved oxygen (DO), oxidation reduction potential (ORP), CO2, pH, and dissolved iron. If the depth to water is less than approximately 25 to 27 feet below ground surface (bgs), the monitoring well has low recovery, the sampled analyses do not include VOCs and SVOCs, and/or the well or direct push system method sample point is constructed such that no other pumping method is feasible or practical, peristaltic pumps may be used.

5.2 Pump Setup

Groundwater sample pumping equipment is setup slightly different depending on the method of sampling and the types of equipment employed. Different types of pumps have different requirements; therefore, pumping equipment should be set up according to the manufacture's recommendations. However, there are general similarities in equipment set up no matter what type of pump is used.

5.2.1 Bladder and Submersible Pumps

- Connect the pump to the sample intake-discharge tubing. Connect either the air pressure tubing (bladder pumps) or the pump power control cable (submersible pumps) to the pump. Tightly secure the tubing to the pump with one or two zip-tie fasteners. If the well is very deep, connect a separate deployment cable or line to the pump.

- Slowly and carefully lower the pump with tubing (and cable) into the well to the desired well depth. Lower the pump with the deployment cable (if used) or the most secure and largest diameter tubing or cable attached.

- Secure the pump and tubing to the top of the casing by the deployment cable (if used) or the most secure and largest diameter tubing or cable attached. Use with multiple zip-tie fasteners or a spring clamp if the pump is relatively light and the well is shallow.

- Connect the opposite end of the air pressure tubing or the pump power control cable to the pump controller. Both bladder and submersible pumps have some kind of pump controller.

- Clamp the other end of the sample intake-discharge tubing to the purge bucket in a way that discharging purge water will flow into the bucket.

- Connect the pump controller to either an air compressor (bladder pump) or directly to a generator (submersible pump) using a compressed air hose or extension power cord as appropriate.

- If a bladder pump and air compressor are used, connect the compressor to the generator using an extension power cord.

- Place the generator downwind of the sampling area a significant distance away (~20 feet or more). If a bladder pump is used, the generator should not be operating while a sample is being collected.

- Make sure that the generator supplying power to the pump is sufficiently fueled before purging and sampling to avoid power loss.

- In lieu of using a generator, obtain power from the field vehicle power supply (i.e., cigarette lighter). Be sure that the field vehicle is located downwind of the sample collection site.

5.2.2 Peristaltic Pumps

- Connect an appropriate length of sample intake tubing to one end of an approximately 8- to 12-inch piece of silicone tubing. Connect the other end of the silicone tubing to a 3- to 4-foot piece of pump discharge tubing. Try and minimize the length of sample tubing whenever possible to reduce sample turbulence and aeration during pumping.

- Slowly and carefully lower the sample intake tubing into the well to the desired sample intake depth.

- Secure the sample intake tubing to the top of the casing using multiple zip-tie fasteners or a spring clamp.

- Insert the 8- to 12-inch silicone tubing section into the peristaltic pump head and lock the tubing within the pump head.

- Clamp the other end of the discharge tubing to the purge bucket in a way that discharging purge water will flow into the bucket.

- Connect the peristaltic pump directly to the generator (or battery if available) using an extension power cord.

- Place the generator downwind of the sampling area a significant distance away (~20 feet or more). If a battery is available, it should used while a sample is being collected.

- Make sure that the generator supplying power to the pump is sufficiently fueled before purging and sampling to avoid power loss.

- In lieu of using a generator or battery, obtain power from the field vehicle power supply (i.e., cigarette lighter). Be sure that the field vehicle is located downwind of the sample collection site.

5.3 Well Purging

Most groundwater methods (except no-purge sampling methods) require purging of the well before groundwater sampling. The purpose of well purging is to remove stagnant water from the well and obtain a water sample representative of the aquifer being sampled with a minimum of disturbance to the water column. Using the low-flow or the well-volume approach methodology, purge the well until three well casing volumes are purged, or until the well is purged dry. Do not collect a representative groundwater sample until the groundwater level has recovered at least 90%. Containerize purge water and manage as investigation derived waste.

5.4 Well Stabilization

Well stabilization is typically conducted to help verify that the groundwater sample is representative of aquifer conditions. A well is considered 'stabilized' after the groundwater stabilization parameter measurements are within acceptable limits for three consecutive readings. The stabilization parameters should be monitored at a frequency of five minute intervals or greater unless there are other project requirements. The pump's flow rate must be able to 'turn over' at least one flow-through cell volume between measurements (e.g., flow rate = 50 mL/min, flow-through cell = 250 mL, monitor every five minutes; every 10 minutes with a 500 mL flow-through cell). Well stabilization parameters may vary by project or regulatory agency, but at a minimum typically include pH, conductivity (temperature corrected electrical conductivity), oxidation-reduction potential (ORP), turbidity, and dissolved oxygen (DO). Temperature should also be measured and recorded, but will not be used to determine stability. Turbidity and DO usually require the longest time for stabilization.

Most wells should stabilize within two hours. Prior to going on-site, review previous low-flow groundwater sampling logs from the site (if available) and discuss with the project or task manager what should be done if wells take longer than two hours to stabilize (e.g., collect a pair of filtered/unfiltered samples for metals analysis when turbidity > 5 NTU). Initially, the field technician should verify that the field equipment is functioning properly and that operator error is not an issue. If the checks produce no new insight, one of three optional courses of action may be taken: 1) continue purging until stabilization is achieved, 2) discontinue purging, do not collect any samples, and record in the field log data sheets or field notebook and in the Field Sampling Report that stabilization could not be achieved (documentation must describe attempts to achieve stabilization), or 3) discontinue purging, collect samples and clearly document in the field log data sheets or field notebook and in the Field Sampling Report that stabilization was not achieved.

5.5 Preparation for Groundwater Sampling

The following procedures should be performed at each well in preparation for groundwater sampling:

- Wear PPE and take any other precautions as specified in the site-specific HASP and work plan.
- Monitor the ambient air and any vapors within or near a well while opening the well and during sampling according to SOP Organic Vapor Monitoring and Air Monitoring. Check the area around the well for organic vapors (background reading) using a photoionization detector (PID). Open the well cap and check for organic vapors in the well casing and breathing zone.
- Inspect the condition any permanent monitoring wells for any unusual site or well conditions. Record the condition of the well monument, concrete well pad, protective posts (if present), or other well condition around the well on the Groundwater Services Field Log. Any deficiencies encountered should be reported to the Project Manager as soon as possible.
- Measure the depth of the static water level and the total well depth with a water level (or oil-water indicator probe if contamination is suspected) to the nearest 0.01 foot from the measurement reference point on the well casing pipe Record information on the Groundwater Services Field Log. Refer to SOP Measuring Water levels, Immiscible layers, and total depth in wells.
- If previous total well depth information is available from either well construction or previous sampling events, compare the current total well depth with the previously measured total well depth and note any differences greater than 0.5 foot on the Groundwater Services Field Log.

5.6 Groundwater Sampling Procedures

5.6.1 No-Purge Sampling

No-purge groundwater sampling is a method for obtaining representative groundwater samples under natural flow conditions without purging the well beforehand. This procedure is directed primarily at monitoring wells that have a screen, or an open interval of 10 feet or less. This method may be appropriate for wells that are unconfined and screened through the water table, do not contain a non-aqueous phase liquid, and have been previously sampled using conventional sampling techniques to provide data for comparison.

Advantages to this method include that less time is needed for sampling and elimination of purge water management and disposal costs. Samples obtained using this procedure are also suitable for the analysis of groundwater contaminants such as PFAS, VOCs, SVOCs, herbicides, pesticides, PCBs, metals, and naturally occurring compounds. Disadvantages include potentially low-biased results for volatile and redox-sensitive parameters if groundwater is stagnant in the well and in contact with air.

No-purge groundwater sampling can be conducted using either bailers or pumps and is commonly used for direct push system groundwater sampling. No-purge groundwater sampling is expected when using a direct push screen point sampler and is potentially used during sampling of direct push system well points. No-purge groundwater sampling should be conducted as follows using bailers and pumps:

<u>No-Purge Method with a Bailer</u>

- Measure the water level within the well using a water level meter and record readings on the Groundwater Services Field Log.
- Securely connect a bottom-filling bailer to a retrieval line or cord. The bailer line and any leader used that comes in contact with the water should be constructed of HDPE or new silicon cord. Fit reusable bailers with a new bailer line for each well sampled; the bailer and line may be handled only by personnel wearing clean disposable gloves. Prevent the new bailing line from contacting the outside of the well, equipment, and clothing before or during sampling.

- Very slowly, lower the bailer down the well and below the water table, taking care to not disturb the water column or stir up sediment in the bottom of the well as the bailer fills with water from the bottom.

- Obtain samples as close as possible to the water table, unless analysis indicates that contamination is at a different depth.

- Lift the bailer slowly and transfer, with minimum disturbance and agitation, approximately 1 to 2 pints of water into a decontaminated sample cell. If applicable, measure the pH, temperature, conductivity, DO, ORP, and turbidity, and record readings on the Groundwater Services Field Log.

- Slowly transfer the remaining water in the bailer into analytical sample containers with a minimum of disturbance and agitation to prevent loss of volatile compounds.

<u>No-Purge Method with a Pump</u>

- Measure an initial water level within the well using a water level meter and record on the Groundwater Services Field Log.

- Set up the sampling equipment and pump according to the manufacturer's instructions.

- Very slowly, lower the pump or pump intake tubing down the well to the desired sample intake depth.

- Start the pump on the lowest setting. Adjust the flow slowly until water begins to discharge. Continue pumping and begin low-flow sampling.

- First fill approximately 1 to 2 pints of water into a decontaminated sample cell; if applicable, measure the pH, temperature, conductivity, DO, ORP, and turbidity, and record readings on the Groundwater Services Field Log.

- Next, slowly fill the required analytical sample containers with a groundwater sample, taking care to minimize disturbance and agitation of the sample and prevent loss of volatile compounds.

5.6.2 Low-flow Sampling

Low-flow sampling is a method of collecting samples from a well that does not require purging large volumes of water from the well and relies on natural flow of formation water through the well. Using this method, the water flowing into and through the well is representative of the groundwater within the formation surrounding the screen and thus representative groundwater samples can be obtained by slowly pumping.

"Low flow" refers to the velocity with which water enters the pump intake and is imparted during pumping to the formation pore water adjacent to the well screen. Low-flow does not necessarily refer to the flow rate of water discharged by a pump at the surface, which can be affected by valves, connections, and discharge tubing restrictions. However, typical low-flow surface discharge rates should be limited to less than 0.5 liters per minute (L/min) (0.13 gal/min). Low-flow sampling methods emphasize minimal stress to the groundwater by low water-level drawdown and low pumping rates in order to collect samples with minimal alterations to water chemistry This is the preferred method for natural attenuation monitoring, which requires careful measurements of DO and oxidation-reduction sensitive analytes, such as iron and manganese. Low-flow sampling is the most recommended sampling method for collecting groundwater samples and should be used whenever possible and practical, including at conventional, permanent wells, micro-wells, and at direct push system well points if possible. Wells with low recharge rates may require special pumps capable of very-low-flow rates, such as bladder or peristaltic pumps. If the well is dewatered during purging, then it should be sampled as discussed below for low-permeability formations.

Low-flow sampling is typically conducted using positive displacement pumps, submersible pumps, or peristaltic pumps. Low-flow groundwater sampling should be conducted as follows:

<u>Setup</u>

- Measure an initial water level within the well using a water level meter and record on the Groundwater Services Field Log.

- Set up the sampling equipment and pump apparatus.

- Connect a short discharge tube to the effluent connector at the top of the flow-through cell and run the other end of the discharge tube into a 5-gallon graduated purge water discharge bucket.
- Very slowly lower the pump or pump intake tubing down the well to the desired sample intake depth (preferably within the screened interval).
- Run the aboveground end of the intake tube from the pump directly into the 5-gallon purge water bucket.

Purging

- Turn on the pump and start to pump on the lowest setting. Adjust the flow slowly until water begins to discharge. Slowly pump until the purge water begins to visually clear up. A continuous effort should be made to keep air bubbles and significant air volume to a minimum.
- Continue pumping and begin low-flow purging the monitoring well at a flow rate of approximately 1 liter (0.25 gallons) every 3 minutes or 0.1 gal/min, such that the pumping rate does not lower the water level more than 0.3 foot. Initially monitor the drawdown frequently, to establish a steady pumping rate that minimizes drawdown. If the minimal drawdown exceeds 0.3 foot, but remains stable, continue purging.
- Purge the water into a 5-gallon graduated purge water discharge bucket. Observe the purge rate and cumulative total discharge volume based on the graduated marks on the purge bucket. Empty the purge bucket into an investigation derived waste drum.
- Groundwater parameter measurements should be monitored and recorded on the Groundwater Services Field Log.
- Following purging, sampling may begin once the well has stabilized.
- Collect groundwater samples without altering the flow rate or extensively interrupting the flow. While sampling, discharge any groundwater pumped

between filling sample containers in a 5-gallon groundwater purge bucket. Dispose of this water along with other purge water accumulated.

- Begin filling the laboratory-supplied analytical sample containers in the order of volatility as previously described in Section 3.0. Fill the analytical sample containers as discussed in Section 5.6 until complete.

- Record the sample ID, date and time, sampler, analytes, and other sample information on the sample bottle labels, the sample chain-of-custody, and on the Groundwater Services Field Log.

5.6.3 Well-Volume Approach

The well-volume approach method is based on purging three to six well volumes before sampling. This method can be conducted with either a bailer or pump. This method is also the default method used during low-flow sampling if groundwater parameter stabilization cannot be achieved.

Well-volume approach sampling should be conducted as follows:

- Measure the water level within well using a water level meter. Record the depth to water on the Groundwater Services Field Log.

- Securely connect a bottom-filling bailer to a retrieval line or cord or setup the sampling equipment and pump according to the manufacturer's instructions.

- Very slowly lower the bailer, pump, or pump intake tubing to the desired sample intake depth.

- Begin bailing or pumping the well, starting at low rate and then increasing the flow.

- If applicable, routinely measure and record the DO, ORP, conductivity, pH, turbidity, temperature, and current groundwater level throughout the purge and record on the Groundwater Services Field Log.

- After three to six well casing volumes have been purged, if applicable, record the final parameter measurements, final water level, total purge volume, and any other purge observations on the Groundwater Services Field Log.

- Begin filling the laboratory-supplied analytical sample containers in the order of volatility as previously described in Section 3.0. Fill the analytical sample containers as discussed in Section 5.6 until complete. Water should be transferred to the sample containers with minimum of disturbance and agitation.

- Record the sample ID, date and time, sampler, analytes, and other sample information on the sample bottle labels, the sample chain-of-custody, and on the Groundwater Services Field Log.

5.6.4 Low-Permeability Formations

If a well is screened in a low permeability zone (such as silts and clay layers), natural recharge flow into the well may be so low that there may be no way to avoid pumping or bailing the well dry. Low-flow purging and sampling are particularly useful for wells that purge dry or take 1 hour or longer to recharge. If a well is purged dry, a minimum of two hours between purging and sampling should be observed and groundwater samples should not be collected until the well has recharged to approximately 90% of its pre-purge volume. For this method, a bailer may be used, since many sampling pumps have tubing capacities that would exceed the water volume in the well and cause it to be pumped dry again. A very-low-flow device, such as a peristaltic pump, can also be used if the groundwater depth is less than approximately 25 feet.

The following procedures apply for purging low-permeability formations, where it is not possible to obtain stabilization of field parameter data:

- Purge the well dry and allow the well to recover until at least one of the following is met:

    - A minimum of 2 hours has elapsed since purging.

    - There is sufficient water volume present to obtain a water sample.

- The water in the well has recovered to 80% of the pre-pumping elevation.

- Begin filling the laboratory-supplied analytical sample containers in the order of volatility as previously described in Section 3.0. Fill the analytical sample containers as discussed in Section 5.7 until complete. Water should be transferred to the sample containers with minimum of disturbance and agitation.

- Record the sample ID, date and time, sampler, analytes, and other sample information on the sample bottle labels, the sample chain-of-custody, and on the Groundwater Services Field Log.

5.7 Sampling Collection

Groundwater samples should be collected as follows:

- Fill sample containers so that the sample is allowed to flow gently along the inside wall of the container. Take care to minimize turbulence, agitation, and aeration of the sample.

- Minimize the headspace in the sample container by filling the sample jar until a positive meniscus is present.

- Quickly and adequately seal the containers.

- Clean rims before tightening lids.

- Record the sample ID, date and time, sampler, analytes, and other sample information on the sample bottle labels, the sample chain-of-custody, and on the Groundwater Services Field Log.

- Preserve containers. At a minimum, immediately cool the samples to 4±2°C and maintain this temperature through delivery to laboratory until the samples are analyzed.

6.0 RECORDS

Record details regarding the pumping method, parameter readings, purge volumes, and samples collected on the Groundwater Services Field Log.

C.T. MALE ASSOCIATES ENGINEERING, SURVEYING, ARCHITECTURE, LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

MEASURING STATIC WATER LEVEL, IMMISCIBLE LAYERS (DNAPL and LNAPL), and TOTAL WELL DEPTH IN WATER

January26, 2018

Print	Technical Reviewer	Signature	Date
Print	QA Manager	Signature	Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: MEASURING STATIC WATER LEVEL, IMMISCIBLE LAYERS (DNAPL and LNAPL), and TOTAL WELL DEPTH IN WATER

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to describe the procedure for measuring static water level, light non-aqueous phase liquid (LNAPL) level, dense non-aqueous phase liquid (DNAPL) level, and total well depth in a groundwater well.

2.0 SCOPE

This SOP applies to all C.T. Male Associates personnel and subcontractors engaged in measuring static water level, light non-aqueous phase liquid (LNAPL) level, dense non-aqueous phase liquid (DNAPL) level, and total well depth in a groundwater well. This SOP focuses on the measuring static water level tasks and should be used in conjunction with other applicable project SOPs, including the following:

- SOP: Note Taking and Field Logs.
- SOP: Organic Vapor Monitoring and Air Monitoring.
- SOP: Equipment Decontamination Procedures.

3.0 RESPONSIBILITIES

3.1 Project Manager

The Project Manager will develop the site specific scope of work based upon the needs of the project. These work plans can include a site specific work plan, Health and Safety plan, community air monitoring plan, field sampling plan, and a QAPP.

3.2 Field Team Leader

The Field Team Leader will develop site specific or direct the water level measuring procedures to be used and direct field technicians in the proper procedures in the SOPs. The Field Team Leader shall know the requirements for water level measurements, measuring immiscible layers, and total well depth and maintain adequate documentation of the sampling process.

3.3 Field Technician

Experienced Field Technicians are responsible for the proper measurement and documentation of water levels, immiscible (does not dissolve in water) layers (DNAPL and LNAPL), and total water depth. They are also responsible for maintaining the equipment in working order and aid in troubleshooting equipment issues.

3.4 Health & Safety Officer

The Health & Safety Officer oversees site-specific health, safety, and environment (HS&E) protocols and overall compliance with project HS&E requirements. The Health and Safety Officer conducts personal protective equipment (PPE) evaluations, selects the appropriate PPE, lists the requirements in the Project-specific Health and Safety Plan (HASP), coordinates with the Project Manager and Field Manager to certify the PPE, and conducts project health and safety audits to evaluate the effectiveness of the HS&E program.

3.5 Site Safety and Health Officer

The role of Site Safety and Health Officer is delegated to the Field Team Leader by the Project Manager to assist in implementing the project HASP. The Project Manager and/or Health & Safety Officer assists the Field Team Leader with the health and safety program, implements the PPE requirements described in the project HASP and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

4.0 EQUIPMENT, REAGENTS, and SUPPLIES

The following items are applicable to this SOP:

- Electronic water level indicator
- Personnel protective equipment
- Oil/water interface probe

5.0 PROCEDURE

This section below describes the procedures and equipment used for measuring static water level, light non-aqueous phase liquid (LNAPL) level, dense non-aqueous phase liquid (DNAPL) level, product thickness, and total well depth in a groundwater well.

5.1 Calibration

The electronic water level indicator and oil/water interface probe will be tested prior to use to ensure they are functioning properly. Instruments that are not properly functioning should be tagged for inspection by the Field Team Leader or sent to the manufacturer for repair. AA or 9V batteries are normally used for a power source; spare batteries should be kept on hand.

5.2 Measurements

The water level, total depth, and immiscible layers are measured prior to well purging or sampling. For new wells, measurements should not be taken until the water table has stabilized—preferably 24 hours after well installation and/or development. Decontaminate reusable equipment per CT Male's SOP 'Equipment Decontamination Procedures'.

5.2.1 Water Level

Groundwater levels are usually measured at all wells on the same day and before purging any wells. Typically, the water level is measured with an electronic water level indicator probe that is lowered into the well. An oil/water interface probe may also be used if oil layers may be encountered (see section below). The electronic water level indicator consists of a spool of marked cable, a probe attached to the end, and an indicator. When the probe comes in contact with the water, the circuit is closed, and a meter light and/or tone signals the contact.

To ensure consistent results, groundwater level measurements are made in reference to an established point (e.g., top of well casing, top of riser pipe). Water level measurements are made from the high side of the riser pipe or well casing unless otherwise specified. If the top of the riser is apparently level, take the readings at the north side of the riser. The depth to water is indicated by the markings on the cable. Read the water level directly off of the tape. The groundwater level should be measured three times consecutively (without completely winding up the water level indicator probe) to help ensure accuracy. Record the water level to the nearest 0.01 foot on the appropriate field sheets.

5.2.2 Total Well Depth

Determine the total well depth by lowering the water level indicator probe (or equivalent) into the well. After feeling the bottom of the well, raise and lower the water level indicator probe three times to ensure the bottom is being felt. Record the total well depth to the nearest 0.01 foot on the appropriate field sheets.

5.2.3 Immiscible Layer Thickness – Oil/Water Interface Probe

An immiscible layer may consist of LNAPL or DNAPL. LNAPL has a specific gravity less than water and is typically at the water surface of a well. DNAPL has a specific gravity greater than water and tends to accumulate at the bottom of a well. An oil/water interface probe is used to measure the layer and consists of a flat measuring tape with a probe attached to the end, an indicator, and a grounding mechanism. After grounding the instrument to a metal source (well casing), determine the product thickness by slowly lowering the probe into the well.

5.2.3.1 LNAPL

If LNAPL (floating product) is present, a steady tone will activate. If there is no floating product, an intermittent tone will activate indicating the air/water interface (water level). Raise and lower the probe gently to clear product from the conductivity sensor and to determine the exact upper level of the floating product. The air/product level should be measured three times consecutively (without completely winding up the product level interface probe) to help ensure accuracy. Read the level of the air/product interface from the measuring tape and record to the nearest 0.01 foot.

Continue lowering the probe through the product until the original signal changes to an intermittent tone. This signals the contact of the water level. Raise and lower the probe gently to clear product from the conductivity sensor and to determine the exact lower level of the floating product. The product/water interface should be measured three times consecutively (without completely winding up the product level interface probe) to help ensure accuracy. Read the level of the product/water interface from the measuring tape and record to the nearest 0.01 foot.

5.2.3.2 DNAPL

If there isn't any LNAPL, an intermittent tone will activate when the water level is reached. Continue lowering the probe until a steady tone is activated indicating the upper level of the product layer. Raise and lower the probe gently to clear product from the conductivity sensor and to determine the exact upper level of the product. The water/product level contact should be measured three times consecutively (without completely winding up the product level indicator probe) to help ensure accuracy. Read the level of the water/product interface from the measuring tape and record to the nearest 0.01 foot.

Continue lowering the probe through the product until coming into contact with the bottom of the well. Raise and lower the probe gently to ensure the bottom is being felt. The bottom of the well should be measured three times consecutively (without completely winding up the product level interface probe) to help ensure accuracy. Read the depth to the bottom of the well from the measuring tape and record to the nearest 0.01 foot.

5.3 Data Reduction/Calculations

The water column in the well is calculated by subtracting the measured water level from the total well depth.

The difference in the LNAPL upper level and the LNAPL lower level is the LNAPL thickness. The difference in the DNAPL upper level and the bottom of well is the DNAPL thickness.

5.4 Disposal

Waste generated by this process will be disposed of in accordance with Federal, State and Local regulations and CT Male's SOP 'Investigative Derived Waste'. Where reasonably feasible, technological changes have been implemented to minimize the potential for environmental pollution.

6.0 RECORDS

The field technician(s) will document the water level, total depth, or product level measurements on the water level data sheet and the field log data sheet for each well, if required.

Examples of common field documentation are available in CT Male's "Note taking and Field Logs". Field documentation specific to this SOP are listed below:

- Field Sampling Report
- Field Log Data Sheet
- Water Level Data Sheet

Other CT Male SOP subjects referenced within this SOP: field water quality measurements and groundwater sampling.

C.T. MALE ASSOCIATES ENGINEERING,
SURVEYING, ARCHITECTURE,
LANDSCAPE ARCHITECTURE &
GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

FIELD WATER QUALITY MEASUREMENTS and CALIBRATION

March 6, 2020

Print	Technical Reviewer	Signature	Date
Print	QA Manager	Signature	Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: FIELD WATER QUALITY MEASUREMENTS and CALIBRATION

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to describe general methods for calibrating, maintaining, and operating water quality meters and probes used for groundwater sampling. This technical procedure provides general guidelines; however, the manufacturer's manual describing calibration and standard operating procedures for each field instrument should be referred to for complete calibration and operating instructions

2.0 SCOPE

This SOP applies to all C.T. Male, sub consultants and subcontractors engaged in ground water sampling activities. Other applicable project SOPs, including the following:

- SOP: Note Taking and Field Logs.
- SOP: Organic Vapor Monitoring and Air Monitoring.
- SOP: Groundwater Sampling.
- SOP: Equipment Decontamination Procedures.
- SOP: Collection of Quality Control Samples.
- SOP: Documentation on a Chain-of-Custody.
- SOP: Domestic Transport of Samples to Laboratories in USA.

3.0 GENERAL

Water quality meters are typically used in the field to measure the following parameters:

- Dissolved oxygen (DO)
- Oxidation-reduction potential (ORP)
- Conductivity
- pH
- Turbidity
- Temperature

Instructions for maintenance and operation of all these field instruments are described in the operation manuals provided by the manufacturer.

4.0 RESPONSIBILITIES

4.1 Project Manager

The Project Manager verifies that monitoring well and piezometer installation procedures comply with this SOP and the requirements of the enforcing agencies. Alternate installation requirements and procedures required by local agencies or other modifications must be documented and approved by the Project Manager.

4.2 Health & Safety Officer

The Health & Safety Officer oversees site-specific health, safety, and environment (HS&E) protocols and overall compliance with project HS&E requirements. The Health and Safety Officer conducts personal protective equipment (PPE) evaluations, selects the appropriate PPE, lists the requirements in the Project-specific Health and Safety Plan (HASP), coordinates with the Project Manager and Field Manager to certify the PPE, and conducts project health and safety audits to evaluate the effectiveness of the HS&E program.

4.3 Site Safety and Health Officer

The role of Site Safety and Health Officer is delegated to the Field Team Leader by the Project Manager to assist in implementing the project HASP. The Project Manager and/or Health & Safety Officer assists the Field Team Leader with the health and safety program, implements the PPE requirements described in the project HASP and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

4.4 Field Team Leader

The Field Team Leader will know how to use the field instruments and conduct the daily instrument calibrations. They will also maintain adequate documentation of the calibration process and measurements taken while using the instruments.

5.0 PROCEDURES

The following sections describe typical materials, equipment, and procedures for soil vapor probe installation and soil vapor sampling.

5.1 Instruments and Supplies

Water quality meters and instruments vary in their manufacturer and model number. Below is a list of commonly used meters and instruments, and other related supplies that can be used for field water quality measurements:

- YSI 556 MPS Multi-parameter Instrument
- YSI 650 MDS Multi-parameter datalogger
- YSI 6-Series sonde or similar multiparameter probe
- YSI 5083 Flow Cell or similar flow-thru cell
- Hach 2100P Portable Turbidimeter
- Data transfer connector cables
- Discharge hoses (two)
- Fittings to attach sample tubing to flow through cell (barbs and master flex pump tubing, PFAS free)
- Distilled water
- Calibration solutions and buffers (ORP, conductivity, pH, and turbidity)

5.2 Calibration

Calibrate all instruments for all field parameters daily before collecting water quality data, according to the manufacturer calibration specifications developed for the instrument being calibrated. In addition, if there are anomalous readings during sample collection, stop sample collection and re-calibrate, if possible. Document field calibration in the Field Logs. Section 5.2.4 has a table of calibration acceptance limits for DO, pH, conductivity, and ORP.

If a field instrument will not calibrate, perform troubleshooting as described in the manufacturer's manual. Check that the calibration standards have not expired. If the issue cannot be resolved, use a backup instrument. If one is not available, consult with the Project Manager on whether data collection should continue and on any other corrective actions to be taken. Flag any data recorded from a meter with calibration problems on the Groundwater Purge and Sampling Field Datasheet, and other appropriate Field Logs.

5.2.1 pH Calibration (2-point or 3-point calibration)

Calibrate all instruments recording pH daily, using at minimum a 2-point calibration method. A 2-point calibration uses only two pH buffer calibration solutions (typically pH 7 and pH 10) and is valuable only if the water being monitored is known to be either basic or acidic. If the pH is known to vary between 5.5 and 7, a 2-point calibration with a pH 7 and pH 4 buffer solutions is recommended. When starting the calibration process, calibrate with buffer pH 7 first regardless if performing a 2 or 3 point calibration.

Follow the recommended manufacturer pH calibration instructions for additional detailed instruction for the instrument being used. Enter all pH calibration values based on the appropriate temperature as labeled on the pH calibration solutions used. Record the final pH calibration reading, with the corresponding temperature, in the Field Logs.

If the pH of water being measured is unknown, a 3-point calibration method is preferred. Using this calibration, the pH sensor is calibrated with a pH 7 buffer and two additional buffers (such as pH 4 and pH 10). The 3-point calibration method accounts for the full pH range and assures maximum accuracy when the pH of the media to be monitored cannot be anticipated. Typically, the procedure for a 3-point calibration is the same as for a 2-point calibration, but the instrument may prompt you to select a third pH buffer.

pH Buffer Calibration Check Acceptance limits:

Record the pH millivolts for each calibration point. The acceptable mV outputs for each buffer are shown below. If used standard units, see section 5.2.4 for a table of calibration acceptance limits for pH using standard units:

pH 7 mV value = 0 mV +/- 50 mV
pH 4 mV value = +165 to +180 from 7 buffer mV value
pH 10 mV value = -165 to -180 from 7 buffer mV value

- A value of +50 or -50 mVs in buffer 7 does not indicate a bad sensor.
- The mV span between pH 4 and 7 and 7 and 10 mV values should be ≈ 165 to 180 mV. 177 is the ideal distance. The slope can be 55 to 60 mV per pH unit with an ideal of 59 mV per pH unit.

- If the mV span between pH 4 and 7 or 7 and 10 drops below 160, clean the sensor and try to recalibrate.

5.2.2 Conductivity Calibration

Perform daily calibration for conductivity according to the recommended manufacturer's calibration instructions. Conductivity is typically entered as milliSiemens per centimeter (mS/cm) at 25 degrees Celsius (°C). Conductivity standard solutions have values such as 1.413 mS/cm or 1.409 mS/cm; which is equivalent to 1413 or 1409 microSiemens per centimeter (µS/cm); and 1413 or 1409 µmho/cm. The meter is calibrated by entering the conductivity of the solution being monitored and the instrument will calibrate, and the instruments screen will indicate if the calibration has been accepted. Record the final conductivity calibration reading, with the corresponding temperature, on the Field Calibration Sheet. See section 5.2.4 for a table of calibration acceptance limits for conductivity.

5.2.3 Calibration Check of the Oxidation Reduction Potential (ORP) Probe

A calibration check of the ORP probe can be performed by placing it into a Zobell™ solution that is within approximately 10°C of the expected groundwater temperature, or as close to groundwater temperature as practical. This is not a calibration solution, but a check that the probe is working properly. Zobell™ solution has a short shelf life, typically lasting only 3 months. If expired, make or obtain new solution before measurement. The Zobell™ reading is dependent upon temperature and should fall within ± 10 mV of the ORP reading shown on the meter. The table with the appropriate temperature and Zobell Solutions Value in mV will be listed in the field instruments operation manual. Record the Zobell™ solution ORP reading on the Field Log. See section 5.2.4 for a table of calibration acceptance limits for OPR probe.

5.2.4 Calibration Check acceptance limits for DO, pH, Conductivity, ORP

Below is a table of calibration acceptance limits for each parameter listed.

Sensor	Calibration Solution Value	Calibration Check Acceptance Limits
Dissolved Oxygen (%)	Assumed 100% air saturation based on barometric pressure and/or stabilized reading at time of calibration	± 0.5 mg/L of saturated value
Dissolved Oxygen (mg/L)	Solution of known value (0-20 mg/L)	± 0.5 mg/L of saturated value
Conductivity (mS/cm)	1.409	± 10% of standard or 20 uS/cm, whichever is greater
pH (Standard Units)	4.00 (if used)	± 0.3 Standard Units
pH (Standard Units)	7.00	± 0.3 Standard Units
pH (Standard Units)	10.00 (if used)	± 0.3 Standard Units
ORP (mV)	Zobell Solution (231.0 mV @ 25° C	± 10 mV for temperature based calculation

5.2.5 Turbidity Calibration (4-point calibration)

Perform routine calibration of the turbidity instrument according to the recommended manufacturer's calibration instructions. Turbidity instruments should be calibrated using a 4-point calibration method; typical calibration standards used are <0.1 NTU, 20 NTU, 100 NTU, and 800 NTU StablCal standard or formazin standard. This 4-point calibration method accounts for turbidity over a wide range from 0 to 1000 NTU. Record the calibration standard value and the calibrated turbidity value of each calibration point (< 0.1, 20, 100, and 800 NTU) on the Field Calibration Sheet.

5.3 Water Quality Instrument Field Measurement and Usage

The general procedures for measuring groundwater quality parameters and flow-through cell setup are as follows:

1. Before taking any field measurements, calibrate instruments according to the manufacturer's procedures and record the calibration on the Field Calibration Sheet.

2. Perform a saturated air check of the DO probe by placing a wet piece of cloth in the cap that covers the probe. Check the dissolved oxygen reading against the theoretical value of saturated oxygen at different elevations. If the instrument is not reading in the proper range, it should be recalibrated, or the dissolved oxygen probe membrane should be replaced.

3. Secure the multi-meter sonde (or analyte specific probes) to the flow-through cell. Connect a short discharge tube to the effluent connector at the top of the flow-through cell and run the other end of the discharge tube into a 5-gallon purge water capture bucket.

4. Place the tube from the pump directly into the 5-gallon purge water bucket and start to purge (pump) for approximately 1 to 2 minutes or until the purge water begins to visually clear up. The intent is to limit any initially high turbidity water from filling and settling in the flow-through cell.

5. Once the turbidity has stabilized, briefly turn off the pump and secure the tube from the pump to the influent connector at the bottom of the flow-through cell. Turn on the pump again and then allow the flow-through cell to completely fill with water. Effort should be made to keep air bubbles from collecting in the flow-through cell. To remove any collected air from the cell, disconnect the probes from the cell while pumping until all the air escapes and then reconnect the probes.

6. Continue pumping and begin low-flow purging of the monitoring well at a flow rate of approximately 1 liter (0.25 gallons) every 3 minutes or 0.1 gallon per minute (gal/min).

7. Routinely measure and record the DO, ORP, conductivity, pH, turbidity, temperature, and current groundwater level throughout the purge at approximately every 3- to 5-minute routine measured interval. A minimum of three of these parameters should be monitored and recorded. Record the purge groundwater parameters on the Field Log.

8. Continue to measure and record the groundwater parameters and current groundwater level until the parameters stabilize according to the following stabilization criteria, or until 3 well casing volumes are purged. Groundwater parameters are considered stable after purging if three successive readings are within:

- ± 0.5 °C temperature
- ± 0.1 pH
- ± 5% conductivity
- ± 10 millivolt (mV) ORP

- ± 10% DO or three consecutive readings less than or equal to 0.5 mg/L apart
- ± 10% turbidity or three consecutive readings ≤ 5 nephelometric turbidity units (NTUs) apart

9. Note the following before and during water quality measurement and groundwater purging:

- Obtain the typical ranges for the water quality parameters at a well (or site) prior to measurement and purging, if possible, and bring these values to the field for reference during sampling. Water quality parameter ranges can often be obtained from historical groundwater purging and sampling events. These previous values should be used as clues to determine if an instrument is reading correctly and/or is drifting during water quality measurement.
- ORP and DO measurements should always correlate with each other. Generally, ORP should be negative whenever DO is near or less than 1 milligram per liter(mg/L); likewise, DO should be greater than 1 mg/L if ORP is positive.
- DO measurement should always be positive and range between 0 and 14.62 mg/L.
- ORP measurements should range between -500 mV and 275 mV.
- The pH of environmental samples will typically range from 6 to 8 pH units.
- When measuring turbidity, be sure to clear any moisture or dust off of the turbidity sample cell and emplace the sample cell and light cover completely and securely. Also, be sure to put the turbidity instrument out of direct sunlight (it should be shadowed), or else light interference may provide false readings.

10. When parameters have stabilized, record final measurements and collect samples as specified in SOP Groundwater Sampling Procedures.

5.4 Storage

Perform the following tasks each day upon conclusion of using any water quality measurement instrument:

1. Decontaminate the instrument(s): rinsing with distilled water, a dilute solution of Alconox or Liquinox (or similar), and rinsing with distilled water as specified in SOP Decontamination of Sampling Equipment.

2. Moisten protective caps that are made to protect the tips of probes or sensors with fresh water and replacing them back to their probes or sensors for storage while the instrument is not in use.

3. Recharge or replace batteries on any instruments and meters to verify full battery charge for next use.

4. Store the instrument or meter in the protective case provided with the instrument or meter.

5. Take any additional storage and maintenance steps recommended by the manufacturer as specified in the instrument(s) operations and maintenance manual.

5.5 Service and Maintenance

Perform service and maintenance according to manufacturer's instructions.

6.0 RECORDS

Record all instrument calibration information on a Field Calibration Datasheet or Log. Calibration information that should be recorded into the field log and field book for each instrument calibrated includes the brand and model number, unique identification number, type, lot number, expiration date of any calibration solutions, and results of the calibration. Record all field data collected during groundwater sampling on a Groundwater field logs.

C.T. MALE ASSOCIATES ENGINEERING, SURVEYING, ARCHITECTURE, LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

CHAIN OF CUSTODY PROCEDURES

March 6, 2020

Print	Technical Reviewer	Signature	Date
Print	QA Manager	Signature	Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: CHAIN OF CUSTODY PROCEDSURES

1.0 PURPOSE

The purpose of this procedure is to describe how to properly document information on a Chain-of- Custody (COC) form. A COC is a legally binding document that identifies sample identification, analyses required, and shows traceable possession of samples from the time they are obtained until they are introduced as evidence in legal proceedings. CT Male Associates (CT Male) personnel will complete the information on the COC at the time he/she collects samples and the COC accompanies the samples during transport to a storage facility or to the laboratory for analysis.

The recommended procedures in this SOP should be followed unless conditions make it impractical or inappropriate to do so. Modifications should be noted in the applicable documentation and communicated to appropriate personnel.

2.0 SCOPE

This procedure applies to all C.T. Male personnel engaged in the collection of samples from several Site media (water, soil, etc.) for laboratory analysis per an accepted New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) or Environmental Protection Agency (EPA) laboratory method.

3.0 GENERAL

As part of this SOP, there are limitations on the COC procedures, and they are as follows:

- The SOP does not apply to sample aliquots that are only collected for field screening purposes.
- The SOP does not apply to samples remaining on-site.

4.0 RESPONSIBILITIES

4.1 Project Manager

Field sampling personnel, in conjunction with the Project Manager are responsible for overall compliance with this technical procedure. The Project Manager, or designee, is responsible for verifying that the data entries made on the COC comply with this SOP.

The Project Manager will also provide copies of COC to the Quality Assurance Officer for general review.

4.2 Site Personnel

Experienced Field Personnel are responsible for the proper sample identification and for accurate and complete documentation on the COC. Site personnel who make COC entries are required to read this procedure before engaging in this activity. The Project Manager, or designee, will inform personnel who will be responsible for COC procedures.

5.0 PROCEDURE

The COC is the most important sampling document; it must be filled out accurately and completely every time a sample is collected. The COC will be supplied by the laboratory that will be performing the analytical analysis on the environmental media (soil, water, drinking water, sediment, etc). Depending on the laboratory, the COC may be available in electronic format that will allow for certain fields on the COC to be filled out ahead of time (e.g., project number, project name, project manager, purchase order number, data validation package, turnaround time, etc.) while other information should be completed when sampling. Complete one COC or more as needed for each set of project samples. The COC should be completed prior to leaving the sampling location.

The laboratory receiving the samples will sign and record when received, the lab work order number, and whether any custody seals were used and if intact.

5.1 Common Chain of Custody Information

Listed below are common fields or information that is listed on the COC, which may or may not be applicable to the sampling media or analytical analysis:

- COC numbered pages (e.g., 1 of 1).
- Report and invoice recipient information.
- Purchase order number or account number (if applicable).
- Project name and number.
- Project Manager name.
- Field Technician (sampler) name.
- Sample Identification (Sample ID).

- Analysis requested.
- Sample collection date and time.
- Sample matrix (COC may have abbreviation codes).
- Sample type – composite or grab.
- Sample Preservation Code or written name.
- Sample filtration (if needed).
- Sample Comments, if any.
- Laboratory name and location.
- Requested due date.
- Turnaround time for analysis.
- Method of analytical delivery – email, hard copy – and to whom.
- Data deliverable information.
- An EDD (electronic data deliverable) format.
- Signature of Field Technician (i.e. sampler) under the first 'relinquished by'.
- Date and time of sample transfers.
- Method of transport (UPS, FedEx, local courier, sampler, etc.).
- Air Bill number (if applicable).

For Air Sampling in SUMMA Canisters, the laboratory may supply a different typo of COC that is specific for the collection of air samples. These labs supplied COC typically have different fields that need to be completed, in addition to the ones listed above that area applicable. These fields include, but are not limited to:

- Canister serial number and size or lab identifier.
- Flow controller serial number or lab identifier.
- Initial and final vacuum.
- Stop and start time of air flow.
- PID reading.

5.2 Completing a Chain of Custody Information

The sample collector is responsible for the care and custody of the samples until they are properly transferred or sent to the laboratory. This means that samples are in their possession, under constant observation, or secured. Samples may be secured in a sealed container, locked vehicle, locked room, etc.

All samples leaving the site should be accompanied by a COC record. This record documents sample custody transfer from the sampler, often through another person, to the laboratory. The individuals relinquishing the samples should sign and date the record.

Shipping containers should be sealed and include a tamper indicating seal that will indicate if the container seal has been disturbed. The method of shipment, courier name, or other pertinent information should be listed in the COC record.

The original COC record should accompany the samples. A copy of the record should be retained by the individual or organization relinquishing the samples. Page one (white copy) accompanies the sample shipment to the laboratory; page two (yellow copy) is the Field Technician's copy; and page three (pink copy) is retained by CT Male for filing. In some instances, the yellow copy goes to the lab and the pink copy is retained by the Field Technician. The transmittal of the copies of the COC will be designated by the laboratory providing the analytical service.

The individual receiving the samples should sign and date the record. The condition of the container and the tamper indicating seal should be noted on the COC record. Any problems with the individual samples, such as a broken container, should be noted on the record.

Instructions on how to complete a COC are provided by the laboratory. The CT Male Project Manager will ensure that the field personnel are experienced and have the knowledge to complete the COC prior to sampling activities.

6.0 DOCUMENT CONTROL - RECORDS

The Field Technicians copy of the COC will be kept in the project files and scanned to C.T. Male Associate's electronic project directory. The Project Manager will be responsible for ensuring that the COC record received by the laboratory is signed and dated by the lab as the receiver of the COC and samples, and note any issues with the samples upon receipt.

C.T. MALE ASSOCIATES ENGINEERING,
SURVEYING, ARCHITECTURE,
LANDSCAPE ARCHITECTURE &
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STANDARD OPERATING PROCEDURE

DOMESTIC TRANSPORT OF SAMPLES TO LABORATORIES IN THE USA

March 6, 2020

Print	Technical Reviewer	Signature	Date
Print	QA Manager	Signature	Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: DOMESTIC TRANSPORT OF SAMPLES TO LABORATORIES IN UNITED STATES OF AMERICA

1.0 Purpose

The purpose of this Standard Operating Procedure (SOP) is to describe the procedures necessary for personal delivery or shipment of samples from locations within the United States of America and its territories to analytical laboratories located within the United States of America and its territories. This procedure applies to the transportation of ground and surface water, soil, wipe, sediment, paint chip, debris, and air samples to the appropriate laboratory.

The recommended procedures in this SOP should be followed unless conditions make it impractical or inappropriate to do so. Modifications should be noted in the applicable documentation and communicated to appropriate personnel. Significant changes may result in a revision or newly created SOP.

2.0 Scope

This procedure applies to all C.T. Male personnel engaged in the collection of samples from several Site media (water, soil, etc.) for laboratory analysis.

3.0 General

As part of this SOP, there are limitations, and they are as follows:

- Maintaining proper sample temperatures (<6°C or ambient air temperature in accordance with the analytical method requirements) and delivering samples to the laboratory within 24 to 48 hours from collection are primary concerns.

- This procedure does not apply to the transportation of ground and surface water, soil, wipe, sediment, paint chip, debris, and air samples to laboratories outside of the United States of America – States and Territories.

4.0 Responsibilities

4.1 Project Manager

Field sampling personnel, in conjunction with the Project Manager are responsible for overall compliance with this technical procedure. The Project Manager, in conjunction with the client, develops the site specific scope of work (e.g., Work Plan, Sampling Analysis Plan (SAP), etc.).

4.2 Site Personnel

Experienced Field Personnel shall ensure the security, temperature, and packaging of environmental samples during transport and shipment.

4.3 Health & Safety Officer

The Health & Safety Officer is responsible for site-specific HS&E and overall compliance with project HS&E requirements. The Health & Safety Officer conducts personal protective equipment (PPE) evaluations, selects the appropriate PPE for the project, lists the requirements in the project-specific HASP, coordinates with the Field Team Leader to complete the PPE program, and conducts project audits on the effectiveness of the HS&E program.

4.4 Site Specific Health and Safety Officer

The role of Site Specific Health and Safety Officer is designated to the Field Team Leader by the Project Manager and/or Health & Safety Officer, to assist in implementing the project-specific HASP. The Project Manager and/or Health & Safety Officer assists the Field Team Leader with the HS&E program, implements the PPE requirements described in the project-specific HASP, and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

5.0 EQUIPMENT, REAGENTS, and SUPPLIES

The following items are applicable to this SOP:

- Rigid Cooler
- Ziplock baggies
- Absorbent padding
- Ice
- Chain of Custody record

- Directional arrow labels may be used to ensure samples remain upright
- Environmental Samples
- Bubble wrap / bubble bags (inner packing material)
- Heavy bag for containing ice and preventing leakage of melted water
- Packing tape
- Shipping papers – if shipped via delivery service

6.0 Procedure

6.1 Packaging of Water, Soil and Sediment Samples (Requiring Chilled Preservation per the Analytical Method of Analysis)

6.1.1 Packaging Samples

Place samples in a rigid cooler, pack glass containers in bubble wrap or other cushioning material to avoid breakage. (Note: Bubble-wrap is the preferred packing material.) Methanol sample containers must be placed in a Ziploc® Baggie to meet shipping requirements for preventing leaks. Place samples and cushioning material in strong plastic bag with enough absorption padding to absorb all of the liquid in the packaging. Be sure to zip tie this bag shut.

Add enough ice to maintain a constant temperature at < 6 °C, (but not frozen) until the samples arrive at the laboratory. Package ice in double-lined bags to ensure sample labels will not be compromised, and the cooler(s) will not leak melt water.

Before sealing cooler, fill out the chain-of-custody form completely and include required copies with the samples (see Standard Operating Procedure for Documentation on a Chain-of-Custody).

Adhere two to three strips of packaging tape on the cooler from top to bottom, and adhere an additional strip of tape covering the gap between the lid and sides of cooler to seal the cooler to avoid leakage. Custody Seals must be adhered on the cooler if project quality assurance plan or sampling and analysis plan require them. The custody seal must be adhered to the crack of the lid and the side of the cooler to ensure the cooler lid has not been tampered with in transit. Be sure to attach the courier shipping label to the top of the cooler.

6.1.2 Labeling

A secondary label with the same information should also be attached with packaging tape to the cooler in event that the original label is damaged or destroyed during sample shipment.

When shipping samples preserved with methanol, the cooler must have a Dangerous Goods in Excepted Quantities label (see attachment 4) placed on the outside of the cooler. Be sure to add the number "3" to each label in permanent marker to indicate the hazard class being shipped.

Each cooler shall not exceed 500 mL of Methanol (16 vials, 30 mL of methanol per vial) and each vial shall not have more than 30 mL of methanol to meet the requirements of a dangerous good in excepted quantities. Acid/base preserved samples vials are often 40 mL or larger and do not qualify for excepted quantities.

Directional arrow labels can be attached to the cooler to insure the cooler remains upright during shipping. Directional arrow labels should be attached to the outside of the cooler to keep the cooler in an upright position during sample shipment.

6.2 Packaging of Wipe, Paint Chips, Debris and Air Samples (Requiring Ambient Air Temperature per the Analytical Method of Analysis)

6.2.1 Packaging Samples

Place the samples in a cooler or cardboard box in a manner that will avoid breakage.

Adhere two to three strips of packaging tape from top to bottom on the cooler or box. Fill out the chain- of-custody completely and include required copies with the samples (see Standard Operating Procedure for chain-of-custody record).

Custody Seals must be adhered over the lid if project quality assurance plan or sampling and analysis plan require them. The custody seal must be adhered to the crack of the lid and the side of the cooler or over the flaps of the box to ensure the container remained shut and has not been tampered with in transit.

6.3 Sample Storage

For samples requiring ice as a preservative, the samples will be bubble wrapped, bagged immediately after collection, stored in a sample cooler, packed on double bagged wet ice and accompanied with the proper chain-of-custody documentation. The samples will be kept cold (< 6 °C, but not frozen) until receipt at the laboratory, where they are to be stored in a refrigerated area.

For samples that are stored at ambient air temperature, the samples (wipe, paint chip, debris, and air samples) will be placed in a baggie or shipping carton (i.e. cardboard box) and accompanied with the proper chain-of-custody documentation.

For sample shipments, custody seals shall be present, at minimum; the coolers must be taped shut with two to three straps of packing tape. All samples will be kept secured to prevent tampering. If sample coolers are left in a vehicle or field office for temporary storage, the area will be locked and secured. The coolers must be delivered to the laboratory via hand or over-night delivery courier in accordance with all Federal, State and Local shipping regulations.

Note: Samples may have to be stored indoors in winter to prevent freezing.

6.4 Shipping Consideration

6.4.1 Shipment / Delivery

Once the cooler is packed to prevent breaking of bottles, the proper chain-of-custody (COC) documentation is signed off, sealed in a plastic bag, and placed in the cooler.

All samples will be kept secured to prevent tampering. If sample coolers are left in a vehicle or field office for temporary storage, the area will be locked and secured.

Custody seals may be present, but at a minimum, the coolers must be taped shut to prevent the lid from opening during shipment.

The coolers must be delivered to the laboratory via hand or overnight delivery courier in accordance with all Federal, State and Local transportation regulations and this SOP.

6.4.2 Transport / Delivery Options

Account for samples before shipping and compare to the chain of custody (see Standard Operating Procedure for chain-of-custody record). Ship samples during times when the laboratory will be able to accept and analyze them. Whenever possible, select mode of transport/delivery to ensure delivery to the laboratory will occur with ample EPA recommended holding time remaining for the specified analytical methods required for the samples. Avoid sending samples during holidays and weekends. Federal, State and Local shipping regulations must be met.

Personal Delivery. The samples are delivered to the laboratory by the field technician(s). The chain-of- custody record is signed and dated by the laboratory representative.

Local Courier. The same procedures are followed as above; i.e., the chain-of-custody record is signed and dated and the top copy is sent with the samples. The cooler or box is then secured with packaging tape and a courier is called for pick up of the samples from the Site to the designated laboratory.

Overnight Courier. Follow the procedures above, replacing the local courier service with a courier that provides overnight services (examples Federal Express, United Parcel Service, Speedy Delivery). Date, project number, type of delivery desired, weight, and number of coolers or boxes should be included.

7.0 RECORDS

Examples of common field documentation are available in “Compendium of Field Documentation” or CT Male SOP, ‘Note Taking and Field Logs’. Field documentation specific to this SOP are listed below:

- Chain-of-custody record

Chain-of-custody records are kept at field offices and in the electronic project files at CT Male office. Other SOP subjects referenced within this SOP: Standard Operating Procedure for chain-of-custody record.

C.T. MALE ASSOCIATES ENGINEERING, SURVEYING, ARCHITECTURE, LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

SEDIMENT, SLUDGE, and SEWAGE SAMPLING

March 6, 2020

Print	Technical Reviewer	Signature	Date
Print	QA Manager	Signature	Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: SEDIMENT, SLUDGE and SEWAGE SAMPLING

1.0 PURPOSE

This standard operating procedure (SOP) provides technical guidance and methods that will be used to sample sediments, sludge and sewage. This SOP applies to the collection of sediment samples in surface water bodies such as streams, rivers, ditches, lakes, ponds, lagoons, and wetlands. For sludge and sewage samples it applies to samples from water treatment systems, wastewater treatment samples, interceptor pits, public sewer system manholes, and catch basins.

2.0 SCOPE

This SOP applies to all C.T. Male, sub consultants and subcontractors engaged in sediment and sludge sampling activities. Other applicable project SOPs, including the following:

- SOP: Note Taking and Field Logs.
- SOP: Organic Vapor Monitoring and Air Monitoring.
- SOP: Equipment Decontamination Procedures.
- SOP: Collection of Quality Control Samples.
- SOP: Documentation on a Chain-of-Custody.
- SOP: Domestic Transport of Samples to Laboratories in USA.

3.0 GENERAL

This procedure applies to the collection of sediment samples only in surface water bodies such as streams, rivers, ditches, lakes, ponds, lagoons, and wetlands. The procedure also applies to samples collected from water treatment systems, wastewater treatment samples, interceptor pits, public sewer system manholes, and catch basins.

Sediment and sludge samples will only be collected as discrete samples. Actual sampling locations will be confirmed in the field prior to initiation of the sampling program. Samplers should anticipate accommodating in-field adjustment.

When surface water, sediment or sludge samples are collected from the same location, water samples will be collected first because disturbing the sediment may influence the analytical results of the surface water samples and cause cross contamination. If sampling both surface water and sediment, or just sediment, sample from the most downstream point first and proceed upstream.

When collecting sediment, sludge or sewage samples to be analyzed for PFAS or volatile organic compounds do not pool or homogenize the sample. Slowly decant off any liquid phase and then fill the specified container(s) with the solid, ensuring no headspace. Samples for nonvolatile organic and inorganic analyses can be placed in an appropriate collection pan or bowl and homogenized before they are placed in sample containers.

If the person collecting the sediment sample needs to enter the water to collect the sample, this should be done downstream of the actual sample location, and care must be taken not to disturb the sediment in the location to be sampled. In practice, such factors as safe access and handling, and bad weather will influence sample acquisition. Sampling for sludge or sewage samples will not include the entering of confined or permit confined spaces to collect sludge sample. If entry into a confined or permit confined space is need, only appropriate training personnel can enter and a work permit following CT Male and client procedures will be completed.

Wear appropriate personal protective equipment (PPE) as prescribed by the site specific health and safety plan.

4.0 RESPONSIBILITIES

4.1 Project Manager

The Project Manager verifies that monitoring well and piezometer installation procedures comply with this SOP and the requirements of the enforcing agencies. Alternate installation requirements and procedures required by local agencies or other modifications must be documented and approved by the Project Manager.

4.2 Health & Safety Officer

The Health & Safety Officer oversees site-specific health, safety, and environment (HS&E) protocols and overall compliance with project HS&E requirements. The Health and Safety Officer conducts personal protective equipment (PPE) evaluations, selects the appropriate PPE, lists the requirements in the Project-specific Health and Safety Plan (HASP), coordinates with the Project Manager and Field Manager to certify the

PPE, and conducts project health and safety audits to evaluate the effectiveness of the HS&E program.

4.3 Site Safety and Health Officer

The role of Site Safety and Health Officer is delegated to the Field Team Leader by the Project Manager to assist in implementing the project HASP. The Project Manager and/or Health & Safety Officer assists the Field Team Leader with the health and safety program, implements the PPE requirements described in the project HASP and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

4.4 Field Team Leader

The Project Manager will develop or direct the development of a sampling plan that includes the sampling location, materials and procedures to be used. The Field Team Leader should maintain adequate documentation of the sampling locations and field notes.

5.0 SEDIMENT, SLUDGE and SEWAGE SAMPLING PROCEDURES

The water content of the sediment and sludge to be sampled may vary greatly. Likewise, the sediments or sludge themselves may range from very soft to dense. It may be necessary to use a variety of equipment to obtain the required samples, even at a single site. If the preferred equipment identified in the following procedures is unable to collect a sediment sample (that is, too rocky), a shovel or hand auger may be used.

5.1 Sediment Sampling Methods

The following is a general guideline for collecting sediment samples:

- On arrival at the site, set up and organize sampling equipment near the first (farthest downstream) sample location.
- Arrange sample containers, sampling equipment, and decontaminated equipment.
- Wear PPE in accordance with the site-specific HASP.
- PPE gloves will be changed between sample locations.
- Collect co-located surface water sample, if required.

- Collect sediment sample. The preferred methods of collecting sediment samples will be by hand corer or polyvinyl chloride (PVC) pipe method (if pre-approved).
- For all samples, mark the sampling location on a site map. Locations will also be documented using a GPS unit. Photograph (optional but recommended) and describe each location, and place a numbered stake above the visible high water mark on the bank closest to the sampling location. The photographs and description must be adequate to allow the sampling station to be relocated at a future date.

5.1.1 Hand Corer Method

The hand corer method is intended to collect firm sediment samples. Use the following procedures for hand corer method sample collection:

- Label each sample container properly, cover the label with clear tape, fill out appropriate chain-of-custody information, wipe outside of the container with paper towel or Kim wipe, and place in iced cooler.
- Ensure that the corers and (optional) liners are properly decontaminated prior to initiation of sampling and between each sample location.
- Gently push the corer into the sediment with a smooth continuous motion to a depth of approximately 9 inches (or other pre-specified depth).
- Twist the corer to detach the sample, and then withdraw the corer in a single smooth motion.
- Remove the top of the corer and slowly decant excess water.
- Remove the nosepiece and deposit the sample onto a stainless-steel, HDPE lined tray or bowl.
- Decant, if appropriate and necessary.
- Transfer the sample into sample containers (PFAS then volatile analysis first) using a disposable sample scoop or stainless-steel laboratory spoon (or equivalent device). The transfer equipment may be disposable to avoid the risk of cross contamination. If specific data quality objectives mandate (except for volatile

analysis samples), the sediment sample will be homogenized in a bowl using a sampling spoon prior to placement into sample containers.

- Decontaminate equipment for the next sample location or at the conclusion of all sampling.

5.1.2 Polyvinyl Chloride Pipe Method

The PVC pipe method is intended to collect sediment samples that are soft. The use of polyvinyl chloride piping needs prior approval to start of work by the project manager. Use the following procedures for PVC pipe method sample collection:

- Label each sample container properly, cover the label with clear tape, fill out appropriate chain-of-custody information, wipe outside of the container with paper towel or Kim wipe, and place in iced cooler.
- Gently push pipe into sediment with a smooth continuous motion to a depth of approximately 9 inches (or other pre-specified depth).
- Cap the pipe, forming an airtight seal, to create a vacuum as it is withdrawn from the sediment.
- Slowly decant excess water.
- Deposit the sample onto a stainless-steel or HDPE tray or bowl.
- Decant if appropriate and necessary.
- Transfer the sample into sample containers (PFAS then volatile analysis first) using a stainless-steel laboratory spoon (or equivalent device). The transfer equipment may be disposable to avoid decontamination costs and the risk of cross contamination. If specific data quality objectives mandate (except for volatile analysis samples), the sample will be homogenized in a bowl using a sampling spoon prior to placement into sample containers.
- Decontaminate equipment.

5.1.3 Scoop, Trowel, Spoon, or Ladle Method

This method is intended to collect sediment samples that are very soft. Use the following procedures for very soft sediment sample collection:

- Label each sample container properly, cover the label with clear tape, fill out appropriate chain-of-custody information, wipe outside of the container with paper towel or Kim wipe, and place in iced cooler.
- Insert the sampling device into the sediment at the selected sampling point and slowly remove the sample.
- Slowly decant excess water.
- Deposit the sample into a stainless-steel or HDPE tray or bowl.
- Transfer the sample into sample containers (PFAS then volatile analysis first) using a stainless-steel laboratory spoon (or equivalent device). The transfer equipment may be disposable to avoid decontamination costs and the risk of cross contamination. If specific data quality objectives mandate (except for volatile analysis samples), the sample will be homogenized in a bowl using a sampling spoon prior to placement into sample containers.
- Decontaminate equipment prior to collecting sample from next location.

5.1.4 Ponar Dredge Method

A Ponar dredge is a heavyweight sediment sampling device with weighted jaws that are lever or spring activated. It is used to collect consolidated fine to coarse textured sediment. The following procedure will be used for collecting sediment with a Ponar dredge:

- Attach a sturdy PFAS free rope or steel cable to the ring provided on top of the dredge.
- Arrange the Ponar dredge with the jaws in the open position, setting the trip bar so the sampler remains open when lifted from the top. If the dredge is so equipped, place the spring loaded pin into the aligned holes in the trip bar.
- Slowly lower the sampler to a point approximately two inches above the sediment.

- Drop the sampler to the sediment. Slack on the line will release the trip bar or spring loaded pin; pull up sharply on the line closing the dredge.
- Raise the dredge to the surface and slowly decant any free liquid through the screens on top of the dredge. Care should be taken to retain the fine sediment fraction during this operation.
- Open the dredge and transfer the sediment to a stainless steel, plastic or other appropriate composition container. Ensure that non-dedicated containers have been adequately decontaminated. If necessary, continue to collect additional sediment until sufficient material has been secured to fulfill analytical requirements. Thoroughly homogenize the sediment and then transfer sediment to sample containers appropriate for the analyses requested. Samples for volatile organic analysis must be collected directly from the bucket before homogenization to minimize volatilization of contaminants.

5.1.5 Gravity Core Method

Gravity corers are appropriate for recovering up to 3 meter long cores from soft, fine-grained sediments. Models include stabilizing fins on the upper part of the corer to promote vertical penetration into the sediment, and weights that can be mounted externally to enhance penetration. A variety of liner materials are available including stainless steel. If a liner is used it will need to be PFAS free.

The speed of descent of coring devices should be controlled, especially during the initial penetration of the sediment, to avoid disturbance of the surface and to minimize compression due to frictional drag from the sides of the core liner. In deep waters, winches should be used where necessary to minimize twisting and tilting and to control the rate of both descent and ascent. With the exception of piston corers, that are equipped with their own mechanical impact features, for other corers, only the weight or piston mechanism of the sampler should be used to force it into the sediment. The sampler should be raised to the surface at a steady rate, similar to that described for Ponar dredge sampling. Where core caps are required, it is essential to quickly and securely cap the core samples when the samples are retrieved. The liner from the core sampler should be carefully removed and kept in a stable position until the samples are collected. If there is little to no overlying water in the tube and the sediments are relatively consolidated, it is not necessary to keep the core sample tubes vertical. Core sample tubes should be quickly capped and taped to secure the sample. The depth horizon(s) sampled will depend on the site specific objectives as well as the nature of the substrate. The horizons to be sampled will be outlined in the Site specific work plan and the Site specific QAPP.

5.1.6 Piston Tube Method

Piston corers are generally used in areas with soft sediment, and the seal at the bottom of the device will retain the sediment sample during retrieval. The addition of the internal piston allows the soft sediment to be captured without significant compression or disturbance. Use the following procedures for Piston Tube method sample collection:

- Prior to sampling obtain piston corer with tube assembly.
- Measure depth to top of sediment, if not known, record the measurement.
- Prior to placing piston tube into the water body, fill the tube with water from the water body to the top of the tube.
- Once the tube is filled with water, place the top of the piston core assembly on the tube.
- Lower piston tub into the water body, allow tube to fill completely with water. Coring device may bubble as air is escaping from tube as water is filling the tube.
- Slowly lower the piston coring device into the water to the depth of the top of the sediment.
- At the top of the sediment, secure the rope that is attached to the piston head so the rope will no longer be allowed to descend with the core.
- Gently push the core into sediment with a smooth continuous motion to a depth of approximately 9 inches (or other pre-specified depth).
- Release the rope holding the piston head and pull the core out of the sediment and the water column.
- Prior to the coring device breaking the water surface, place the cap on the end of the coring tube.
- Pull tube from water column, stand upright.

- Slowly decant or siphon off excess water.
- Place the coring tube onto a HDPE tray or bowl, or rolled out sheet.
- Collect the sample(s) from the sediment core at pre-designated levels. Transfer the sample into sample containers (PFAS then volatile analysis first) using a stainless-steel laboratory spoon (or equivalent device). The transfer equipment may be disposable to avoid decontamination costs and the risk of cross contamination. If specific data quality objectives mandate (except for volatile analysis samples), the sample will be homogenized in a bowl using a sampling spoon prior to placement into sample containers.
- Label each sample container properly, fill out appropriate chain-of-custody information, wipe outside of the container with Kim wipe (as needed), and place in iced cooler.
- Decontaminate equipment as needed.

5.2 Sludge and Sewage Sampling Methods

The following is a general guideline for collecting sludge or sewage samples:

- On arrival at the site, set up and organize sampling equipment near the first sample location.
- Arrange sample containers, sampling equipment, and decontaminated equipment.
- Wear PPE and bring needed monitoring equipment in accordance with the site specific HASP.
- Collect co-located surface water sample, if required.
- Collect sludge sample. The preferred methods of collecting sludge samples will be by bailer or polyvinyl chloride (PVC) pipe method (if pre-approved).
- For all samples, mark the sampling location on a site map. Photograph (optional but recommended) and describe each location. The photographs and description must be adequate to allow the sampling location to be relocated at a future date.

5.2.2 Polyvinyl Chloride Pipe Method

The use of the Polyvinyl Chloride Pipe Method will follow the same steps as outlined in the sediment sampling section 5.1.2 above.

5.2.3 Scoop, Trowel, Spoon, or Ladle Method

The method described in section 5.1.3, for sediment sampling, will be the same steps to follow for collecting sludge samples.

5.3 Equipment

The following equipment is required for sediment, sludge or sewage, and co-located surface water samples:

- Stainless-steel, HDPE-lined sampling tray or bowl
- Stainless-steel or HDPE dip sampler, scoops, trowels, spoons, and ladles
- PVC pipe, 2-inch diameter
- Bailer, PFAS free
- Sand core sediment sampler, liners (optional), and extensions
- Jaw-type sampler
- Sample bottles
- Sample cooler with ice
- Rubber boots/waders
- PPE (as required in the HSP)
- Decontamination equipment and materials, as appropriate
- Plastic bucket (for rinse water/solvents, decant, and/or spoils)

5.4 Quality Assurance/Quality Control Procedures and Samples

Quality assurance (QA)/quality control (QC) samples should be collected during sediment and sludge sampling in accordance with the site specific work plan and QAPP. QA/QC samples should be assigned unique sample identification, and handled and submitted to the laboratory in the same manner as field samples.

5.5 Equipment Decontamination

All sampling devices will be decontaminated. Procedures presented in SOP Decontamination of Sampling Equipment, will be followed prior to sampling, between sampling locations, and at the end of the day for decontamination of reusable field equipment and for personnel decontamination.

6.0 RECORDS

All sampling materials and procedures used during the sampling of sediments and sludge will be documented in the Field Logs in accordance with SOP Field Note taking and Field Logs.

C.T. MALE ASSOCIATES ENGINEERING,
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LANDSCAPE ARCHITECTURE &
GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

COLLECTION OF QUALITY CONTROL SAMPLES

March 6, 2020

____________	____________________		__________
Print	Technical Reviewer	Signature	Date
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Print	QA Manager	Signature	Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: COLLECTION OF QUALITY CONTROL SAMPLES

1.0 PURPOSE

The purpose of this standard operating procedure is to describe the procedures used in the collection and handling of field quality control (QC) samples: field blanks, equipment blanks, trip blanks, field (masked) duplicate samples, matrix spikes and matrix spike duplicate samples.

The recommended procedures in this SOP should be followed unless conditions make it impractical or inappropriate to do so. Modifications should be noted in the applicable documentation and communicated to appropriate personnel.

2.0 SCOPE

This procedure applies to all C.T. Male personnel engaged in the collection of samples from several Site media (water, soil, etc.) for laboratory analysis per an accepted New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) or Environmental Protection Agency (EPA) laboratory method.

3.0 GENERAL

As part of this SOP, there are limitations, and they are as follows:

- Laboratory specific QC samples (e.g., method blanks, laboratory control samples) are not discussed within this SOP.

4.0 RESPONSIBILITIES

4.1 Project Manager

Field sampling personnel, in conjunction with the Project Manager are responsible for overall compliance with this technical procedure. The Project Manager, in conjunction with the client, develops the site specific scope of work (e.g., Work Plan, Sampling Analysis Plan (SAP), etc.).

4.2 Site Personnel

Experienced Field Personnel are responsible for the accurate collection of QC samples and the laboratory is responsible for the accurate set-up and analysis of QC samples. Project staff are responsible for ordering sample containers prior to the sampling event.

4.3 Health & Safety Officer

The Health & Safety Officer is responsible for site-specific HS&E and overall compliance with project HS&E requirements. The Health & Safety Officer conducts personal protective equipment (PPE) evaluations, selects the appropriate PPE for the project, lists the requirements in the project-specific HASP, coordinates with the Field Team Leader to complete the PPE program, and conducts project audits on the effectiveness of the HS&E program.

4.4 Site Specific Health and Safety Officer

The role of Site Specific Health and Safety Officer is designated to the Field Team Leader by the Project Manager and/or Health & Safety Officer, to assist in implementing the project-specific HASP. The Project Manager and/or Health & Safety Officer assists the Field Team Leader with the HS&E program, implements the PPE requirements described in the project-specific HASP, and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

5.0 EQUIPMENT, REAGENTS, and SUPPLIES

The following items are applicable to this SOP:

- Laboratory certified containers appropriate for the required analysis
- Chemical resistant gloves (e.g. nitrile)
- Sample labels
- Matrix specific sampling devices and equipment
- Sample containers / media
- Analyte free water

6.0 PROCEDURE

This section provides the definitions and sampling procedure(s) for QC samples.

6.1 Calibration

Calibration is not applicable to this SOP.

6.2 Sampling

General considerations to be taken into account when planning and conducting sampling operations are the required sample amount, sample holding times, sample handling, and special precautions for trace contaminant sampling. Matrix specific sampling SOPs should be followed for the collection and preservation of samples. The QC samples will be handled in the same manner as the sample group for which they are intended (i.e. stored and transported with the sample group).

6.2.1 Field Blank

Field blank samples are prepared on-site and are a sample of analyte-free water exposed to environmental conditions at the sampling site by transfer from one vessel to another. It measures field and laboratory sources of contamination. Generally, blanks are collected for each parameter of interest.

6.2.2 Equipment Blank (Rinsate Blank)

Equipment blank (or rinsate blank) samples are prepared on-site by pouring analyte-free water through decontaminated sample collection equipment (e.g., bailer or pump, hand-trowel, etc.) and collecting the "rinsate" in the appropriate sample container. If collecting a blank for dissolved metals or dissolved organic carbon, the rinsate will be filtered before adding to the sample container. In addition to the field sources of contamination that may be introduced in the transferring of samples to one vessel to another, an equipment blank also tests the potential cross contamination from incomplete decontamination. Generally, blanks are collected for each parameter of interest.

6.2.3 Trip Blank

Trip blank samples are used when sampling volatile organic compounds (VOC) only. Analyte-free water is used for water samples and methanol (or other applicable sample preservative) is used for soil samples. They are prepared or provided by the laboratory along with the VOC sampling containers prior to a sampling event. Trip blank sample containers are not to be opened in the field and accompany the VOC samples during collection, storage, and transport to the analytical laboratory. There must be one set of trip blank samples per sample cooler containing VOC samples from the Site. The trip blanks should be listed on the chain-of-custody (COC) along with the samples and the analysis required. The purpose of the trip blank sample is to determine the extent of potential contamination introduced during sample transport and handling.

6.2.4 Field (Masked) Duplicate

Field (masked) duplicate samples are two aliquots of a sample collected at the same time using the same procedures, equipment, and types of containers as the required samples. The samples are collected by rotating sampling containers from the original/source sample to the field duplicate sample (using the same exact methods for both). The field duplicate sample is identified with an alias (e.g., M-1 or FD) on the sample container label and on the COC to avoid alerting laboratories to the source of the sample duplicated. The time collected should be omitted on this sample also. Analyses of field duplicate samples are the same as the required samples and give a measure of the precision associated with sample collection, preservation, and storage, as well as laboratory procedures. Field duplicate samples are submitted to the laboratory for the same analyses as the original/source sample.

6.2.5 Matrix Spike (MS) and Matrix Spike Duplicate (MSD)

Matrix Spikes (MS) and Matrix Spike Duplicate (MSD) samples are two aliquots of a sample to which known quantities of analytes are added (spiked) in the laboratory. The MS and MSD are prepared and analyzed exactly like their native/source sample aliquot. For some analyses, it is required that three separate sample aliquots are collected in the field for each analysis. One aliquot is analyzed to determine the concentrations in the native/source sample, a second sample aliquot serves as the MS and the third sample aliquot serves as the MSD. The purpose of the MS and MSD is to quantify the bias and precision caused by the sample matrix.

7.0 Quality Control and Quality Assurance (QA/QC)

The QC activities described below allow the self-verification of the quality and consistency of the work.

7.1 QA/QC Samples

The frequency of QC samples is generally one field blank/equipment blank/field duplicate/MS/MSD per twenty samples; however, specific project requirements may require alternative sampling frequencies.

7.2 Measurement Criteria

Criteria are defined in project specific documentation.

8.0 RECORDS

The field technician will document the type and number of QC samples collected during each sampling event on a COC and in a project dedicated field logbook or on field log data sheets.

Examples of common field documentation are available in SOP Field Notes. Field documentation specific to this SOP are listed below:

- Field Log Data Sheet
- COC
- Sample label
- Custody seal (if applicable)

Field documentation and COC will be kept electronically in the project files.

C.T. MALE ASSOCIATES ENGINEERING,
SURVEYING, ARCHITECTURE,
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GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

SAMPLING AND DISPOSAL OF INVESTIGATIVE DERIVED WASTE

January 5, 2018

________________ __________________________ __________

Print Technical Reviewer Signature Date

________________ __________________________ __________

Print QA Manager Signature Date

Review of the SOP has been performed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: SAMPLING and DISPOSAL OF INVESTIGATIVE DERVIED WASTE

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to define the procedures for the sampling and disposal of investigative derived waste (IDW) generated during field investigation activities. This procedure is applicable to sampling IDW which are materials containing pollutants derived during investigation activities including drill cuttings, drilling fluids, cleaning liquids, wastewater, DNAPL, soil and rock samples, protective clothing and equipment, or any other items or materials which are exposed to, or may contain pollutants that must be characterized for off-site disposal.

The recommended procedures in this SOP should be followed unless conditions make it impractical or inappropriate to do so. Modifications should be noted in the applicable documentation and communicated to appropriate personnel. Significant changes may result in a revision or newly created SOP.

2.0 SCOPE

This procedure applies to all C.T. Male personnel engaged in field sampling activities at a Site.

3.0 GENERAL

As part of this SOP, there are limitations, and they are as follows:

- IDW can be contaminated with various hazardous substances, characterization may be necessary.

4.0 RESPONSIBILITIES

4.1 Project Manager

The Project Manager is responsible for determining whether any solid or liquid-phase product, or other waste generated during the field activities needs to be containerized for off-site disposal in accordance with State and Federal regulations.

4.2 Field Services Supervisor

The Field Services Supervisor shall ensure the IDW is properly stored and labeled during site activities and storage as needed prior to disposal. They will also ensure the IDW is sampled and characterized prior to disposal. They will also supervise the proper transportation and disposal of the IDW to ensure it is being done in accordance with State and Federal regulations.

4.3 Field Site Personnel

Experienced Field Personnel shall ensure the security, temperature, and packaging of environmental samples during transport and shipment.

4.4 Health & Safety Officer

The Health & Safety Officer is responsible for site-specific HS&E and overall compliance with project HS&E requirements. The Health & Safety Officer conducts personal protective equipment (PPE) evaluations, selects the appropriate PPE for the project, lists the requirements in the project-specific HASP, coordinates with the Field Team Leader to complete the PPE program, and conducts project audits on the effectiveness of the HS&E program.

4.5 Site Specific Health and Safety Officer

The role of Site Specific Health and Safety Officer is designated to the Field Team Leader by the Project Manager and/or Health & Safety Officer, to assist in implementing the project-specific HASP. The Project Manager and/or Health & Safety Officer assists the Field Team Leader with the HS&E program, implements the PPE requirements described in the project-specific HASP, and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

5.0 EQUIPMENT, REAGENTS, and SUPPLIES

The following items are applicable to this SOP:

- Applicable sampling equipment
- Weatherproof container labels
- Plastic garbage bags
- IDW containers

- Permanent markers
- Plastic covering
- Shipping papers or manifests – if shipped via delivery service

6.0 PROCEDURE

The CT Male Project Manager is responsible for determining if IDW can be left on-site or if it must be disposed of off-site. The project manager shall review NYSDEC DER-10 on IDW guidelines in determining the proper disposal of the IDW for the site conditions. Two general objectives that will be considered when managing IDW are the minimization of IDW generation and managing the IDW consistent with the final remedy for the site. The extent to which the objectives can be met is dependent on the site-specific circumstances.

Any IDW that is required to be containerized will be containerized separately by media until laboratory data are received to determine the appropriate disposition of the materials. Containerization and disposal of personal protective equipment and/or other materials, if necessary, will be determined on a project by project basis and discussed in the project work plan and Field Sampling Plan (FAP).

6.1 Sampling

Representative samples will be collected, preserved, and handled following CT Male's sampling procedures as outlined in other SOPs. Sampling equipment will be cleaned following CT Male's 'Equipment Decontamination Procedures' SOP.

The samples must be delivered to the laboratory via hand or overnight delivery courier in accordance with all Federal, State and Local transportation regulations and CT Male's 'Domestic Transport of Samples to the Laboratory' SOP.

6.2 Disposal

Waste generated by this process will be disposed of in accordance with Federal, State and Local regulations. Where reasonably feasible, technological changes have been implemented to minimize the potential for environmental pollution.

7.0 RECORDS

Field personnel will document the IDW sampling event on the field log data sheet and/or field notebook. They will also document the type and number of bottles on the chain-of-custody record, as appropriate. The analysis for each container and the laboratory used will be documented on the chain-of- custody record. Refer to CT Male's SOP 'Chain-of-Custody (COC) procedures' for further information.

The field documents and COCs are provided to CT Male's project manager and data management personnel for storage on the internal CT Male network.

Other CT Male SOP subjects referenced within this SOP: collection of samples, collection of QC samples, equipment decontamination, domestic transport of samples, and documentation on a COC.

C.T. MALE ASSOCIATES ENGINEERING,
SURVEYING, ARCHITECTURE,
LANDSCAPE ARCHITECTURE &
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STANDARD OPERATING PROCEDURE

SURFACE WATER SAMPLING

December 1, 2017

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Print	Technical Reviewer	Signature	Date
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Print	QA Manager	Signature	Date

Review of the SOP has been preformed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: SURFACE WATER SAMPLING

1.0 PURPOSE

This standard operating procedure (SOP) provides technical guidance and methods that will be used to collect surface water for laboratory analysis and water quality determinations.

2.0 SCOPE

This SOP applies to all C.T. Male, sub consultants and subcontractors engaged in sediment and sludge sampling activities. Other applicable project SOPs, including the following:

- SOP: Note Taking and Field Logs.
- SOP: Equipment Decontamination Procedures.
- SOP: Collection of Quality Control Samples.
- SOP: Documentation on a Chain-of-Custody.
- SOP: Domestic Transport of Samples to Laboratories in USA.

3.0 GENERAL

Surface water samples will only be collected as discrete samples. Actual sampling locations will be confirmed in the field prior to initiation of the sampling program. Samplers should anticipate accommodating in-field adjustments. When surface water and sediment samples are collected from the same location, water samples will be collected first. In practice, such factors as safe access and handling, and bad weather will influence sample acquisition. Wear appropriate personal protective equipment (PPE) as prescribed by the site specific health and safety plan.

4.0 RESPONSIBILITIES

4.1 Project Manager

The Project Manager verifies that monitoring well and piezometer installation procedures comply with this SOP and the requirements of the enforcing agencies.

Alternate installation requirements and procedures required by local agencies or other modifications must be documented and approved by the Project Manager.

4.2 Health & Safety Officer

The Health & Safety Officer oversees site-specific health, safety, and environment (HS&E) protocols and overall compliance with project HS&E requirements. The Health and Safety Officer conducts personal protective equipment (PPE) evaluations, selects the appropriate PPE, lists the requirements in the Project-specific Health and Safety Plan (HASP), coordinates with the Project Manager and Field Manager to certify the PPE, and conducts project health and safety audits to evaluate the effectiveness of the HS&E program.

4.3 Site Safety and Health Officer

The role of Site Safety and Health Officer is delegated to the Field Team Leader by the Project Manager to assist in implementing the project HASP. The Project Manager and/or Health & Safety Officer assists the Field Team Leader with the health and safety program, implements the PPE requirements described in the project HASP and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

4.4 Field Team Leader

The Project Manager will develop or direct the development of a sampling plan that includes the specifics on materials and procedures to be used. The Field Team Leader should know the requirements for site specific work related to surface water sampling and should maintain adequate documentation of the work.

5.0 PROCEDURES

5.1 Surface Water Sampling Methods

Due to the nature of surface water sampling, there may be a need to conduct the sampling from a boat. If this is to occur, then the appropriate water life safety vests and procedures for working within a boat will be outlined in the site specific health and safety plan.

The following is a general guideline for collecting surface water samples:

- Set up a staging area and organize sampling equipment near the first (farthest downstream) sampling location.
- Arrange sample containers, sampling equipment, and decontaminated equipment being careful not to step on or otherwise contaminate the working area.
- Wear PPE in accordance with the site specific HASP.
- Collect surface water samples as described below.
- For all samples, mark the sampling location on a site map. Photograph (optional but recommended) and describe each location, and place a numbered stake closest to the sampling location. The photographs and description must be adequate to allow the sampling station to be relocated at a future date.

5.1.1 Direct Grab Method for Unpreserved and Unfiltered Samples

Samples from shallow depths can readily be collected by the direct grab method, that is, submerging the sample container. This method can be performed when preservatives have not been added to sample containers prior to sampling.

Use the following procedures for direct grab method sample collection:

- Label the sample bottle with an appropriate label and cover the label with clear waterproof sealing tape. Record all applicable information in the field logbook.
- Collect samples for volatile analysis first.
- With minimum surface disturbance, submerge the unpreserved sample bottle with the mouth of the container facing upstream, and allow sample stream to flow gently into the bottle.
- For volatile analysis, completely fill the container so that no headspace is present. In the event headspace is present, the discard water in the vial downstream from the sampling site and attempt this procedure a maximum of three times before substituting with a new vial. For other samples, fill the container approximately two-thirds full, leaving adequate space to allow for expansion.
- After sample collection is completed, submerge a water quality monitoring probe at the sampling site to take water quality measurements in accordance with SOP Field Water Quality Measurements and Calibration.

5.1.2 Sampling (or Transfer) Device Method for Preserved Samples

It is prudent to use the sample transfer device method when preservatives have been added to sample containers prior to sampling. This device may be disposable or constructed of a nonreactive material, such as stainless steel, and it can be used in most sampling situations except where adhesion of a contaminant to the surface of the transfer container (oils and grease) may pose a problem. The sampling device will have a capacity of at least 500 milliliters to minimize the number of times the liquid must be sampled, thus reducing possible disturbance to any sediment layers.

A carboy, dipper, beaker with pour spout and handle, ladle, ice scooper, pond sampler, or other container constructed of inert material, can be used to transfer water from the sample source to a sample bottle. This prevents unnecessary contamination of the outer surface of the sample bottle that might otherwise result from direct immersion of the sample bottle in the water, and it prevents loss of preservative. Use of a sampling device also prevents the technician from having to physically contact the sample media. Depending on the sampling application, the transfer vessel can be either disposed of or reused. If reused, the vessel and any other apparatus that could come into contact with the sample will be thoroughly decontaminated prior to sampling a different source.

Use the following procedures for transfer device method sample collection:

- Label the sample bottle with an appropriate label and cover the label with clear tape. Record all applicable information in the field logbook.
- Collect samples for volatile analysis first.
- If a carboy is used to collect large quantities of surface water, fill the carboy to 1/10 capacity and rinse three times with the water to be sampled, prior to sample collection. Rinse water will be discarded downstream or away from the sampling location. The mouth of the carboy will be facing upstream during sampling. Downstream samples will be collected prior to upstream samples. Care will be taken not to disturb bottom sediments. If a pond sampler will be used, ensure that the sampling beaker, and the bolts and nuts that secure the clamp to the pole are tightened properly.
- With minimal surface disturbance, submerge a pre-cleaned stainless-steel dipper or similar device. The mouth of the container will be facing upstream. The

sampler, if wading, will remain downstream of the sample collection point. In addition, downstream samples will be collected prior to upstream samples. Care will be taken not to disturb bottom sediments. Allow the device to fill slowly and continuously. If disturbed, wait until the sediment settles.

- Collect samples for volatile analysis immediately after filling the sampling device to ensure the integrity of the sample where possible aeration could occur.
- Remove the cap from the sample bottle and slightly tilt the mouth of the bottle below the device. Empty the device slowly, allowing the sample stream to flow gently into the bottle with minimal disturbance.
- For samples to be analyzed for volatiles, completely fill the container so that no headspace is present. For other samples, fill the container approximately two-thirds full, leaving adequate space to allow for expansion.
- For samples to be analyzed for dissolved metals, use a peristaltic pump, silicone tubing, and an in-line (0.45 micrometer) filter to filter the water from the sample collection device. The filtered water will be placed directly into an appropriate sample container, leaving adequate space to allow for expansion. This method will need project manager approval prior to be completed to ensure compliance with State regulations.
- After sample collection is completed, submerge a water quality monitoring probe at the sampling site to take water quality measurements in accordance with SOP Field Water Quality Measurements and Calibration.
- Properly discard or decontaminate all sampling devices.

5.3 Equipment

The following equipment may be used for surface water sampling:

- Surface water sampling device (for example, Niskin bottle or stainless-steel beaker, PFAS free)
- Instruments used to measure water quality parameters (for example, YSI)
- Field notebook
- Kim wipes
- Appropriate decontamination equipment
- Appropriate PPE as designated in the HASP
- Waders/rubber boots

- Cooler with ice
- Sample containers (for example, 1-liter amber) for other constituent sampling
- Sample labels and sealing tape
- Hoses/tubes (for example, medical-grade silicon tubing)
- Mark sticks
- Garbage bags for PPE
- Measuring tape
- Appropriate sampling data forms, for example, field sampling reports, chain-of-custody forms
- Peristaltic pump
- In-line (0.45 micrometer) filters

5.4 Quality Assurance/Quality Control Procedures and Samples

Quality assurance (QA)/quality control (QC) samples should be collected during sediment and sludge sampling in accordance with the site specific work plan and QAPP. QA/QC samples should be assigned unique sample identification, and handled and submitted to the laboratory in the same manner as field samples.

5.5 Equipment Decontamination

All sampling devices will be decontaminated. Procedures presented in SOP, Decontamination of Sampling Equipment, will be followed prior to sampling, between sampling locations, and at the end of the day for decontamination of reusable field equipment and for personnel decontamination.

6.0 RECORDS

All sampling materials and procedures used during the sampling of sediments and sludge will be documented in the Field Logs in accordance with SOP Note Taking and Field Logs.

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SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Under NYSDEC's Part 375 Remedial Programs

April 2023

New York State of Opportunity | Department of Environmental Conservation

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April 2023

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

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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	

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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

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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. <u>All necessary forms will be supplied by the Bureau of Ecosystem Health.</u> 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 **<u>and signed</u>** 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 **<u>and signed</u>** 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 <u>each</u> **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 <u>each</u> 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. **<u>The Bureau of Ecosystem Health will supply the bags.</u>** 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.

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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.

APPENDIX B

QUALITY ASSURANCE PROJECT PLAN

May 2025

Quality Assurance Project Plan

Hudson Valley Regional Airport
Town of Wappinger
18 Griffith Way
Wappinger, New York 12590
Dutchess County
NYSDEC Site #C314129

Prepared by:

C.T. MALE ASSOCIATES
12 Raymond Avenue
Poughkeepsie, New York 12603
(845) 454-4400

C.T. Male Associates Project No: 18.8090

QUALITY ASSURANCE PROJECT PLAN
HUDSON VALLEY REGIONAL AIRPORT SITE
TOWN OF WAPPINGER, DUTCHESS COUNTY
NYSDEC SITE# 314129

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TABLES

ATTACHMENTS

ACRONYM LIST

ARARs – Applicable or relevant and appropriate requirements

COC – Chain-of-custody

DER – Division of Environmental Remediation

DQO – Data quality objective

DUSR – Data Usability Summary Report

EPA – Environmental Protection Agency

FSP – Field Sampling Plan

HASP – Health & Safety Plan

HDPE – High Density Polyethylene

LCS – Laboratory control sample

MDL – Method detection limit

MS – Matrix spike

MSD – Matrix spike duplicate

NYSDEC – New York State Department of Environmental Conservation

PARCCS – Precision, accuracy, representativeness, completeness, comparability, and sensitivity

PFAS – Per-and polyfluoroalkyl substances

Name	Acronym	CAS Number
6:2-Fluorotelomersulfonic acid	6:2 FTS	27619-97-2
8:2-Fluorotelomersulfonic acid	8:2 FTS	39108-34-4
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluorobutanoic acid	PFBA	375-22-4
Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluorodecanoic acid	PFDA	335-76-2
Perfluorododecanoic acid	PFDoDA	307-55-1
Perfluoroheptanesulfonic acid	PFHpS	375-92-8
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluorononanoic acid	PFNA	375-95-1

Perfluorooctanesulfonamide	PFOSA	754-91-6
Perfluorooctanesulfonic acid	PFOS	1763-23-1
Perfluorooctanoic acid	PFOA	335-67-1
Perfluoropentanoic acid	PFPeA	2706-90-3
Perfluorotetradecanoic acid	PFTeDA	376-06-7
Perfluorotridecanoic acid	PFTrDA	72629-94-8
Perfluoroundecanoic acid	PFUnDA	2058-94-8

21 individual PFAS listed above are in accordance with the most recent NYSDEC guidance (NYSDEC, 2021).

QA – Quality assurance

QAM – Quality Assurance Manual

QAPP – Quality Assurance Project Plan

QC – Quality control

RPD – Relative percent difference

RL – Reporting limit

SOP – Standard operating procedure

SPE – Solid phase extraction

SPLP – Synthetic Precipitation Leaching Procedure

TAL – Target Analyte List

TCL – Target Compound List

TOC – Total organic carbon

UFP – Uniform Federal Policy

VOA – Volatile organic analysis

VOC – Volatile organic compound

WAX – Weak ion exchange

1.0 INTRODUCTION

C.T. Male Associates Engineering, Surveying, Architecture, Landscape Architecture & Geology D.P.C. (C.T. Male Associates or C.T. Male) has prepared this Quality Assurance Project Plan (QAPP) for the Pre-Construction Investigation Work Plan (PCI WP) to be conducted at the Hudson Valley Regional Airport (HVRA) (NYSDEC Site #314129) located at 18 Griffith Way in the Town of Wappinger, Dutchess County, New York (the "Site").

The QAPP was prepared in a manner consistent with the following guidance documents:

- EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5;
- EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5;
- Sampling for 1,4-Dioxane and Per- and Polyfluoroalkyl Substances (PFAS) Under DEC's Part 375 Remedial Programs, June 2019;
- Sampling, Analysis and Assessment of Per-and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, April 2023;
- United States Environmental Protection Agency (EPA) Intergovernmental Data Quality Task Force environmental requirements as specified in the Uniform Federal Policy (UFP) QAPP guidance document Part 2A Revised (March 2012); and
- USEPA, *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.*

This project specific QAPP provides the details of the organizations and the project management, objectives, data acquisition, data assessment, oversight and data review procedures associated with the project Site. Protocols for sample collection, handling, storage, chain-of-custody (COC), laboratory and/or field analyses, data evaluation and validation, and reporting are addressed. Some project details are included in the PCI WP. Field activities performed under this QAPP will be conducted in accordance with the applicable Standard Operating Procedures (SOP) within the PCI WP and the site-specific Health & Safety Plan (HASP).

1.1 Site History and Background

The Site is located at 18 Griffith Way in the Town of Wappinger, Dutchess County, New York. The Site is approximately 510.8 acres in size and has primarily been used as an airport since the 1930's. Prior to being developed, the Site appears to have been used for agricultural purposes. The airport occupies the majority of the Site and is currently referred to as the Hudson Valley Regional Airport. Two (2) closed landfills are located on northern and northeastern portions of the Site, and two NYSDEC inactive hazardous waste sites are located on the eastern portion of the site, that are currently used a airport hangars. The Site has been designated as a potential inactive hazardous waste disposal site (P-Site #314129) by the New York State Department of Environmental Conservation (NYSDEC) based on the detection of perfluorinated compounds in a water supply well located on the Site and detections in nearby off-site water supply wells.

The Site is currently owned by the County, and accessed at multiple points via gated driveways along Route 376, New Hackensack Road, and Citation Drive. The Site includes a parking lot, airport terminal, and various support buildings and hangars. The airport is enclosed by a chain-link fence which is located inside the property boundary.

2.0 QAPP WORKSHEET #1 & 2 – TITLE AND APPROVAL PAGE

1. **Project Identifying Information**
    a. **Site name/project name:** Hudson Valley Regional Airport
    b. **Site location/number:** 18 Griffith Way, Town of Wappinger, Dutchess County, New York / NYSDEC Site ID No. 314129
    c. **Property Owner:** Dutchess County, Robert H. Balkind, Commissioner, Dutchess County Department of Public Works
    d. **C.T. Male Client:** Dutchess County, Robert H. Balkind, Commissioner, Dutchess County Department of Public Works

2. **Lead Organization - Town of Wappinger**
    i. **Project Manager (name/title/signature/date):**

    ____

    Jeff Durand, Airport Manager

3. **Other Stakeholders (as needed)**
    a. **Consulting Engineers:** C.T. Male Associates
        i. **Project Manager Principal (name/title/signature/date):**

        ____

        Daniel Reilly, P.E. / Environmental Services Manager

        ii. **Project Manager (name/title/signature/date):**

        ____

        Jim McIver, P.G. / Project Manager

        iii. **Health & Safety Manager (name/title/signature/date):**

        ____

        Nancy Garry, P.E., CSP / Sr. Environmental Engineer

iv. Field Services Manager (name/title/signature/date):

____

Eric White / Environmental Scientist

v. Quality Assurance (QA) Manager (name/title/signature/date):

____

Jeffrey A. Marx, P.E. / Managing Environmental Engineer

3.0 QAPP WORKSHEET #3 & 5 – PROJECT ORGANIZATIONAL AND QAPP DISTRIBUTION

This section identifies the reporting relationships between organizations involved in the project, including the lead organization and contractors and subcontractor organizations. It also includes recipients of controlled copies of the QAPP. The organizational chart in Attachment A identifies pertinent personnel, contractors and subcontractors who are responsible for document control within their organizations. Site-specific work plans may identify other personnel in similar roles.

4.0 QAPP WORKSHEET #4, 7 & 8 – PERSONNEL QUALIFICATIONS AND SIGN-OFF SHEET

This section identifies project personnel associated with each organization, contractor, and subcontractor participating in responsible roles. This includes the project manager, QA manager, project contacts for organizations involved in the project, the project health & safety officer, field operation personnel, and the analytical services provider. This worksheet also lists individuals' project titles or roles; qualifications; and any specialized/non-routine training, certifications, or clearances required by the project. Signatures indicate personnel have read and understand how to implement this QAPP as written and that the QAPP will be kept on-file at each organization.

ORGANIZATION: C.T. Male Associates (C.T. Male)

Name	Title/Role	Education/Experience/Certifications	Signature/Date
Daniel Reilly, P.E.	Project Principal	See resumé included in Attachment B	See Section 2.0, titled worksheet #1 & 2
Jim McIver, P.G.	Project Manager	See resumé included in Attachment B	See Section 2.0, titled worksheet #1 & 2
Nancy Garry, P.E., CSP	Health & Safety Manager	See resumé included in Attachment B	See Section 2.0, titled worksheet #1 & 2
Eric White	Field Services Manager	See resumé included in Attachment B	See Section 2.0, titled worksheet #1 & 2
Jeffrey A. Marx, P.E.	QA Manager	See resumé included in Attachment B	See Section 2.0, titled worksheet #1 & 2

ORGANIZATION: Pace Analytical, Inc. of Westborough and Mansfield, Massachusetts (Pace).

Name	Title/Role	Specialized Training/ Certifications	Signature/Date
Candace Fox	Project Manager	Training as required by laboratory QA Manual, Laboratory Certifications in Attachment C	
Jason Hebert	QA Manager	Training as required by laboratory QA Manual, Laboratory Certifications in Attachment C	

ORGANIZATION: Environmental Data Services (EDS)

Name	Title/Role	Specialized Training/ Certifications	Signature/Date
Nancy Weaver	President	See resumé included in Attachment B	

5.0 QAPP WORKSHEET #6 – COMMUNICATION PATHWAYS

Communication pathways for this project are shown below.

Communication Driver	Organization	Name	Contact Information	Procedure (Timing, pathway, etc.)
Regulatory Agency Interface	NYSDEC	Greta Kowalski	Office (O): 518-402-2029 Greta.kowalski@dec.ny.gov	C.T. Male will contact Jeff Durand and the regulatory agency (NYSDEC) via email if issues with the implementation of this QAPP occur impacting data quality, when comments to the submittals occur, and when new field sampling plans are identified for implementation.
	C.T. Male	Jim McIver	O: 845-454-4400 k.moline@ctmale.com	
	Town of Wappinger, Airport Manager	Jeff Durand	Cell: 518-637-7329 jdurand@dutchessny.gov	
Laboratory Problems/ Corrective Actions	C.T. Male	Jeffrey A. Marx	O: 518-786-7548 j.marx@ctmale.com	C.T. Male's QA Manager will be the contact for the laboratories should the laboratories experience issues with project samples. Environmental Data Services will contact the laboratories if issues are discovered from data validation.
	EDS	Nancy Weaver	O: 757-564-0090 nweaver@env-data.com	
	Pace Lab	Candace Fox	O: 716-427-5223 candace.fox@pacelabs.com	

Field Problems/ Corrective Actions	C.T. Male	Eric White	O: 845.454.4400 e.white@ctmale.com	C.T. Male field staff will contact the C.T. Male Project Manager and/or Field Services Manger to discuss difficulties encountered during field activities. They will coordinate with their QA Manager, as needed and appropriate. C.T. Male will contact the NYSDEC via email.
		Jon Dippert	O: 518-786-7563 j.dippert@ctmale.com	
	NYSDEC	Greta Kowalski	Office (O): 518-402-2029 Greta.kowalski@dec.ny.gov	
Safety Issues	C.T. Male	Jon Dippert	O: 518-786-7563 j.dippert@ctmale.com	C.T. Male field staff will contact the C.T. Field Services Manager and/or Health & Safety Officer and work may stop until safety issues are cleared. NYSDEC may be contacted if safety issues delay obtaining/reporting of data.
		Nancy Garry	O: 518-786-7541 n.garry@ctmale.com	
Field Activity Modifications	NYSDEC	Greta Kowalski	O: 518-897-1241 Greta.kowalski@dec.ny.gov	Town of Wappinger and C.T. Male will propose modifications to current sampling program via periodic updates or otherwise as needed. Reduction of testing parameters or frequencies will be performed in consultation with and approval from NYSDEC.
	C.T. Male	Eric White	O: 845.454.4400 e.white@ctmale.com	
	Town of Wappinger, Airport Manager	Jeff Durand	Cell: 845-337-1659 jdurand@dutchessny.gov	

6.0 QAPP WORKSHEET #9 – PROJECT SCOPING SESSION PARTICIPANTS SHEET

As noted in the introduction, investigation activities will be conducted in accordance with a PCI WP that has been approved by the NYSDEC. The sampling and analysis activities implemented as part of additional investigations or studies will follow the protocols set forth in this QAPP. Additionally, this QAPP will be updated as needed based on the planned sampling and analysis activities.

7.0 QAPP WORKSHEET #10 – SITE MODEL

The Site is listed on the Registry of Inactive Hazardous Waste Disposal Sites in New York and has been assigned Site #314129 pursuant to contaminants in groundwater at concentrations exceeding regulatory standards and guidance values.

Parameters that will be analyzed to evaluate the environmental quality of the Site's media include the Target Compound List (TCL) of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides and polychlorinated biphenyls (PCBs), the Target Analyte List (TAL) of metals and cyanide, per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The laboratory performing the analytical services is identified in Table 1, which includes the laboratory's address and the list of parameters the laboratory will perform.

The sample type, laboratory analysis, sampling method and sampling rationale for the samples collected during thePCI are summarized in the site-specific work plans.

The proposed sampling activities are presented in the scope of work and are described in more detail in the PCI WP.

8.0 QAPP WORKSHEET #11 – PROJECT/DATA QUALITY OBJECTIVES

Data Quality Objectives (DQOs) are qualitative and quantitative statements that clearly state the objective of a proposed project, define the most appropriate type of data to collect, determine the appropriate conditions for data collection, and specify acceptable decision error limits that establish the quantity and quality of data needed for decision making.

DQOs for measurements during this project will be addressed in terms of the data quality indicators: precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS). The numerical PARCCS parameters will be determined from the project DQOs to ensure that they are met. The DQOs and resulting PARCCS parameters will require that the sampling be performed using standard methods with properly operated and calibrated equipment and conducted by trained personnel and are summarized in Worksheet #12.

The laboratories performing the analytical services are detailed in Table 1, which includes their addresses and the list of parameters that each lab may perform. Other laboratories may need to perform analyses if a laboratory has an unplanned event such as an instrument breakdown. The parameter would be analyzed by a subcontract laboratory that has accreditation in NY for the same method, where applicable. If possible, the subcontract laboratory would have similar limits as the primary laboratory. Any subcontracting of analyses will be approved by C.T. Male prior to sample submittal.

Parameters other than PFAS that may be analyzed to evaluate the environmental quality of the site’s media may include the Target Compound List (TCL) of volatile organic compounds (VOCs), the Target Analyte List (TAL) of metals, and total organic carbon (TOC).

The sample type, laboratory analysis, sampling method and sampling rationale for the samples collected during the site investigations and routing monitoring is summarized in the site-specific work plans.

9.0 QAPP WORKSHEET #12 – MEASUREMENT PERFORMANCE CRITERIA TABLE

This worksheet displays the data quality indicator, QC activity, matrix, and measurement performance criteria for both the sampling and analytical measurement systems. Matrix groups may include but are not limited to the following:

- Water – groundwater, surface water and drinking water
- Solid – soil, sediment
- Air – soil vapor, indoor air, outdoor air

Data Quality Indicator	QC sample or measurement performance activity	Matrix Group	Measurement Performance Criteria
Precision (field)	Field duplicate samples	Water, solid, air	Values > 5x reporting limit (RL)/limit of quantitation (LOQ); relative percent difference (RPD) ≤ 30%
Precision (laboratory)	Laboratory duplicate samples or Laboratory control samples (LCS) and LCS duplicates	Water, solid, air	Values > RL; method-specific (See Table 2)
Overall accuracy/bias (field and laboratory) /representativeness	Field, equipment, rinsate blanks	Water, and solid	No target analyte concentrations ≥ RL/LOQ
	Laboratory Trip blanks	Water (VOCs and PFAS)	
Overall accuracy/bias (laboratory)	Method blanks	Water, solid, air	No target analyte concentrations ≥ RL/LOQ
Analytical accuracy/bias/precision (laboratory)	LCS and LCS duplicates	Water, solid, air	Analyte-specific (See Table 2)
Analytical accuracy/bias/precision (laboratory)	Matrix Spikes (MS) and Matrix Spike Duplicates (MSD)	Water, and solid	Analyte-specific (See Table 2)

Data Quality Indicator	QC sample or measurement performance activity	Matrix Group	Measurement Performance Criteria
Analytical accuracy/bias (laboratory)	Surrogate recoveries	Water, and solid	Analyte-specific (See Table 2)
Sensitivity	Samples reported to method detection limit (MDL-where applicable)	Water, solid, air	Analyte-specific (See Table 2)
Completeness	See Worksheet #34	Water, solid, air	See Worksheet #34

10.0 QAPP WORKSHEET #13 – SECONDARY DATA USES AND LIMITATIONS TABLE

Analytical data and information to be used for the project, prior to this QAPP, was collected in accordance with previous work plans. The originating sources are identified. Analytical data obtained prior to this QAPP is presented.

Data type	Source	Data uses relative to current project	Factors affecting the reliability of data and limitations on data use
Site Characterization Report, December 2019	C.T. Male Associates	Data used to determine if the Site's media (water) was impacted above regulatory standards and guidance values for the Site's intended use.	

11.0 QAPP WORKSHEET #14 & 16 – PROJECT TASKS & SCHEDULE TABLE

Listed are the project activities as well as the QA assessments that will be performed during the course of the project.

Activities	Organization	Dates		Deliverable(s)	Anticipated Deliverable Due Date
		Anticipated Date(s) of Initiation	Anticipated Date of Completion		
Excavating test pits, soil borings, well drilling and installing	C.T. Male	July 2025	July 2025	Field reports and sample results	December 2024
Collecting water, solids, air, and field QC samples	C.T. Male	July 2025	July 2025	Field reports and sample results	December 2024
Laboratory analyses	Pace	Upon receipt of samples in July 2025	August 2025	Laboratory reports (Category B Data Package)	January 2025
Data evaluation / validation	Environmental Data Services	After receipt of data reports in August 2025	August 2025	Evaluation or validation report entitled 'Data Usability Summary Report (DUSR)'	January 2025
Summarizing data	C. T. Male	August 2025	September 2025	Telephone, email, progress reports	February 2025
Uploading data to NYSDEC EQuIS	C. T. Male	After receipt and review of DUSRs in September 2025	September 2025	Submission of data packages to online NYSDEC EQuIS system	February 2025

Activities	Organization	Dates		Deliverable(s)	Anticipated Deliverable Due Date
		Anticipated Date(s) of Initiation	Anticipated Date of Completion		
PCI Investigation Report	C.T. Male	After receipt and review of relevant data reports in September 2025	October 2025	Submission to NYSDEC	March 2025

12.0 QAPP WORKSHEET #15 – PROJECT ACTION LIMITS AND LABORATORY-SPECIFIC DETECTION/QUANTITATION LIMITS

Analytical data quality objectives are used to ensure that the analysis will accurately and adequately identify the contaminants of concern. The applicable or relevant and appropriate requirements (ARARs) are related to defining satisfactory cleanup efforts. To be able to evaluate the data generated with respect to potential ARARs, the samples will be reported to the MDL (where applicable). The analytical methods selected for this project are designed to achieve ARAR values. The laboratory limits for specific parameters are included in Table 2.

13.0 QAPP WORKSHEET #17 – SAMPLING DESIGN AND RATIONALE

The design and rationale of the sampling program is outlined in Worksheet #10 and will be specified in the PCIWP.

14.0 QAPP WORKSHEET #18 – SAMPLING LOCATIONS AND METHODS

The PCIWP will provide specific detail regarding the individual sample locations and methods.

15.0 QAPP WORKSHEET #19 & 30 – SAMPLE CONTAINERS, PRESERVATION, AND HOLD TIMES TABLE

Sample Parameters, Matrix, Containers, Preservation, Hold Times per Analytical Group

Analytical Group	Matrix	Containers (number, size & type per sample)(1)	Preservation(2)	Preparation/ Analytical Holding Time(3)
PFAS	Water	250 mL high density polyethylene (HDPE)	Cool ≤6°C, Trizma (if chlorine residual present)	14 days until extraction; analysis within 28 days of extraction
	Solid	4.5 oz HDPE jar	Cool ≤6°C	14 days until extraction; analysis within 40 days of extraction
PFAS, SPLP	Solid	4.5 oz HDPE jar	Cool ≤6°C	28 days until leachate or extraction; analysis within 28 days of extraction. Note that these holding times may be subject to change based on most current NYSDEC technical guidance.
TCL VOCs	Water	3-40 mL glass VOA vials	HCl to pH<2, cool ≤6°C, no headspace	14 days. Unpreserved samples - 7 days
	Soil	40 mL VOA vial or coring device kit	1:1 solvent or zero headspace, cool ≤6°C. Additional unpreserved for %moisture if solvent collection	48 hours from sample collection to preservation; 14 days
TCL SVOCs	Water	2-1000 mL amber glass	Cool ≤6°C	7 days until extraction/analysis within 40 days of extraction
	Soil	8 oz glass jar	Cool ≤6°C	14 days until extraction/analysis within 40 days of extraction
TCL Pesticides	Water	2-1000 mL amber glass	Cool ≤6°C	7 days until extraction/analysis within 40 days of extraction
	Soil	8 oz. glass jar	Cool ≤6°C	14 days until extraction/analysis within 40 days of extraction
TCL PCBs	Water	2-1000 mL amber glass	Cool ≤6°C	1 year until extraction / analysis within 40 days of extraction
	Soil	8 oz. glass jar / each analysis	Cool ≤6°C	1 year until extraction / analysis within 40 days of extraction

Analytical Group	Matrix	Containers (number, size & type per sample)(1)	Preservation(2)	Preparation/ Analytical Holding Time(3)
TAL Metals (Including Major Cations and Ions)	Water	250 ml plastic	HNO_3 to pH <2 Cool, 4°C	180 days to analysis
	Soil	4 oz. glass jar	Cool ≤6ºC	
Mercury	Water	250 ml plastic	HNO_3 to pH <2 Cool, 4°C	28 days to analysis
	Soil	4 oz. glass jar	Cool ≤6ºC	
Cyanide	Water	250 ml plastic	NaOH	14 days to analysis
	Soil	4 oz. glass jar	Cool ≤6ºC	
1,4-Dioxane	Water	250 mL amber glass	Cool ≤6ºC	7 days until extraction/analysis within 40 days of extraction
TOC	Solid	4 oz. glass jar	Cool ≤6ºC	28 days
pH	Solid	4 oz. glass jar	Cool ≤6ºC	As soon as possible
Moisture, %	Solid	4 oz. glass jar	Cool ≤6ºC	Not applicable
TO-15	Air	Evacuated, certified clean canister	NA	30 days

(1) Container types and sizes listed are for guidance only. Laboratories may use different containers or combine analyses into larger volume containers.
(2) Cool ≤ 6 °C will be chilled using regular ice only.
(3) Holding time starts from date of collection unless otherwise noted.
Note: Laboratory standard operating procedures (SOPs) are retained at each laboratory's place of business and are available upon request for review.

16.0 QAPP WORKSHEET #20 – FIELD QUALITY CONTROL SUMMARY

The site-specific work plans may provide additional detail on the sample type, parameter, frequency, and sampling methods of field QC samples. Internal laboratory quality control checks will be those specified in EPA Methods or in the most recent NYSDEC ASP for the analytical method performed. All PFAS samples will be analyzed via EPA Method 1633.

The laboratory will be responsible for performing what is necessary for complying with appropriate standards and certifications of the selected EPA method and NYSDEC ASP requirements. The laboratory quality control acceptance criterion is method specific and will be the laboratory's responsibility to meet the most recent NYSDEC ASP criteria.

At a minimum the following field quality control samples will be collected.

Matrix	Analytical Group	No. of Field Duplicate Pairs	No. of MS/MSD	No. of Laboratory Trip Blanks	No. of Field Trip Blanks	No. of Equip. Blanks	No. of Rinsate (Rinse) Blanks or Material Checks
Water, solid	All analytical groups	5% of total number sampled or one sample per media, whichever is greater	5% of total number sampled per media	One per cooler for VOC and PFAS	One per cooler for PFAS	5% of total number sampled per media or at a minimum of one per day per matrix when decontamination of sampling equipment has occurred.	One per lot/batch of new equipment/ material
Air	All analytical groups	1 per 20 samples	None	None	None	None	None

17.0 QAPP WORKSHEET #21 – PROJECT SAMPLING SOP REFERENCES

The field activities for this Site will include collecting samples of water, solid and air matrix groups (see worksheet #12) for laboratory analysis. The procedures relative to implementing these field activities are included in the PCI WP. As described in the PCI WP specific precautions will be implemented when sampling for PFAS compounds to prevent cross contamination

18.0 QAPP WORKSHEET #22 – FIELD EQUIPMENT CALIBRATION, MAINTENANCE, TESTING, AND INSPECTION

The field equipment calibration, maintenance, testing, and inspection information are included in the PCI WP.

19.0 QAPP WORKSHEET #23 – ANALYTICAL AND VALIDATION SOPS

The laboratory's SOPs and the data validation SOPs are retained at each place of business and are available upon request for review once each laboratory's specific protocols have been followed. Modifications to methods performed are summarized below.

EPA 537 modifications for non-drinking water matrices.

- No Trizma preservation of non-drinking water samples.
- Weak anion exchange (WAX) solid phase extraction (SPE) column used for the effective extraction of the broader range of compounds instead of the SPE specified in EPA 537.
- Isotopically labelled analogs used as pre-extraction internal standards (isotope dilution) instead of the EPA 537 specified post-extraction addition of internal standards for the analysis of matrices that are not finished drinking waters (i.e., surface water, groundwater, wastewater and leachates) to correct results based on extraction efficiency.
- Alternate solvent used for extraction.
- Extracts are concentrated to dryness.
- Internal standards added post-extraction to calculate the recoveries of the isotopic analogs listed above.
- More PFAS analyzed than the EPA 537 list of compounds.
- Laboratory control sample (LCS) concentration not rotated as listed in EPA 537.
- RPD not controlled between the high and low areas for each internal standard in the initial calibration as listed in EPA 537.
- Holding time of 14 days from extraction to analysis used for solid matrices. EPA 537 only addresses holding times for drinking water samples.

TO-15 Low-level and SIM modifications

- < 30% RSD is allowed for 4 compounds instead of 2 compounds as listed in TO-15.
- UHP Nitrogen is used for blanks and standards instead of Zero Air since it provides a higher purity gas matrix.

20.0 QAPP WORKSHEET #24 – ANALYTICAL INSTRUMENT CALIBRATION

The analytical instrument calibration information is included in the laboratory QAM and/or the appropriate SOP. These documents are retained at each laboratory's place of business and are available upon request for review.

21.0 QAPP WORKSHEET #25 – ANALYTICAL INSTRUMENT AND EQUIPMENT MAINTENANCE, TESTING, AND INSPECTION

The analytical instrument and equipment maintenance, testing, and inspection information are included in the laboratory QAM and/or the appropriate SOP. These documents are retained at each laboratory's place of business and are available upon request for review.

22.0 QAPP WORKSHEET #26 & 27 – SAMPLE HANDLING, CUSTODY, AND DISPOSAL

Sampling Organization: C.T. Male Associates
Laboratories: Pace of Westborough, MA or Mansfield, MA
Method of sample delivery (shipper/carrier): Pace provided courier or FedEx/UPS
Number of days from reporting until sample disposal: As documented in laboratory QAM.

The SOPs within the PCI WP describes the various methods and techniques to be followed during the completion of the sampling activities, instrument operation and calibration, and chain-of-custody procedures. As described, specific precautions will be implemented when sampling for PFAS compounds to prevent cross contamination.

23.0 QAPP WORKSHEET #28 –ANALYTICAL QUALITY CONTROL AND CORRECTIVE ACTION

The analytical quality control and corrective action information are included in the laboratory QAM and/or the appropriate laboratory SOP. These documents are retained at the laboratory's place of business and are available upon request for review. Corrective action may be requested of the laboratory if issues arise that affect the quality of the data.

24.0 QAPP WORKSHEET #29 – PROJECT DOCUMENTS AND RECORDS TABLE

The documents and records that will be generated for the project including, but not limited to, sample collection and field measurement, analysis, and data assessment, are noted below.

Sample Collection Documents and Records	Generation	Verification	Where Maintained
Field Documents Field Notes Field Sample Forms COC Records Field Instrument Calibration Logs Sampling Notes Photographs Health and Safety Plan	C.T. Male Field Staff	C.T. Male Project Manager or designees	Field documents generated by C.T. Male field staff will be maintained in the project file located at C.T. Male offices until scanned and electronically filed. Documents should be scanned as soon as possible upon return to the office.
Project Report Documents Project sign-off forms Project report submittals	C.T. Male Project Staff	C.T. Male Project Manager	Report documents will be maintained in the project file located at C.T. Male offices until scanned and electronically filed.
Laboratory Documents Sample receipt, custody, and tracking record Equipment calibration logs (electronically stored) Sample preparation logs (electronically stored) Analysis Run Logs (electronically stored) Raw data	Laboratory Project Manager	Laboratory QA Manager	As detailed in the laboratories QAM, data is typically retained for a period of 5 years from the report date.
Correspondence	C.T. Male Project Staff	C.T. Male Project Manager	Project communications regarding the work plans, QAPP and schedule will be kept at C.T. Male offices.

Laboratory Data Deliverables									
Laboratory Record	**TCL VOCs**	**TCL SVOCs (including 1,4-dioxane)**	**TCL Pesticides**	**TCL PCBs**	**TAL Metals**	**Cyanide**	**PFAS**	**Other (non-organic)***	**TO-15**
Narrative	X	X	X	X	X	X	X	X	X
COC and any additional receiving documentation	X	X	X	X	X	X	X	X	X
Sample Results	X	X	X	X	X	X	X	X	X
QC Results	X	X	X	X	X	X	X	X	X
Raw Data (including but not limited to the following where appropriate - preparation logs, tune checks, ICALs, DDT/Endrin breakdown, instrument logs, tailing factor, chromatograms)	X	X	X	X	X	X	X	X	X
NYSDEC ASP Category B deliverables	X	X	X	X	X	X	X	X	X
EQuIS Version 4 EDDs	X	X	X	X	X	X	X	X	X

Notes:
* pH, % moisture, TOC
COC = Chain of custody
EDD = Electronic Data Deliverables
QC = Quality Control
DDT = dichloro-diphenyl-trichloroethane
NYSDEC = New York State Department of Environmental Conservation
ASP = Analytical Service Protocols

25.0 QAPP WORKSHEET #31, 32, & 33 – ASSESSMENTS AND CORRECTIVE ACTION TABLE

Assessments:

Assessment Type	Responsible Party & Organization	Number/ Frequency	Estimated Dates	Assessment Deliverable	Deliverable due date
Review of field procedures	C.T. Male QA Manager and/or Field Service Manager and /or designee for work completed by C.T. Male	As warranted by identification of an exception to protocols	Determined in accordance to the level of exception	On-site audit and documentation of corrective action, as required by exception	1 month from completion of audit and assessment
Review of field notes/deviations from work plans	C.T. Male QA Manager and/or Field Service Manager and/or designee for work completed by C.T. Male	Upon completion of routine monitoring round or investigation phase	Ongoing	Documentation of review	With the completion of an investigation or monitoring progress report.
Review of COCs	Laboratory, C. T. Male QA Manager and/or designee for samples collected by C.T. Male	Every event/report	Within 5 days of receipt	Documentation of review	Ongoing
Review/validation analytical reports	Environmental Data Services Inc.	Level IIA every event / report and Level IV determined on a case-by-case basis	Ongoing	Evaluation or validation report entitled DUSR	Ongoing

Assessment Response and Corrective Action:

Assessment Type	Responsibility for responding to assessment findings	Assessment Response Documentation	Timeframe for Response	Responsibility for Implementing Corrective Action	Responsible for monitoring
Review of field procedures	C.T. Male - QA Manager and/or Project Manager	Written report	30 days	C.T. Male QA Manager and/or Field Service Manager and /or designee for work completed by C.T. Male	Project Manager and/or QA Manager, C.T. Male
Review of field notes/deviations from work plans	C.T. Male – Project Manager	Note in field notes, project file, retained in correspondence	Immediately to within 3 days of deviation	C.T. Male QA Manager and/or Field Service Manager and/or designee for work completed by C.T. Male	QA Manager, C.T. Male
Review of COCs	C.T. Male - QA Manager / Laboratory	Note on COC	Immediately to within 3 days of discrepancy	Laboratory, C. T. Male QA Manager and/or designee for samples collected by C.T. Male	QA Manager, C.T. Male
Review analytical reports	C.T. Male – QA Manager	QA/QC Summary Sheet	Immediately to within 3 days of discrepancy	QA Manager, C.T. Male, Project Manager, Laboratory	QA Manager, C.T. Male or Project Manager or Laboratory
Review Validation Analytical Reports	Pace / Environmental Data Services	QA/QC Summary Sheet	Immediately to within 3 days of discrepancy	QA Manager, C.T. Male Project Manager, Laboratory	QA Manager, C.T. Male Project Manager, Laboratory

26.0 QAPP WORKSHEET #34 – DATA VERIFICATION AND VALIDATION INPUTS TABLE

The following worksheets define the data verification and validation process. This worksheet describes how each item will be verified. Worksheets #35 and #36 describe when specific activities will occur, what documentation is necessary and identifies the person(s) responsible for field and analytical data respectively.

Item	Description	Verification (Completeness)	Validation (conformance to specifications)
Planning Documents / Records			
1	Approved QAPP	X	
2	Contract	X	
3	Field SOP	X	
4	Laboratory SOP	X	
Field Records			
5	Field Notes	X	X
6	Equipment calibration records	X	X
7	COC forms	X	X
8	Sampling diagrams / surveys	X	X
9	Relevant correspondence	X	X
10	Change orders / deviations	X	X
11	Field audit reports	X	X
12	Field corrective action reports	X	X
Analytical Data Package (Verified by the Laboratory QA Officer)			
13	Cover sheet (laboratory identifying information)	X	X
14	Case narrative	X	X
15	Internal laboratory COC	X	X
16	Sample receipt records	X	X
17	Sample chronology (i.e., dates and times of receipt, preparation, and analysis	X	X
18	Definition of laboratory qualifiers	X	X
19	Results reporting forms	X	X
20	QC sample results	X	X
21	Compound(s) identified and reported in proper units	X	X

22	Labeled sample chromatograms (organics)	X	X
23	Electronic data deliverable	X	X
24	Communication records	X	X
25	MDL/RL establishment and verification	X	X
26	Standards traceability	X	X
27	Instrument calibration records	X	X
28	Corrective action reports	X	X
29	Raw data	X	X

27.0 QAPP WORKSHEET #35 – DATA VERIFICATION PROCEDURES TABLE

Described below are the processes that will be followed to validate project field data.

Records Reviewed	**Requirement Documents**	**Process Description**	**Responsible Person, Organization**
Field notes and forms	QAPP, Field SOPs	Verify that records are present and complete for each day of field activities. Verify that planned samples were collected and that sample collection locations are documented. Verify that changes/exceptions are documented and reported in accordance with requirements. Verify that required field monitoring was performed and results are documented.	C.T. Male Project Manager and/or Field Services Manager for work completed by C.T. Male field staff.
COC forms	QAPP, Field SOPs	Verify the completeness of COC records. Examine entries for consistency with the field notes. Verify that required signatures and dates are present. Check for transcription errors.	C.T. Male Project Manager and/or Field Services Manager for work completed by C.T. Male field staff.
Laboratory analytical reports	QAPP	Level IIA data review is performed for every event/report. Level IV is determined on a case-by-case basis. The evaluation/validation report entitled DUSR will be provided to NYSDEC.	Environmental Data Services

28.0 QAPP WORKSHEET #36 – DATA VALIDATION PROCEDURES

The data validator is responsible for review of the analytical data generated for this Site. The data validator will review analytical data and prepare a report documenting if the analytical data is valid and usable. The report will also present data rejection and qualification, where necessary, based on laboratory performance. The data validation will conform to NYSDEC DER-10, Appendix 2B, Data Usability Summary Reports (DUSR).

External data validation will be performed by an independent data validator who will utilize the applicable analytical method, standard laboratory practices and where applicable, NYSDEC ASP Category B Data Deliverable, the USEPA National and Regional Validation Guidelines/Procedures to determine the applicable qualifications of the data. This will include an evaluation of the laboratory raw data which may include but is not limited to the following:

- Analytical holding times
- Instrument performance checks
- Initial and continuing calibration
- Blanks
- Laboratory control samples
- Deuterated/surrogate compounds
- Matrix spike and spike duplicate samples
- Internal standards
- Target compound identification
- Target compound quantitation
- System performance
- Overall assessment of data

The validator will then prepare a DUSR of the review. The data validation company for this project is Environmental Data Services Inc.

29.0 QAPP WORKSHEET #37 – DATA USABILITY ASSESSMENT

Described below are the procedures / methods / activities that will be used to determine whether data are of the right type, quality, and quantity to support environmental decision making for the project. Also noted are how data quality issues will be addressed and how limitations on the use of the data will be handled.

Personnel (organization and position/title) responsible for participating in the data usability assessment:

Pace Laboratory QA manager, C.T. Male Project Manager, C.T. Male QA Manager, Environmental Data Services President

The usability of the data will be assessed based on a review of the field measurements and laboratory results. The laboratory results will be reviewed by the laboratory and EDS prior to submittal and by the C.T. Male QA Manager upon receipt.

Step 1	**Review the project's objectives and sampling design** Review the key outputs defined during systematic planning (i.e., DQOs) to make sure they are still applicable. Review the sampling design for consistency with stated objectives. This step provides the context for interpreting the data in subsequent steps.
Step 2	**Review the data verification and data validation outputs** Review available QA reports, including the data verification and/or data validation reports. Perform basic calculations and summarize the data (using graphs, maps, tables, etc.). Look for patterns, trends, and anomalies (i.e., unexpected results). Review deviations from planned activities (e.g., number and locations of samples, holding time exceedances, damaged samples, and SOP deviations) and determine their impacts on the data usability. Evaluate implications of unacceptable QC sample results.

Step 3	**Verify the assumptions of the selected statistical method** Verify whether underlying assumptions for selected statistical methods (if documented in the QAPP) are valid. Common assumptions include the distributional form of the data, independence of the data, dispersion characteristics, homogeneity, etc. Depending on the robustness of the statistical method, minor deviations from assumptions usually are not critical to statistical analysis and data interpretation. If serious deviations from assumptions are discovered, another statistical method may need to be selected.
Step 4	**Implement the statistical method** Implement the specified statistical procedures for analyzing the data and review underlying assumptions. For decision projects that involve hypothesis testing (e.g., "concentrations of lead in groundwater are below the action level") consider the consequences for selecting the incorrect alternative; for estimation projects (e.g., establishing a boundary for surface soil contamination), consider the tolerance for uncertainty in measurements.
Step 5	**Document data usability and draw conclusions** Determine if the data can be used as intended, considering implications of deviations and corrective actions. Discuss data quality indicators. Assess the performance of the sampling design and identify limitations on data use. Update the conceptual site model and document conclusions in the Pre-Construction Investigation report.

TABLES

Table 1
Laboratory Analyses
Hudson Valley Regional Airport, Town of Wappinger, NY   QAPP

Alpha Analytical, Inc. (Alpha) 320 Forbes Boulevard Mansfield, MA 02048	<u>Matrices</u> PFAS (soil, water) – EPA 537 modified

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria
TCL Volatiles - EPA 8260C/5035 High&Low (SOIL)										
Methylene chloride	75-09-2	10	1.65	ug/kg	70-130	30	70-130	30	30	
1,1-Dichloroethane	75-34-3	1.5	0.27	ug/kg	70-130	30	70-130	30	30	
Chloroform	67-66-3	1.5	0.37	ug/kg	70-130	30	70-130	30	30	
Carbon tetrachloride	56-23-5	1	0.345	ug/kg	70-130	30	70-130	30	30	
1,2-Dichloropropane	78-87-5	3.5	0.228	ug/kg	70-130	30	70-130	30	30	
Dibromochloromethane	124-48-1	1	0.176	ug/kg	70-130	30	70-130	30	30	
1,1,2-Trichloroethane	79-00-5	1.5	0.313	ug/kg	70-130	30	70-130	30	30	
Tetrachloroethene	127-18-4	1	0.302	ug/kg	70-130	30	70-130	30	30	
Chlorobenzene	108-90-7	1	0.348	ug/kg	70-130	30	70-130	30	30	
Trichlorofluoromethane	75-69-4	5	0.417	ug/kg	70-139	30	70-139	30	30	
1,2-Dichloroethane	107-06-2	1	0.246	ug/kg	70-130	30	70-130	30	30	
1,1,1-Trichloroethane	71-55-6	1	0.35	ug/kg	70-130	30	70-130	30	30	
Bromodichloromethane	75-27-4	1	0.308	ug/kg	70-130	30	70-130	30	30	
trans-1,3-Dichloropropene	10061-02-6	1	0.208	ug/kg	70-130	30	70-130	30	30	
cis-1,3-Dichloropropene	10061-01-5	1	0.231	ug/kg	70-130	30	70-130	30	30	
1,3-Dichloropropene, Total	542-75-6	1	0.208	ug/kg				30	30	
1,3-Dichloropropene, Total	542-75-6	1	0.208	ug/kg				30	30	
Bromoform	75-25-2	4	0.237	ug/kg	70-130	30	70-130	30	30	
1,1,2,2-Tetrachloroethane	79-34-5	1	0.298	ug/kg	70-130	30	70-130	30	30	
Benzene	71-43-2	1	0.193	ug/kg	70-130	30	70-130	30	30	
Toluene	108-88-3	1.5	0.195	ug/kg	70-130	30	70-130	30	30	
Ethylbenzene	100-41-4	1	0.17	ug/kg	70-130	30	70-130	30	30	
Chloromethane	74-87-3	5	0.436	ug/kg	52-130	30	52-130	30	30	
Bromomethane	74-83-9	2	0.338	ug/kg	57-147	30	57-147	30	30	
Vinyl chloride	75-01-4	2	0.315	ug/kg	67-130	30	67-130	30	30	
Chloroethane	75-00-3	2	0.316	ug/kg	50-151	30	50-151	30	30	
1,1-Dichloroethene	75-35-4	1	0.372	ug/kg	65-135	30	65-135	30	30	
trans-1,2-Dichloroethene	156-60-5	1.5	0.241	ug/kg	70-130	30	70-130	30	30	
Trichloroethene	79-01-6	1	0.302	ug/kg	70-130	30	70-130	30	30	
1,2-Dichlorobenzene	95-50-1	5	0.182	ug/kg	70-130	30	70-130	30	30	
1,3-Dichlorobenzene	541-73-1	5	0.218	ug/kg	70-130	30	70-130	30	30	
1,4-Dichlorobenzene	106-46-7	5	0.182	ug/kg	70-130	30	70-130	30	30	
Methyl tert butyl ether	1634-04-4	2	0.153	ug/kg	66-130	30	66-130	30	30	
p/m-Xylene	179601-23-1	2	0.351	ug/kg	70-130	30	70-130	30	30	
o-Xylene	95-47-6	2	0.338	ug/kg	70-130	30	70-130	30	30	
Xylene (Total)	1330-20-7	2	0.338	ug/kg				30	30	
Xylene (Total)	1330-20-7	2	0.338	ug/kg				30	30	
cis-1,2-Dichloroethene	156-59-2	1	0.342	ug/kg	70-130	30	70-130	30	30	
1,2-Dichloroethene (total)	540-59-0	1	0.241	ug/kg				30	30	
1,2-Dichloroethene (total)	540-59-0	1	0.241	ug/kg				30	30	
Styrene	100-42-5	2	0.401	ug/kg	70-130	30	70-130	30	30	
Dichlorodifluoromethane	75-71-8	10	0.5	ug/kg	30-146	30	30-146	30	30	
Acetone	67-64-1	10	2.29	ug/kg	54-140	30	54-140	30	30	

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria
TCL Volatiles - EPA 8260C/5035 High&Low (SOIL)										
Carbon disulfide	75-15-0	10	1.1	ug/kg	59-130	30	59-130	30	30	
2-Butanone	78-93-3	10	0.69	ug/kg	70-130	30	70-130	30	30	
4-Methyl-2-pentanone	108-10-1	10	0.244	ug/kg	70-130	30	70-130	30	30	
2-Hexanone	591-78-6	10	0.666	ug/kg	70-130	30	70-130	30	30	
Bromochloromethane	74-97-5	5	0.357	ug/kg	70-130	30	70-130	30	30	
1,2-Dibromoethane	106-93-4	4	0.199	ug/kg	70-130	30	70-130	30	30	
n-Butylbenzene	104-51-8	1	0.228	ug/kg	70-130	30	70-130	30	30	
sec-Butylbenzene	135-98-8	1	0.217	ug/kg	70-130	30	70-130	30	30	
tert-Butylbenzene	98-06-6	5	0.247	ug/kg	70-130	30	70-130	30	30	
1,2-Dibromo-3-chloropropane	96-12-8	5	0.396	ug/kg	68-130	30	68-130	30	30	
Isopropylbenzene	98-82-8	1	0.194	ug/kg	70-130	30	70-130	30	30	
p-Isopropyltoluene	99-87-6	1	0.202	ug/kg	70-130	30	70-130	30	30	
Naphthalene	91-20-3	5	0.138	ug/kg	70-130	30	70-130	30	30	
n-Propylbenzene	103-65-1	1	0.215	ug/kg	70-130	30	70-130	30	30	
1,2,3-Trichlorobenzene	87-61-6	5	0.251	ug/kg	70-130	30	70-130	30	30	
1,2,4-Trichlorobenzene	120-82-1	5	0.215	ug/kg	70-130	30	70-130	30	30	
1,3,5-Trimethylbenzene	108-67-8	5	0.161	ug/kg	70-130	30	70-130	30	30	
1,2,4-Trimethylbenzene	95-63-6	5	0.186	ug/kg	70-130	30	70-130	30	30	
Methyl Acetate	79-20-9	20	0.463	ug/kg	51-146	30	51-146	30	30	
Cyclohexane	110-82-7	20	0.433	ug/kg	59-142	30	59-142	30	30	
1,4-Dioxane	123-91-1	40	14.4	ug/kg	65-136	30	65-136	30	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	20	0.514	ug/kg	50-139	30	50-139	30	30	
Methyl cyclohexane	108-87-2	4	0.24	ug/kg	70-130	30	70-130	30	30	
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*
Toluene-d8	*2037-26-5*									*70-130*
4-Bromofluorobenzene	*460-00-4*									*70-130*
Dibromofluoromethane	*1868-53-7*									*70-130*
TCL Semivolatiles - EPA 8270D (SOIL)										
Acenaphthene	83-32-9	133.6	17.3012	ug/kg	31-137	50	31-137	50	50	
1,2,4-Trichlorobenzene	120-82-1	167	19.1048	ug/kg	38-107	50	38-107	50	50	
Hexachlorobenzene	118-74-1	100.2	18.704	ug/kg	40-140	50	40-140	50	50	
Bis(2-chloroethyl)ether	111-44-4	150.3	22.6452	ug/kg	40-140	50	40-140	50	50	
2-Chloronaphthalene	91-58-7	167	16.5664	ug/kg	40-140	50	40-140	50	50	
1,2-Dichlorobenzene	95-50-1	167	29.9932	ug/kg	40-140	50	40-140	50	50	
1,3-Dichlorobenzene	541-73-1	167	28.724	ug/kg	40-140	50	40-140	50	50	
1,4-Dichlorobenzene	106-46-7	167	29.1582	ug/kg	28-104	50	28-104	50	50	
3,3'-Dichlorobenzidine	91-94-1	167	44.422	ug/kg	40-140	50	40-140	50	50	
2,4-Dinitrotoluene	121-14-2	167	33.4	ug/kg	40-132	50	40-132	50	50	
2,6-Dinitrotoluene	606-20-2	167	28.6572	ug/kg	40-140	50	40-140	50	50	
Fluoranthene	206-44-0	100.2	19.1716	ug/kg	40-140	50	40-140	50	50	
4-Chlorophenyl phenyl ether	7005-72-3	167	17.869	ug/kg	40-140	50	40-140	50	50	
4-Bromophenyl phenyl ether	101-55-3	167	25.4842	ug/kg	40-140	50	40-140	50	50	
Bis(2-chloroisopropyl)ether	108-60-1	200.4	28.5236	ug/kg	40-140	50	40-140	50	50	

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria
TCL Semivolatiles - EPA 8270D (SOIL)										
Bis(2-chloroethoxy)methane	111-91-1	180.36	16.7334	ug/kg	40-117	50	40-117	50	50	
Hexachlorobutadiene	87-68-3	167	24.4488	ug/kg	40-140	50	40-140	50	50	
Hexachlorocyclopentadiene	77-47-4	477.62	151.302	ug/kg	40-140	50	40-140	50	50	
Hexachloroethane	67-72-1	133.6	27.0206	ug/kg	40-140	50	40-140	50	50	
Isophorone	78-59-1	150.3	21.6766	ug/kg	40-140	50	40-140	50	50	
Naphthalene	91-20-3	167	20.3406	ug/kg	40-140	50	40-140	50	50	
Nitrobenzene	98-95-3	150.3	24.716	ug/kg	40-140	50	40-140	50	50	
NitrosoDiPhenylAmine(NDPA)/DPA	86-30-6	133.6	19.0046	ug/kg	36-157	50	36-157	50	50	
n-Nitrosodi-n-propylamine	621-64-7	167	25.7848	ug/kg	32-121	50	32-121	50	50	
Bis(2-Ethylhexyl)phthalate	117-81-7	167	57.782	ug/kg	40-140	50	40-140	50	50	
Butyl benzyl phthalate	85-68-7	167	42.084	ug/kg	40-140	50	40-140	50	50	
Di-n-butylphthalate	84-74-2	167	31.6632	ug/kg	40-140	50	40-140	50	50	
Di-n-octylphthalate	117-84-0	167	56.78	ug/kg	40-140	50	40-140	50	50	
Diethyl phthalate	84-66-2	167	15.4642	ug/kg	40-140	50	40-140	50	50	
Dimethyl phthalate	131-11-3	167	35.07	ug/kg	40-140	50	40-140	50	50	
Benzo(a)anthracene	56-55-3	100.2	18.8042	ug/kg	40-140	50	40-140	50	50	
Benzo(a)pyrene	50-32-8	133.6	40.748	ug/kg	40-140	50	40-140	50	50	
Benzo(b)fluoranthene	205-99-2	100.2	28.1228	ug/kg	40-140	50	40-140	50	50	
Benzo(k)fluoranthene	207-08-9	100.2	26.72	ug/kg	40-140	50	40-140	50	50	
Chrysene	218-01-9	100.2	17.368	ug/kg	40-140	50	40-140	50	50	
Acenaphthylene	208-96-8	133.6	25.7848	ug/kg	40-140	50	40-140	50	50	
Anthracene	120-12-7	100.2	32.565	ug/kg	40-140	50	40-140	50	50	
Benzo(ghi)perylene	191-24-2	133.6	19.6392	ug/kg	40-140	50	40-140	50	50	
Fluorene	86-73-7	167	16.2324	ug/kg	40-140	50	40-140	50	50	
Phenanthrene	85-01-8	100.2	20.3072	ug/kg	40-140	50	40-140	50	50	
Dibenzo(a,h)anthracene	53-70-3	100.2	19.3052	ug/kg	40-140	50	40-140	50	50	
Indeno(1,2,3-cd)Pyrene	193-39-5	133.6	23.2798	ug/kg	40-140	50	40-140	50	50	
Pyrene	129-00-0	100.2	16.5998	ug/kg	35-142	50	35-142	50	50	
Biphenyl	92-52-4	380.76	38.744	ug/kg	54-104	50	54-104	50	50	
4-Chloroaniline	106-47-8	167	30.394	ug/kg	40-140	50	40-140	50	50	
2-Nitroaniline	88-74-4	167	32.1976	ug/kg	47-134	50	47-134	50	50	
3-Nitroaniline	99-09-2	167	31.4962	ug/kg	26-129	50	26-129	50	50	
4-Nitroaniline	100-01-6	167	69.138	ug/kg	41-125	50	41-125	50	50	
Dibenzofuran	132-64-9	167	15.7982	ug/kg	40-140	50	40-140	50	50	
2-Methylnaphthalene	91-57-6	200.4	20.1736	ug/kg	40-140	50	40-140	50	50	
Acetophenone	98-86-2	167	20.6746	ug/kg	14-144	50	14-144	50	50	
2,4,6-Trichlorophenol	88-06-2	100.2	31.6632	ug/kg	30-130	50	30-130	50	50	
P-Chloro-M-Cresol	59-50-7	167	24.883	ug/kg	26-103	50	26-103	50	50	
2-Chlorophenol	95-57-8	167	19.7394	ug/kg	25-102	50	25-102	50	50	
2,4-Dichlorophenol	120-83-2	150.3	26.8536	ug/kg	30-130	50	30-130	50	50	
2,4-Dimethylphenol	105-67-9	167	55.11	ug/kg	30-130	50	30-130	50	50	
2-Nitrophenol	88-75-5	360.72	62.792	ug/kg	30-130	50	30-130	50	50	
4-Nitrophenol	100-02-7	233.8	68.136	ug/kg	11-114	50	11-114	50	50	

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria
TCL Semivolatiles - EPA 8270D (SOIL)										
2,4-Dinitrophenol	51-28-5	801.6	77.822	ug/kg	4-130	50	4-130	50	50	
4,6-Dinitro-o-cresol	534-52-1	434.2	80.16	ug/kg	10-130	50	10-130	50	50	
Pentachlorophenol	87-86-5	133.6	36.74	ug/kg	17-109	50	17-109	50	50	
Phenol	108-95-2	167	25.217	ug/kg	26-90	50	26-90	50	50	
2-Methylphenol	95-48-7	167	25.885	ug/kg	30-130.	50	30-130.	50	50	
3-Methylphenol/4-Methylphenol	106-44-5	240.48	26.1522	ug/kg	30-130	50	30-130	50	50	
2,4,5-Trichlorophenol	95-95-4	167	31.9972	ug/kg	30-130	50	30-130	50	50	
Benzoic Acid	65-85-0	541.08	169.004	ug/kg	10-110	50	10-110	50	50	
Benzyl Alcohol	100-51-6	167	51.102	ug/kg	40-140	50	40-140	50	50	
Carbazole	86-74-8	167	16.2324	ug/kg	54-128	50	54-128	50	50	
2-Fluorophenol	*367-12-4*									*25-120*
Phenol-d6	*13127-88-3*									*10-120*
Nitrobenzene-d5	*4165-60-0*									*23-120*
2-Fluorobiphenyl	*321-60-8*									*30-120*
2,4,6-Tribromophenol	*118-79-6*									*10-136*
4-Terphenyl-d14	*1718-51-0*									*18-120*
TCL Pesticides - EPA 8081B (SOIL)										
Delta-BHC	319-86-8	7.992	1.5651	ug/kg	30-150	30	30-150	50	50	
Lindane	58-89-9	3.33	1.48851	ug/kg	30-150	30	30-150	50	50	
Alpha-BHC	319-84-6	3.33	0.94572	ug/kg	30-150	30	30-150	50	50	
Beta-BHC	319-85-7	7.992	3.0303	ug/kg	30-150	30	30-150	50	50	
Heptachlor	76-44-8	3.996	1.79154	ug/kg	30-150	30	30-150	50	50	
Aldrin	309-00-2	7.992	2.81385	ug/kg	30-150	30	30-150	50	50	
Heptachlor epoxide	1024-57-3	14.985	4.4955	ug/kg	30-150	30	30-150	50	50	
Endrin	72-20-8	3.33	1.3653	ug/kg	30-150	30	30-150	50	50	
Endrin aldehyde	7421-93-4	9.99	3.4965	ug/kg	30-150	30	30-150	50	50	
Endrin ketone	53494-70-5	7.992	2.05794	ug/kg	30-150	30	30-150	50	50	
Dieldrin	60-57-1	4.995	2.4975	ug/kg	30-150	30	30-150	50	50	
4,4'-DDE	72-55-9	7.992	1.84815	ug/kg	30-150	30	30-150	50	50	
4,4'-DDD	72-54-8	7.992	2.85048	ug/kg	30-150	30	30-150	50	50	
4,4'-DDT	50-29-3	14.985	6.4269	ug/kg	30-150	30	30-150	50	50	
Endosulfan I	959-98-8	7.992	1.88811	ug/kg	30-150	30	30-150	50	50	
Endosulfan II	33213-65-9	7.992	2.67066	ug/kg	30-150	30	30-150	50	50	
Endosulfan sulfate	1031-07-8	3.33	1.58508	ug/kg	30-150	30	30-150	50	50	
Methoxychlor	72-43-5	14.985	4.662	ug/kg	30-150	30	30-150	50	50	
Toxaphene	8001-35-2	149.85	41.958	ug/kg	30-150	30	30-150	50	50	
cis-Chlordane	5103-71-9	9.99	2.78388	ug/kg	30-150	30	30-150	50	50	
trans-Chlordane	5103-74-2	9.99	2.63736	ug/kg	30-150	30	30-150	50	50	
Chlordane	57-74-9	64.935	26.4735	ug/kg	30-150	30	30-150	50	50	
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*
Decachlorobiphenyl	*2051-24-3*									*30-150*
TCL PCBs - EPA 8082A (SOIL)										
Aroclor 1016	12674-11-2	33.5	3.7989	ug/kg	40-140	50	40-140	50	50	

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria
TCL PCBs - EPA 8082A (SOIL)										
Aroclor 1221	11104-28-2	33.5	5.0987	ug/kg	40-140	50	40-140	50	50	
Aroclor 1232	11141-16-5	33.5	3.2964	ug/kg	40-140	50	40-140	50	50	
Aroclor 1242	53469-21-9	33.5	4.1004	ug/kg	40-140	50	40-140	50	50	
Aroclor 1248	12672-29-6	33.5	3.7587	ug/kg	40-140	50	40-140	50	50	
Aroclor 1254	11097-69-1	33.5	2.7336	ug/kg	40-140	50	40-140	50	50	
Aroclor 1260	11096-82-5	33.5	3.4974	ug/kg	40-140	50	40-140	50	50	
Aroclor 1262	37324-23-5	33.5	2.7537	ug/kg	40-140	50	40-140	50	50	
Aroclor 1268	11100-14-4	33.5	2.3718	ug/kg	40-140	50	40-140	50	50	
PCBs, Total	1336-36-3	33.5	1.541	ug/kg				50	50	
PCBs, Total	1336-36-3	33.5	1.541	ug/kg				50	50	
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*
Decachlorobiphenyl	*2051-24-3*									*30-150*
METALS by 6010C/7471B (SOIL)										
Aluminum, Total	7429-90-5	4	1.08	mg/kg	48-151		75-125	20	20	
Antimony, Total	7440-36-0	2	0.152	mg/kg	1-208		75-125	20	20	
Arsenic, Total	7440-38-2	0.4	0.0832	mg/kg	79-121		75-125	20	20	
Barium, Total	7440-39-3	0.4	0.0696	mg/kg	83-117		75-125	20	20	
Beryllium, Total	7440-41-7	0.2	0.0132	mg/kg	83-117		75-125	20	20	
Cadmium, Total	7440-43-9	0.4	0.0392	mg/kg	83-117		75-125	20	20	
Calcium, Total	7440-70-2	4	1.4	mg/kg	81-119		75-125	20	20	
Chromium, Total	7440-47-3	0.4	0.0384	mg/kg	80-120		75-125	20	20	
Cobalt, Total	7440-48-4	0.8	0.0664	mg/kg	84-115		75-125	20	20	
Copper, Total	7440-50-8	0.4	0.1032	mg/kg	81-118		75-125	20	20	
Iron, Total	7439-89-6	2	0.3612	mg/kg	45-155		75-125	20	20	
Lead, Total	7439-92-1	2	0.1072	mg/kg	81-117		75-125	20	20	
Magnesium, Total	7439-95-4	4	0.616	mg/kg	76-124		75-125	20	20	
Manganese, Total	7439-96-5	0.4	0.0636	mg/kg	81-117		75-125	20	20	
Mercury, Total	7439-97-6	0.08	0.016896	mg/kg	72-128		80-120	20	20	
Nickel, Total	7440-02-0	1	0.0968	mg/kg	83-117		75-125	20	20	
Potassium, Total	7440-09-7	100	5.76	mg/kg	71-129		75-125	20	20	
Selenium, Total	7782-49-2	0.8	0.1032	mg/kg	78-122		75-125	20	20	
Silver, Total	7440-22-4	0.4	0.1132	mg/kg	75-124		75-125	20	20	
Sodium, Total	7440-23-5	80	1.26	mg/kg	72-127		75-125	20	20	
Thallium, Total	7440-28-0	0.8	0.126	mg/kg	80-120		75-125	20	20	
Vanadium, Total	7440-62-2	0.4	0.0812	mg/kg	78-122		75-125	20	20	
Zinc, Total	7440-66-6	2	0.1172	mg/kg	82-118		75-125	20	20	
CYANIDE by 9010C/9012B (SOIL)										
Cyanide, Total	57-12-5	1	0.212	mg/kg	80-120	35	75-125	35	35	

TABLE 2B: PARAMETERS - METHODS, LIMITS, ACCURACY AND PRECISION (WATER)
Hudson Valley Regional Airport, Town of Wappinger, NY

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria
PFAS - EPA 537(M)-Isotope Dilution (WATER)										
Perfluorobutanoic Acid (PFBA)	375-22-4	2	0.1312	ng/l	50-150	30	50-150	30	30	
Perfluoropentanoic Acid (PFPeA)	2706-90-3	2	0.0856	ng/l	50-150	30	50-150	30	30	
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	2	0.11	ng/l	50-150	30	50-150	30	30	
Perfluorohexanoic Acid (PFHxA)	307-24-4	2	0.1264	ng/l	50-150	30	50-150	30	30	
Perfluoroheptanoic Acid (PFHpA)	375-85-9	2	0.0924	ng/l	50-150	30	50-150	30	30	
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	2	0.1076	ng/l	50-150	30	50-150	30	30	
Perfluorooctanoic Acid (PFOA)	335-67-1	2	0.0504	ng/l	50-150	30	50-150	30	30	
Perfluorononanoic Acid (PFNA)	375-95-1	2	0.1008	ng/l	50-150	30	50-150	30	30	
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	2	0.1116	ng/l	50-150	30	50-150	30	30	
Perfluorodecanoic Acid (PFDA)	335-76-2	2	0.1904	ng/l	50-150	30	50-150	30	30	
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	2	0.2908	ng/l	50-150	30	50-150	30	30	
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA	2355-31-9	2	0.2504	ng/l	50-150	30	50-150	30	30	
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	2	0.1912	ng/l	50-150	30	50-150	30	30	
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	2	0.2224	ng/l	50-150	30	50-150	30	30	
Perfluorooctanesulfonamide (FOSA)	754-91-6	2	0.2268	ng/l	50-150	30	50-150	30	30	
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	2	0.3728	ng/l	50-150	30	50-150	30	30	
Perfluorododecanoic Acid (PFDoA)	307-55-1	2	0.0916	ng/l	50-150	30	50-150	30	30	
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	2	0.0904	ng/l	50-150	30	50-150	30	30	
Perfluorotetradecanoic Acid (PFTA)	376-06-7	2	0.072	ng/l	50-150	30	50-150	30	30	
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)		2	0.194	ng/l	50-150	30	50-150	30	30	
Perfluoroheptanesulfonic Acid (PFHpS)		2	0.155	ng/l	50-150	30	50-150	30	30	
Perfluoro[13C4]Butanoic Acid (MPFBA)	*NONE*									*50-150*
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	*NONE*									*50-150*
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	*NONE*									*50-150*
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	*NONE*									*50-150*
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	*NONE*									*50-150*
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	*NONE*									*50-150*
Perfluoro[13C8]Octanoic Acid (M8PFOA)	*NONE*									*50-150*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6	*NONE*									*50-150*
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	*NONE*									*50-150*
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	*NONE*									*50-150*
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	*NONE*									*50-150*
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8	*NONE*									*50-150*
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (	*NONE*									*50-150*
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	*NONE*									*50-150*
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	*NONE*									*50-150*
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d	*NONE*									*50-150*
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	*NONE*									*50-150*
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	*NONE*									*50-150*
TCL Volatiles - EPA 8260C (WATER)										
Methylene chloride	75-09-2	2.5	0.7	ug/l	70-130	20	70-130	20	20	
1,1-Dichloroethane	75-34-3	2.5	0.7	ug/l	70-130	20	70-130	20	20	
Chloroform	67-66-3	2.5	0.7	ug/l	70-130	20	70-130	20	20	

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria
TCL Volatiles - EPA 8260C (WATER)										
Carbon tetrachloride	56-23-5	0.5	0.134	ug/l	63-132	20	63-132	20	20	
1,2-Dichloropropane	78-87-5	1	0.137	ug/l	70-130	20	70-130	20	20	
Dibromochloromethane	124-48-1	0.5	0.149	ug/l	63-130	20	63-130	20	20	
1,1,2-Trichloroethane	79-00-5	1.5	0.5	ug/l	70-130	20	70-130	20	20	
Tetrachloroethene	127-18-4	0.5	0.181	ug/l	70-130	20	70-130	20	20	
Chlorobenzene	108-90-7	2.5	0.7	ug/l	75-130	20	75-130	20	20	
Trichlorofluoromethane	75-69-4	2.5	0.7	ug/l	62-150	20	62-150	20	20	
1,2-Dichloroethane	107-06-2	0.5	0.132	ug/l	70-130	20	70-130	20	20	
1,1,1-Trichloroethane	71-55-6	2.5	0.7	ug/l	67-130	20	67-130	20	20	
Bromodichloromethane	75-27-4	0.5	0.192	ug/l	67-130	20	67-130	20	20	
trans-1,3-Dichloropropene	10061-02-6	0.5	0.164	ug/l	70-130	20	70-130	20	20	
cis-1,3-Dichloropropene	10061-01-5	0.5	0.144	ug/l	70-130	20	70-130	20	20	
1,3-Dichloropropene, Total	542-75-6	0.5	0.144	ug/l				20	20	
1,3-Dichloropropene, Total	542-75-6	0.5	0.144	ug/l				20	20	
Bromoform	75-25-2	2	0.65	ug/l	54-136	20	54-136	20	20	
1,1,2,2-Tetrachloroethane	79-34-5	0.5	0.167	ug/l	67-130	20	67-130	20	20	
Benzene	71-43-2	0.5	0.159	ug/l	70-130	20	70-130	20	20	
Toluene	108-88-3	2.5	0.7	ug/l	70-130	20	70-130	20	20	
Ethylbenzene	100-41-4	2.5	0.7	ug/l	70-130	20	70-130	20	20	
Chloromethane	74-87-3	2.5	0.7	ug/l	64-130	20	64-130	20	20	
Bromomethane	74-83-9	2.5	0.7	ug/l	39-139	20	39-139	20	20	
Vinyl chloride	75-01-4	1	0.0714	ug/l	55-140	20	55-140	20	20	
Chloroethane	75-00-3	2.5	0.7	ug/l	55-138	20	55-138	20	20	
1,1-Dichloroethene	75-35-4	0.5	0.169	ug/l	61-145	20	61-145	20	20	
trans-1,2-Dichloroethene	156-60-5	2.5	0.7	ug/l	70-130	20	70-130	20	20	
Trichloroethene	79-01-6	0.5	0.175	ug/l	70-130	20	70-130	20	20	
1,2-Dichlorobenzene	95-50-1	2.5	0.7	ug/l	70-130	20	70-130	20	20	
1,3-Dichlorobenzene	541-73-1	2.5	0.7	ug/l	70-130	20	70-130	20	20	
1,4-Dichlorobenzene	106-46-7	2.5	0.7	ug/l	70-130	20	70-130	20	20	
Methyl tert butyl ether	1634-04-4	2.5	0.7	ug/l	63-130	20	63-130	20	20	
p/m-Xylene	179601-23-1	2.5	0.7	ug/l	70-130	20	70-130	20	20	
o-Xylene	95-47-6	2.5	0.7	ug/l	70-130	20	70-130	20	20	
Xylene (Total)	1330-20-7	2.5	0.7	ug/l				20	20	
Xylene (Total)	1330-20-7	2.5	0.7	ug/l				20	20	
cis-1,2-Dichloroethene	156-59-2	2.5	0.7	ug/l	70-130	20	70-130	20	20	
1,2-Dichloroethene (total)	540-59-0	2.5	0.7	ug/l				20	20	
1,2-Dichloroethene (total)	540-59-0	2.5	0.7	ug/l				20	20	
Styrene	100-42-5	2.5	0.7	ug/l	70-130	20	70-130	20	20	
Dichlorodifluoromethane	75-71-8	5	1	ug/l	36-147	20	36-147	20	20	
Acetone	67-64-1	5	1.46	ug/l	58-148	20	58-148	20	20	
Carbon disulfide	75-15-0	5	1	ug/l	51-130	20	51-130	20	20	
2-Butanone	78-93-3	5	1.94	ug/l	63-138	20	63-138	20	20	
4-Methyl-2-pentanone	108-10-1	5	1	ug/l	59-130	20	59-130	20	20	

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria
TCL Volatiles - EPA 8260C (WATER)										
2-Hexanone	591-78-6	5	1	ug/l	57-130	20	57-130	20	20	
Bromochloromethane	74-97-5	2.5	0.7	ug/l	70-130	20	70-130	20	20	
1,2-Dibromoethane	106-93-4	2	0.65	ug/l	70-130	20	70-130	20	20	
n-Butylbenzene	104-51-8	2.5	0.7	ug/l	53-136	20	53-136	20	20	
sec-Butylbenzene	135-98-8	2.5	0.7	ug/l	70-130	20	70-130	20	20	
tert-Butylbenzene	98-06-6	2.5	0.7	ug/l	70-130	20	70-130	20	20	
1,2-Dibromo-3-chloropropane	96-12-8	2.5	0.7	ug/l	41-144	20	41-144	20	20	
Isopropylbenzene	98-82-8	2.5	0.7	ug/l	70-130	20	70-130	20	20	
p-Isopropyltoluene	99-87-6	2.5	0.7	ug/l	70-130	20	70-130	20	20	
Naphthalene	91-20-3	2.5	0.7	ug/l	70-130	20	70-130	20	20	
n-Propylbenzene	103-65-1	2.5	0.7	ug/l	69-130	20	69-130	20	20	
1,2,3-Trichlorobenzene	87-61-6	2.5	0.7	ug/l	70-130	20	70-130	20	20	
1,2,4-Trichlorobenzene	120-82-1	2.5	0.7	ug/l	70-130	20	70-130	20	20	
1,3,5-Trimethylbenzene	108-67-8	2.5	0.7	ug/l	64-130	20	64-130	20	20	
1,2,4-Trimethylbenzene	95-63-6	2.5	0.7	ug/l	70-130	20	70-130	20	20	
Methyl Acetate	79-20-9	2	0.234	ug/l	70-130	20	70-130	20	20	
Cyclohexane	110-82-7	10	0.271	ug/l	70-130	20	70-130	20	20	
1,4-Dioxane	123-91-1	250	60.8	ug/l	56-162	20	56-162	20	20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	2.5	0.7	ug/l	70-130	20	70-130	20	20	
Methyl cyclohexane	108-87-2	10	0.396	ug/l	70-130	20	70-130	20	20	
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*
Toluene-d8	*2037-26-5*									*70-130*
4-Bromofluorobenzene	*460-00-4*									*70-130*
Dibromofluoromethane	*1868-53-7*									*70-130*
TCL Semivolatiles - EPA 8270D (WATER)										
Acenaphthene	83-32-9	2	0.591	ug/l	37-111	30	37-111	30	30	
1,2,4-Trichlorobenzene	120-82-1	5	0.661	ug/l	39-98	30	39-98	30	30	
Hexachlorobenzene	118-74-1	2	0.579	ug/l	40-140	30	40-140	30	30	
Bis(2-chloroethyl)ether	111-44-4	2	0.669	ug/l	40-140	30	40-140	30	30	
2-Chloronaphthalene	91-58-7	2	0.64	ug/l	40-140	30	40-140	30	30	
1,2-Dichlorobenzene	95-50-1	2	0.732	ug/l	40-140	30	40-140	30	30	
1,3-Dichlorobenzene	541-73-1	2	0.688	ug/l	40-140	30	40-140	30	30	
1,4-Dichlorobenzene	106-46-7	2	0.708	ug/l	36-97	30	36-97	30	30	
3,3'-Dichlorobenzidine	91-94-1	5	1.39	ug/l	40-140	30	40-140	30	30	
2,4-Dinitrotoluene	121-14-2	5	0.845	ug/l	48-143	30	48-143	30	30	
2,6-Dinitrotoluene	606-20-2	5	1.12	ug/l	40-140	30	40-140	30	30	
Fluoranthene	206-44-0	2	0.568	ug/l	40-140	30	40-140	30	30	
4-Chlorophenyl phenyl ether	7005-72-3	2	0.625	ug/l	40-140	30	40-140	30	30	
4-Bromophenyl phenyl ether	101-55-3	2	0.731	ug/l	40-140	30	40-140	30	30	
Bis(2-chloroisopropyl)ether	108-60-1	2	0.696	ug/l	40-140	30	40-140	30	30	
Bis(2-chloroethoxy)methane	111-91-1	5	0.626	ug/l	40-140	30	40-140	30	30	
Hexachlorobutadiene	87-68-3	2	0.717	ug/l	40-140	30	40-140	30	30	
Hexachlorocyclopentadiene	77-47-4	20	7.84	ug/l	40-140	30	40-140	30	30	

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria
TCL Semivolatiles - EPA 8270D (WATER)										
Hexachloroethane	67-72-1	2	0.682	ug/l	40-140	30	40-140	30	30	
Isophorone	78-59-1	5	0.601	ug/l	40-140	30	40-140	30	30	
Naphthalene	91-20-3	2	0.68	ug/l	40-140	30	40-140	30	30	
Nitrobenzene	98-95-3	2	0.753	ug/l	40-140	30	40-140	30	30	
NitrosoDiPhenylAmine(NDPA)/DPA	86-30-6	2	0.644	ug/l	40-140	30	40-140	30	30	
n-Nitrosodi-n-propylamine	621-64-7	5	0.7	ug/l	29-132	30	29-132	30	30	
Bis(2-Ethylhexyl)phthalate	117-81-7	3	0.91	ug/l	40-140	30	40-140	30	30	
Butyl benzyl phthalate	85-68-7	5	1.26	ug/l	40-140	30	40-140	30	30	
Di-n-butylphthalate	84-74-2	5	0.689	ug/l	40-140	30	40-140	30	30	
Di-n-octylphthalate	117-84-0	5	1.14	ug/l	40-140	30	40-140	30	30	
Diethyl phthalate	84-66-2	5	0.628	ug/l	40-140	30	40-140	30	30	
Dimethyl phthalate	131-11-3	5	0.65	ug/l	40-140	30	40-140	30	30	
Benzo(a)anthracene	56-55-3	2	0.61	ug/l	40-140	30	40-140	30	30	
Benzo(a)pyrene	50-32-8	2	0.539	ug/l	40-140	30	40-140	30	30	
Benzo(b)fluoranthene	205-99-2	2	0.635	ug/l	40-140	30	40-140	30	30	
Benzo(k)fluoranthene	207-08-9	2	0.597	ug/l	40-140	30	40-140	30	30	
Chrysene	218-01-9	2	0.543	ug/l	40-140	30	40-140	30	30	
Acenaphthylene	208-96-8	2	0.658	ug/l	45-123	30	45-123	30	30	
Anthracene	120-12-7	2	0.645	ug/l	40-140	30	40-140	30	30	
Benzo(ghi)perylene	191-24-2	2	0.611	ug/l	40-140	30	40-140	30	30	
Fluorene	86-73-7	2	0.619	ug/l	40-140	30	40-140	30	30	
Phenanthrene	85-01-8	2	0.613	ug/l	40-140	30	40-140	30	30	
Dibenzo(a,h)anthracene	53-70-3	2	0.548	ug/l	40-140	30	40-140	30	30	
Indeno(1,2,3-cd)Pyrene	193-39-5	2	0.707	ug/l	40-140	30	40-140	30	30	
Pyrene	129-00-0	2	0.569	ug/l	26-127	30	26-127	30	30	
Biphenyl	92-52-4	2	0.757	ug/l	40-140	30	40-140	30	30	
4-Chloroaniline	106-47-8	5	0.632	ug/l	40-140	30	40-140	30	30	
2-Nitroaniline	88-74-4	5	1.14	ug/l	52-143	30	52-143	30	30	
3-Nitroaniline	99-09-2	5	1.22	ug/l	25-145	30	25-145	30	30	
4-Nitroaniline	100-01-6	5	1.3	ug/l	51-143	30	51-143	30	30	
Dibenzofuran	132-64-9	2	0.656	ug/l	40-140	30	40-140	30	30	
2-Methylnaphthalene	91-57-6	2	0.72	ug/l	40-140	30	40-140	30	30	
Acetophenone	98-86-2	5	0.847	ug/l	39-129	30	39-129	30	30	
2,4,6-Trichlorophenol	88-06-2	5	0.681	ug/l	30-130	30	30-130	30	30	
P-Chloro-M-Cresol	59-50-7	2	0.617	ug/l	23-97	30	23-97	30	30	
2-Chlorophenol	95-57-8	2	0.631	ug/l	27-123	30	27-123	30	30	
2,4-Dichlorophenol	120-83-2	5	0.769	ug/l	30-130	30	30-130	30	30	
2,4-Dimethylphenol	105-67-9	5	1.64	ug/l	30-130	30	30-130	30	30	
2-Nitrophenol	88-75-5	10	1.52	ug/l	30-130	30	30-130	30	30	
4-Nitrophenol	100-02-7	10	1.77	ug/l	10-80	30	10-80	30	30	
2,4-Dinitrophenol	51-28-5	20	5.47	ug/l	20-130	30	20-130	30	30	
4,6-Dinitro-o-cresol	534-52-1	10	2.1	ug/l	20-164	30	20-164	30	30	
Pentachlorophenol	87-86-5	10	3.43	ug/l	9-103	30	9-103	30	30	

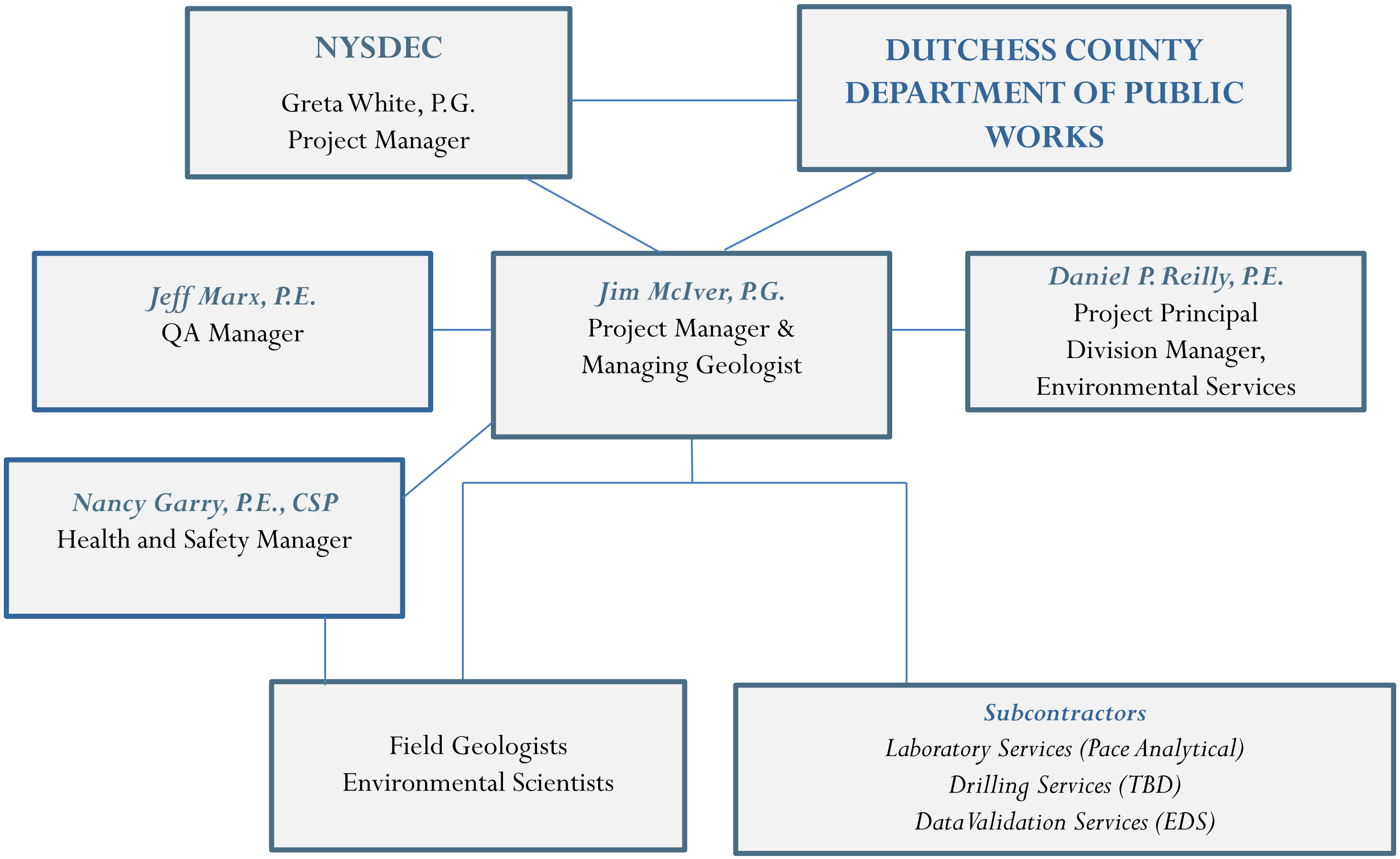
Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria
TCL Semivolatiles - EPA 8270D (WATER)										
Phenol	108-95-2	5	1.89	ug/l	12-110	30	12-110	30	30	
2-Methylphenol	95-48-7	5	1.02	ug/l	30-130	30	30-130	30	30	
3-Methylphenol/4-Methylphenol	106-44-5	5	1.11	ug/l	30-130	30	30-130	30	30	
2,4,5-Trichlorophenol	95-95-4	5	0.715	ug/l	30-130	30	30-130	30	30	
Benzoic Acid	65-85-0	50	12.9	ug/l	10-164	30	10-164	30	30	
Benzyl Alcohol	100-51-6	2	0.725	ug/l	26-116	30	26-116	30	30	
Carbazole	86-74-8	2	0.627	ug/l	55-144	30	55-144	30	30	
2-Fluorophenol	*367-12-4*									*21-120*
Phenol-d6	*13127-88-3*									*10-120*
Nitrobenzene-d5	*4165-60-0*									*23-120*
2-Fluorobiphenyl	*321-60-8*									*15-120*
2,4,6-Tribromophenol	*118-79-6*									*10-120*
4-Terphenyl-d14	*1718-51-0*									*41-149*
1,4 Dioxane - EPA 8270D-SIM (ug/L) (WATER)										
1,4-Dioxane	123-91-1	0.15	0.075	ug/l	40-140	30	40-140	30	30	
1,4-Dioxane-d8	*17647-74-4*									*15-110*
1,4-Dioxane-d8 (IS)	17647-74-4			ug/l						
TCL Pesticides - EPA 8081B (WATER)										
Delta-BHC	319-86-8	0.02	0.00467	ug/l	30-150	20	30-150	30	30	
Lindane	58-89-9	0.02	0.00434	ug/l	30-150	20	30-150	30	30	
Alpha-BHC	319-84-6	0.02	0.00439	ug/l	30-150	20	30-150	30	30	
Beta-BHC	319-85-7	0.02	0.0056	ug/l	30-150	20	30-150	30	30	
Heptachlor	76-44-8	0.02	0.0031	ug/l	30-150	20	30-150	30	30	
Aldrin	309-00-2	0.02	0.00216	ug/l	30-150	20	30-150	30	30	
Heptachlor epoxide	1024-57-3	0.02	0.00415	ug/l	30-150	20	30-150	30	30	
Endrin	72-20-8	0.04	0.00429	ug/l	30-150	20	30-150	30	30	
Endrin aldehyde	7421-93-4	0.04	0.0081	ug/l	30-150	20	30-150	30	30	
Endrin ketone	53494-70-5	0.04	0.00477	ug/l	30-150	20	30-150	30	30	
Dieldrin	60-57-1	0.04	0.00429	ug/l	30-150	20	30-150	30	30	
4,4'-DDE	72-55-9	0.04	0.00381	ug/l	30-150	20	30-150	30	30	
4,4'-DDD	72-54-8	0.04	0.00464	ug/l	30-150	20	30-150	30	30	
4,4'-DDT	50-29-3	0.04	0.00432	ug/l	30-150	20	30-150	30	30	
Endosulfan I	959-98-8	0.02	0.00345	ug/l	30-150	20	30-150	30	30	
Endosulfan II	33213-65-9	0.04	0.00519	ug/l	30-150	20	30-150	30	30	
Endosulfan sulfate	1031-07-8	0.04	0.00481	ug/l	30-150	20	30-150	30	30	
Methoxychlor	72-43-5	0.2	0.00684	ug/l	30-150	20	30-150	30	30	
Toxaphene	8001-35-2	0.2	0.0627	ug/l	30-150	20	30-150	30	30	
cis-Chlordane	5103-71-9	0.02	0.00666	ug/l	30-150	20	30-150	30	30	
trans-Chlordane	5103-74-2	0.02	0.00627	ug/l	30-150	20	30-150	30	30	
Chlordane	57-74-9	0.2	0.0463	ug/l	30-150	20	30-150	30	30	
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*
Decachlorobiphenyl	*2051-24-3*									*30-150*

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria
TCL PCBs - EPA 8082A (WATER)										
Aroclor 1016	12674-11-2	0.083	0.019588	ug/l	40-140	50	40-140	50	50	
Aroclor 1221	11104-28-2	0.083	0.031872	ug/l	40-140	50	40-140	50	50	
Aroclor 1232	11141-16-5	0.083	0.027058	ug/l	40-140	50	40-140	50	50	
Aroclor 1242	53469-21-9	0.083	0.029548	ug/l	40-140	50	40-140	50	50	
Aroclor 1248	12672-29-6	0.083	0.022576	ug/l	40-140	50	40-140	50	50	
Aroclor 1254	11097-69-1	0.083	0.034611	ug/l	40-140	50	40-140	50	50	
Aroclor 1260	11096-82-5	0.083	0.01992	ug/l	40-140	50	40-140	50	50	
Aroclor 1262	37324-23-5	0.083	0.017098	ug/l	40-140	50	40-140	50	50	
Aroclor 1268	11100-14-4	0.083	0.027058	ug/l	40-140	50	40-140	50	50	
PCBs, Total	1336-36-3	0.083	0.017098	ug/l				50	50	
PCBs, Total	1336-36-3	0.083	0.017098	ug/l				50	50	
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*
Decachlorobiphenyl	*2051-24-3*									*30-150*
METALS by 6020A/7471B (WATER)										
Aluminum, Total	7429-90-5	0.01	0.00327	mg/l	80-120		75-125	20	20	
Antimony, Total	7440-36-0	0.004	0.000429	mg/l	80-120		75-125	20	20	
Arsenic, Total	7440-38-2	0.0005	0.000165	mg/l	80-120		75-125	20	20	
Barium, Total	7440-39-3	0.0005	0.000173	mg/l	80-120		75-125	20	20	
Beryllium, Total	7440-41-7	0.0005	0.000107	mg/l	80-120		75-125	20	20	
Cadmium, Total	7440-43-9	0.0002	0.0000599	mg/l	80-120		75-125	20	20	
Calcium, Total	7440-70-2	0.1	0.0394	mg/l	80-120		75-125	20	20	
Chromium, Total	7440-47-3	0.001	0.000178	mg/l	80-120		75-125	20	20	
Cobalt, Total	7440-48-4	0.0005	0.000163	mg/l	80-120		75-125	20	20	
Copper, Total	7440-50-8	0.001	0.000384	mg/l	80-120		75-125	20	20	
Iron, Total	7439-89-6	0.05	0.0191	mg/l	80-120		75-125	20	20	
Lead, Total	7439-92-1	0.001	0.000343	mg/l	80-120		75-125	20	20	
Magnesium, Total	7439-95-4	0.07	0.0242	mg/l	80-120		75-125	20	20	
Manganese, Total	7439-96-5	0.001	0.00044	mg/l	80-120		75-125	20	20	
Mercury, Total	7439-97-6	0.0002	0.000066	mg/l	80-120		75-125	20	20	
Nickel, Total	7440-02-0	0.002	0.000556	mg/l	80-120		75-125	20	20	
Potassium, Total	7440-09-7	0.1	0.0309	mg/l	80-120		75-125	20	20	
Selenium, Total	7782-49-2	0.005	0.00173	mg/l	80-120		75-125	20	20	
Silver, Total	7440-22-4	0.0004	0.000163	mg/l	80-120		75-125	20	20	
Sodium, Total	7440-23-5	0.1	0.0293	mg/l	80-120		75-125	20	20	
Thallium, Total	7440-28-0	0.0005	0.000143	mg/l	80-120		75-125	20	20	
Vanadium, Total	7440-62-2	0.005	0.00157	mg/l	80-120		75-125	20	20	
Zinc, Total	7440-66-6	0.01	0.00341	mg/l	80-120		75-125	20	20	
CYANIDE by 9010c/9012B (WATER)										
Cyanide, Total	57-12-5	0.005	0.0018	mg/l	85-115	20	80-120	20	20	

<u>ATTACHMENT A</u>

ORGANIZATIONAL CHART

C.T. MALE PROJECT ORGANIZATION – HUDSON VALLEY REGIONAL AIRPORT



<u>ATTACHMENT B</u>

PERSONNEL RESUMES

DANIEL REILLY, P.E.

Chief Operating Officer

C.T. Male Associates | 518 786 7400 | ctmale.com

PROFESSIONAL BACKGROUND

Licensed Professional Engineer in NY

YEARS OF EXPERIENCE

Total Years of Experience: 31
Total Years with C.T. Male: 31

EDUCATION

BS in Environmental Engineering
Rensselaer Polytechnic Institute

SPECIALIZED TRAINING

OSHA 40-Hour Health & Safety Training

C.T. Male Associates
A DESIGN PROFESSIONAL CORPORATION

SUMMARY

Mr. Reilly joined C.T. Male in 1993 as an Environmental Engineer, and currently serves as the firm's Chief Operating Officer and the Environmental Services Division Manager. As Environmental Services Division Manager, Mr. Reilly is responsible for the personnel, production and operations of the Environmental Services Group. He manages and supervises a staff of 35 employees consisting of licensed professional engineers, certified geologists/hydro-geologists, industrial hygienists, scientists, and support staff. He is responsible for aligning appropriate staff to accommodate the production demands of many active projects within the Division. He also prepares and reviews proposals, budgets and contract documents, and performs quality reviews of project deliverables.

As Chief Operating Officer, responsibilities include maintaining high client service throughout the organization and coordinating the activities of the firm's other professional service Divisions to ensure that resources are appropriately aligned to meet client needs and expectations.

Mr. Reilly is currently working on a wide variety of projects including environmental permitting for air emission sources, complex air dispersion modeling, environmental compliance auditing, and managing investigative and compliance activities for emerging contaminants (ex., PFAS).

NOTABLE PROJECT EXPERIENCE

Emerging Contaminants

- PFAS Remedial Investigation activities for an industrial client conducted on a regional basis in NY, VT & NH

Petroleum & Chemical Bulk Storage

- Eastern Correction Facility
- Albany County Airport Authority

Environmental Auditing

- Multiple Colleges, Hospitals & Industrial Facilities

Air Permitting

- GLOBALFOUNDRIES, Fab 8, Malta, NY
- AMRI Large Scale Manufacturing Facility, Rensselaer, NY
- Saint Gobain Performance Plastics Corporation

Water & Wastewater

- Water System Improvements, Town of Bethlehem, NY
- Bedford Hills Correctional Facility Water System Improvements, Westchester County, NY
- I684 Rest Area WWTP, Putnam County, NY

JAMES D. MCIVER, JR., P.G.

Managing Geologist/Regional Office Manager - Lower Hudson Valley

C.T. Male Associates | 518 786 7400 | ctmale.com

PROFESSIONAL BACKGROUND
Licensed Professional Geologist in NY

YEARS OF EXPERIENCE
Total Years of Experience: 39
Total Years with C.T. Male: 16

EDUCATION
BA in Geology
University of Massachusetts

Masters in Geology & Geophysics
Boston College

MBA
Marist College

Groundwater Pollution and Hydrology
The Princeton Course

PROFESSIONAL AFFILIATIONS
Hudson Valley Pattern for Progress
Pattern for Progress Fellow

SPECIALIZED TRAINING
OSHA 40-Hour Health & Safety Training

C.T. Male Associates
A DESIGN PROFESSIONAL CORPORATION

SUMMARY
Mr. McIver joined C.T. Male in 2008 as Managing Geologist and Regional Office Manager for Lower Hudson Valley operations. He has conducted or led PFAS, Brownfields, geophysical and environmental investigations. He has lead remediation projects, clean water projects and regulatory compliance programs since 1985. He has focused primarily on investigation, cleanup and redevelopment of contaminated sites in New York. He has been recognized as an expert by the NYSDEC and works well with the regulating community. He routinely assists clients determine the value of projects that are impacted by contamination.

He has managed and/or provided technical support to numerous projects involving site characterization, brownfield redevelopment, RI/FS; numerous petroleum spill investigations and cleanups, compliance audits, and landfill closures. Applicable project experience is presented below.

He also provides permitting and SEQR support services and has managed multi-disciplined teams of engineers and scientists on complicated multi-phase projects. His work has helped clients remediate and revitalize underutilized properties. He has evaluated watersheds to develop predictable water supply models for regional aquifer systems.

NOTABLE PROJECT EXPERIENCE

NYSDEC Regulated PFAS Sites
- Hudson Valley Regional Airport, Dutchess County NY
- 5 Scobie Drive, Newburgh, NY

NYSDEC Brownfield Cleanup Program (BCP) Projects
- Former Miron Pre-Cast Site, Ulster, NY
- L&M Cornell Site, Kingston, NY
- Island Dock, Kingston, NY
- Wildberry Commons, New Paltz, NY
- PURA -14, Poughkeepsie, NY
- Former Poughkeepsie STP, Poughkeepsie, NYUSAI Lighting Site, New Windsor, NY

US EPA Brownfield Pilot Study
- Phase I Environmental Site Assessments (ESAs) of 79 Brownfield Sites in Kingston, Poughkeepsie, Middletown and Newburgh, NY

RI/FS Investigations
- Rotron Olive Site, Olive, NY

Watershed Modeling and Water Supply Projects
- Modified Belleayre Resort, Catskill Region

NANCY GARRY, P.E., CSP

Senior Environmental Engineer

C.T. Male Associates | 518 786 7400 | ctmale.com

PROFESSIONAL BACKGROUND

Licensed Professional Engineer in NY

Certified Safety Professional

YEARS OF EXPERIENCE

Total Years of Experience: 27
Total Years with C.T. Male: 7

EDUCATION

Master in Environmental Engineering
Rensselaer Polytechnic Institute

BA in Chemistry/Biology
College of St. Rose

PROFESSIONAL AFFILIATIONS

NYS Society of Professional Engineers

Capital District Chapter, NYS Society of Professional Engineers
Director 2017-2019 and MATHCOUNTS volunteer scorer (2019 - Present)

American Society of Safety Professionals Member

VOLUNTEER AFFILIATIONS

Greater Johnstown School District BOE
2020 to present

Fulton County IDA
2016 to present

Nathan Littauer Foundation Board of Directors
2016 to present

C.T. Male Associates
A DESIGN PROFESSIONAL CORPORATION

SUMMARY

Ms. Garry joined C.T. Male in 2017 as a Senior Environmental Engineer. She has extensive experience in site investigation and remediation projects and environmental compliance. Ms. Garry also has extensive experience in OSHA and environmental, health and safety on-site compliance for industrial and government clients. Ms. Garry serves as the firm's Corporate Safety Manager.

Ms. Garry is responsible for projects including Clean Air Act assessments and compliance; Risk Management Plans; chemical and petroleum bulk storage assessments and compliance; environmental audits; Phase 1 & 2 environmental site assessments; and various environmental engineering projects.

NOTABLE PROJECT EXPERIENCE

Managed a three year (2015 -2018), New York State Office of General Services, Environmental Remediation Services Statewide Term Contract*. Projects under these contracts have included:

- Tank design packages for the removal of underground and aboveground storage tanks and installation of aboveground storage tanks for back up fuel sources and fueling stations at numerous Department of Corrections and Community Supervision facilities throughout NYS.
- Three New York State Department of Transportation former spills sites that required remediation, ongoing monitoring, and spill closure.

Managed a seven year (2008 -2015), New York State Department of Environmental Conservation, Standby Engineering Services for Remediation Statewide, Term Contract*. Projects under these contracts have included:

- Managed approx. twenty-five projects under the NYSDEC contract that included site characterizations, remedial investigations, feasibility studies, point of entry use systems, and site management throughout NYS. Management included submitting work plans, reports, health & safety plans, quality control plans, and review of subcontractors plans. (*Projects completed at previous employer).

Long term ongoing ground water remedial treatment system operation, that includes remote access and control, monthly sampling and weekly inspections. The remedial treatment system is part of an Interim Remedial Measure (IRM) for the project site per NYSDEC.

Preparing Site Safety Plans across company Divisions: Environmental, Civil, Mechanical/Electrical, Survey; for submission to various private, municipal and agency clients. This includes reviewing clients needs for the project, review scope of work with project teams for understanding of potential hazards for project work, and addressing comments from clients of the Site Safety Plans.

ERIC WHITE

Environmental Scientist

C.T. Male Associates | 518 786 7400 | ctmale.com

YEARS OF EXPERIENCE

Total Years of Experience: 26
Total Years with C.T. Male: 2

EDUCATION

BS in Plant and Soil Science
University of Massachusetts

SPECIALIZED TRAINING

New York State Department of Labor (NYSDOL) Certified Asbestos Inspector and Project Designer

New York City certified Asbestos Investigator

OSHA 40-Hour Health & Safety Training and Annual 8 Hour Refresher

OSHA 10-Hour Construction Safety Training

C.T. Male Associates
A DESIGN PROFESSIONAL CORPORATION

SUMMARY

Mr. White joined C.T. Male in 2023 as an Environmental Scientist. Mr. White has experience performing Phase I and II Environmental Site Assessments, NYS Brownfield Cleanup Program Investigations/ Characterizations, Remedial Alternative Analysis, and Asbestos, Lead, and Universal Waste Investigations and Abatement Designs for numerous Federal, State, City and private entities. Projects have included residential, commercial, and industrial properties, and highway, rail, and tunnel infrastructure corridors. Mr. White has performed environmental re- mediation services including underground storage tank removal, and re- mediation of petroleum, metals and polychlorinated biphenyl contaminated soil and groundwater. His responsibilities included all phases of investigation including preparation of Health & Safety Plans, Work Plans, Waste Management Plans, Citizen Participation Plans, Remedial Investigations, Remediation Design Specifications & Contact Drawings, Field Oversight and Closure Reporting. Mr. White has participated in multiple site characterizations for Per– and Polyfluoroalkyl Substances (PFAS) in soil, sediment and groundwater, and has managed monitoring and maintenance of POET Systems for remediation of PFAS in domestic po- table water.

NOTABLE PROJECT EXPERIENCE

**Projects completed at prior firm*

PFAS Investigation and Remediation Projects

- Hudson Valley Regional Airport (HVRA) Sky Harbor Terminal South Side, PFAS Soil Investigation
- HVRA Point of Entry Treatment System (POETS) Domestic Water Monitoring Program Potable Water Treatment System Monitoring
- HVRA Site Characterization, Soil, Sediment, and Groundwater Assessment

Phase II Environmental Site Assessments & Asbestos, Lead Paint, and Universal Waste Investigation and Design Services

- Widening of Bronx and Manhattan Toll Plazas Project (TB-65), Triborough Bridge and Tunnel Authority, NY, NY*
- Rehabilitation of Yonkers Train Station, Metro North Railroad, Yonkers, NY*
- Replacement of the Willis Avenue Bridge, Bronx/NY, NY*
- Renovation of Gowanus and Prospect Expressway Interchange, Brooklyn, NY*

New York State Department of Environmental Conservation Consent Order Remedial Investigations

- Remediation of PCB Contaminated Soil, Bedford Correction Facility, Bedford, NY, New York State Office of General Ser- vices (NYSOGS)*
- Remediation of Lead Contaminated Soil at Firing Range, Bed- ford Correction Facility, Bedford, NY, NYSOGS*

JEFFREY A. MARX, P.E.

Managing Environmental Engineer/Principal

C.T. Male Associates | 518 786 7400 | ctmale.com

SUMMARY

Mr. Marx joined C.T. Male in 1997 as an environmental engineer and is currently a managing environmental engineer responsible for supervising five (5) technical staff members within the Environmental Division. His responsibilities include managing environmental field investigations and remedial activities for NYS Brownfield, Environmental Restoration and Spills Programs; tank assessment/closures; PFAS sampling and cleanup; supervising landfill monitoring; hazardous waste sampling, management and disposal; due diligence environmental assessments and scoping; remediation scoping and implementation; and QA/QC of environmental projects. He develops engineering and construction costs estimates; authors technical specifications and reports; manages multi-discipline projects and remedial construction activities; is the certifying engineer for water withdrawal permitting; and conducts/facilitates environmental compliance assistance (i.e., petroleum and chemical bulk storage, industrial wastewater management, hazardous waste, SPRs, SWPPPs, etc.) for industrial clients. This compliance work prepares for regulatory audits/inspections, helps maintain compliance with a variety of regulatory programs and assists with responding to/correcting Notices of Violation (NOV). Mr. Marx is a trusted advisor for many clients and internal staff on environmental topics and is the leader in EQuIS data management.

PROFESSIONAL BACKGROUND

Licensed Professional Engineer in NY

NYSDOL Licensed Asbestos Project Designer

YEARS OF EXPERIENCE

Total Years of Experience: 29
Total Years with C.T. Male: 27

EDUCATION

BS in Civil Engineering
Rochester Institute of Technology

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers, Hudson Mohawk Section, Member

The Practicing Institute of Engineering, Inc., Member and Continuing Education Course Evaluator

The Foundation for Engineering Education, Inc., E-Week Steering Committee Co-Chair

East Greenbush Branch YMCA Volunteer, Chair of Advisory Council Member and Capital District YMCA Board Member

Capital District YMCA Facilities Committee Member

SPECIALIZED TRAINING

OSHA 40-Hour Health & Safety Training

OSHA 10-Hour Construction Safety

Hazmat Ground Shipper Certification - 2023

C.T. Male Associates
A DESIGN PROFESSIONAL CORPORATION

NOTABLE PROJECT EXPERIENCE

NYSDEC ERP & BCP (Certifying Remedial Engineer)

- Hamilton Hill II BCP; Schenectady, NY
- Former Grand Union BCP; Fort Edward, NY
- Former Chalmers Knitting Mill ERP; Amsterdam, NY
- Former Tanneries (3 sites) ERPs; Gloversville, NY
- South Troy Industrial Park ERP; Troy, NY

Phase II ESAs, Tank Closures & Remediation

- Tobin Investments, Tank Closure; Champlain, NY
- Haleon (formerly GSK), Tank Closure and Spill Cleanup
- Confidential Site, Buried Drums Assessment & Removal; Malta, NY
- Bobby's Auto Decommissioning; Schenectady, NY

Environmental Compliance

- Regeneron Pharmaceuticals, Rensselaer & East Greenbush NY Facilities, Various Regulatory Programs
- Haleon (formerly GSK) , Durham, NY, SPCC Plan, SWPP Plan, BMP Plan, Hazardous Waste Reporting, Mercury Minimization Plan
- GlobalFoundries; Malta, NY, Various Regulatory Programs

Emergent Contaminant Work

- Fenix Parts, Inc., Queensbury, NY, PFAS Spill Cleanup
- Schuyler Heights Fire District, Menands, NY, PFAS Site Monitoring
- Saint-Gobain, Multiple Facilities, PFAS Lab Data Management

Water Withdrawal Permitting

- Rocking Horse Ranch; Highland, NY
- Indeck Corinth Energy Center; Corinth, NY

ENVIRONMENTAL
Data Services, Inc.

Nancy Weaver

Senior Chemist

EXPERIENCE OVERVIEW

Ms. Weaver has over thirty years combined laboratory, data validation and project management experience. She is the President and co-founder of EDS and is responsible for the technical data review and validation of laboratory data. Ms. Weaver has performed data validation on thousands of data validation projects. She has extensive knowledge in applying the various regional and project specific data validation guidelines and QAPPs. Her experience also includes writing Quality Assurance Project Plans (QAPPs), managing subcontracted analytical laboratories, performing laboratory audits, participating in field sampling activities and analyzing samples in a laboratory.

EDUCATION

Degree, University, Year
B.S., Chemistry, University of Colorado, Denver, Colorado

CERTIFICATIONS AND TRAINING

Certification, Year Received
State of New York Department of Environmental Conservation certified Asbestos Inspector
40-Hour OSHA Hazardous Waste Training
8-Hour Health and Safety Supervisor Training for Hazardous Waste Operations

PROJECT EXPERIENCE

Principal/Senior Chemist, Environmental Data Services, Inc., August 1994 - Present
As the Principal Chemist at Environmental Data Services, Inc., Ms. Weaver has provided Level IV, M3 and IM2 data review on more than 6000 Sample Delivery Groups (SDGs) generated through site investigations and/or remediations. These SDGs have included every analytical fraction possible including VOC, SVOC, pesticides, PCBs, herbicides, DRO, GRO, dioxin/furans, PCB congeners, metals, wet chemistry and radiological parameters. Sample matrices include water, soil, sediment, wipe, concrete and air. The SDGs have included CLP data packages produced under the CLP SOWs and CLP-like data packages with samples analyzed under SW-864 methodologies. Sample quantities validated may reach upwards of 120,000 per fraction over the past 20 years. Ms. Weaver has been using the Region III Modifications to the National Functional Guidelines since 1997 and has provided M2, M3, and IM-2 validation. Ms. Weaver has been using the National Functional Guidelines since 1993 and has provided both Level III and IV validation.

Chemist-Analyst Specialist, City & County of Denver, June 1992 - August 1994
As a Chemist-Analyst Specialist for the City and County of Denver, Ms. Weaver supervised performance and compliance sampling for O & M requirements at groundwater treatment facility. She provided assessment of analytical data for quarterly reports to local regulatory agencies. She also acted as liaison between the technical group and laboratory to coordinate sampling events and resolve problems with analyses. While in this capacity, she performed data validation for organic, inorganic and radiological analyses. Ms. Weaver reviewed over 2000 VOC, SVOC, pesticide, PCB, TPH, metals and wet chemistry samples. Ms. Weaver managed the database for groundwater and treatment plant sampling events and performed environmental site assessments for commercial and residential properties. She provided

technical review and recommendations of Phase I and Phase II site investigations performed by outside consultants. She also analyzed policy and interpreted city, state and federal environmental regulations.

Data Validation Specialist, C.C. Johnson & Malhotra, January 1990 to June 1992
While a Data Validation Specialist at C.C. Johnson & Malhorta, Ms. Weaver performed data validation and interpretation of organic analytical data generated from the EPA Contract Laboratory Program (CLP). Data analysis included VOC, SVOC, pesticides, PCBs, metals and wet chemistry. Ms. Weaver reviewed more than 600 SDGs and 9000 samples. She interpreted gas chromatograms, gas chromatography/mass spectral data and verified mathematical calculations.

Environmental Chemist, The Anschutz Corporation - SP Environmental Systems, Inc., July 1990 to January 1992
As an Environmental Chemist for The Anschutz Corporation - SP Environmental Systems, Inc., Ms. Weaver assisted in the management of site investigations and remediation for Southern Pacific Transportation Company properties. In this capacity, she performed environmental audits and site assessments and conducted site investigations at potential Superfund sites with state and federal agencies. She researched and prepared responses to regulatory agencies for non-compliant sites and defined the needs for hazardous waste disposal including the analysis required and disposal. Ms. Weaver also supervised the removal of underground storage tanks and remediation. She prepared closure reports for UST removals, as well as annual waste summary forms for TSD facilities throughout the state of Texas. She also constructed, developed, and sampled groundwater monitoring wells.

Environmental Specialist, Martin Marietta Astronautics Group, January 1988 to January 1990
While with Martin Marietta Astronautics Group as an Environmental Specialist, Ms. Weaver performed organic analysis and sampling of wastewater, groundwater, and drinking water in support of NPDES permit. She operated and maintained laboratory instrumentation including GC and GC/MS for volatile, semi-volatile, and pesticide/PCB analysis. Ms. Weaver also coordinated sample collection and preparation activities, developed and authored standard operating procedures for laboratory analysis, and followed EPA protocol for QA/QC requirements for analysis. She calculated and interpreted data and reported results.

Environmental Chemist, Camp, Dresser, & McKee, April 1986 to October 1987
As an Environmental Chemist with Camp, Dresser, & McKee, Ms. Weaver analyzed water/wastewater for organic compounds. She operated and maintained laboratory instrumentation including GC and infrared spectrophotometer for volatile, pesticide/PCB, and petroleum hydrocarbon analysis. She also calculated and interpreted data and reported results. Ms. Weaver analyzed more than 2000 samples.

EMPLOYMENT HISTORY

Environmental Data Services, Inc.	Principal/Senior Chemist	1994–Present
City & County of Denver	Chemist-Analyst Specialist	1992–1994
C.C. Johnson & Malhorta	Contractor/Data Validation Specialist	1990–1992
The Anschutz Corporation - SP Environmental Systems, Inc.	Environmental Chemist	1990–1992
Martin Marietta Astronautics Group	Environmental Specialist	1988–1990
Camp, Dresser, & McKee	Environmental Chemist	1986–1987

ATTACHMENT C

LABORATORY CERTIFICATIONS

Alpha Analytical

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Lead on Air Filter	EPA 40 CFR Part 50 App. G	AE	x	Y	
NY	PCBs and Aroclors	EPA TO-10A	AE	x	Y	
NY	Acenaphthene	EPA TO-13A Full Scan	AE	x	Y	
NY	Acenaphthylene	EPA TO-13A Full Scan	AE	x	Y	
NY	Anthracene	EPA TO-13A Full Scan	AE	x	Y	
NY	Benzo(a)anthracene	EPA TO-13A Full Scan	AE	x	Y	
NY	Benzo(a)pyrene	EPA TO-13A Full Scan	AE	x	Y	
NY	Benzo(b)fluoranthene	EPA TO-13A Full Scan	AE	x	Y	
NY	Benzo(ghi)perylene	EPA TO-13A Full Scan	AE	x	Y	
NY	Benzo(k)fluoranthene	EPA TO-13A Full Scan	AE	x	Y	
NY	Chrysene	EPA TO-13A Full Scan	AE	x	Y	
NY	Dibenzo(a,h)anthracene	EPA TO-13A Full Scan	AE	x	Y	
NY	Fluoranthene	EPA TO-13A Full Scan	AE	x	Y	
NY	Fluorene	EPA TO-13A Full Scan	AE	x	Y	
NY	Indeno(1,2,3-cd)pyrene	EPA TO-13A Full Scan	AE	x	Y	
NY	Naphthalene	EPA TO-13A Full Scan	AE	x	Y	
NY	Phenanthrene	EPA TO-13A Full Scan	AE	x	Y	
NY	Pyrene	EPA TO-13A Full Scan	AE	x	Y	
NY	1,1,1-Trichloroethane	EPA TO-15	AE	x	Y	
NY	1,1,2,2-Tetrachloroethane	EPA TO-15	AE	x	Y	
NY	1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA TO-15	AE	x	Y	
NY	1,1,2-Trichloroethane	EPA TO-15	AE	x	Y	
NY	1,1-Dichloroethane	EPA TO-15	AE	x	Y	
NY	1,1-Dichloroethene	EPA TO-15	AE	x	Y	
NY	1,2,4-Trichlorobenzene	EPA TO-15	AE	x	Y	
NY	1,2,4-Trimethylbenzene	EPA TO-15	AE	x	Y	
NY	1,2-Dibromo-3-Chloropropane (DBCP)	EPA TO-15	AE	x	Y	
NY	1,2-Dibromoethane (EDB)	EPA TO-15	AE	x	Y	
NY	1,2-Dichlorobenzene	EPA TO-15	AE	x	Y	
NY	1,2-Dichloroethane	EPA TO-15	AE	x	Y	
NY	1,2-Dichloropropane	EPA TO-15	AE	x	Y	
NY	1,2-Dichlorotetrafluoroethane	EPA TO-15	AE	x	Y	
NY	1,3,5-Trimethylbenzene	EPA TO-15	AE	x	Y	
NY	1,3-Butadiene	EPA TO-15	AE	x	Y	
NY	1,3-Dichlorobenzene	EPA TO-15	AE	x	Y	
NY	1,4-Dichlorobenzene	EPA TO-15	AE	x	Y	
NY	1,4-Dioxane	EPA TO-15	AE	x	Y	
NY	2,2,4-Trimethylpentane	EPA TO-15	AE	x	Y	
NY	2-Butanone	EPA TO-15	AE	x	Y	
NY	2-Chlorotoluene	EPA TO-15	AE	x	Y	
NY	3-Chloropropene	EPA TO-15	AE	x	Y	
NY	4-Methyl-2-Pentanone	EPA TO-15	AE	x	Y	
NY	Acetaldehyde	EPA TO-15	AE	x	Y	
NY	Acetone	EPA TO-15	AE	x	Y	
NY	Acetonitrile	EPA TO-15	AE	x	Y	
NY	Acrolein	EPA TO-15	AE	x	Y	
NY	Acrylonitrile	EPA TO-15	AE	x	Y	
NY	Benzene	EPA TO-15	AE	x	Y	
NY	Benzyl Chloride	EPA TO-15	AE	x	Y	

Alpha Analytical

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Bromodichloromethane	EPA TO-15	AE	x	Y	
NY	Bromoform	EPA TO-15	AE	x	Y	
NY	Bromomethane	EPA TO-15	AE	x	Y	
NY	Carbon Disulfide	EPA TO-15	AE	x	Y	
NY	Carbon Tetrachloride	EPA TO-15	AE	x	Y	
NY	Chlorobenzene	EPA TO-15	AE	x	Y	
NY	Chloroethane	EPA TO-15	AE	x	Y	
NY	Chloroform	EPA TO-15	AE	x	Y	
NY	Chloromethane	EPA TO-15	AE	x	Y	
NY	cis-1,2-Dichloroethene	EPA TO-15	AE	x	Y	
NY	cis-1,3-Dichloropropene	EPA TO-15	AE	x	Y	
NY	Cyclohexane	EPA TO-15	AE	x	Y	
NY	Dibromochloromethane	EPA TO-15	AE	x	Y	
NY	Dichlorodifluoromethane	EPA TO-15	AE	x	Y	
NY	Ethylbenzene	EPA TO-15	AE	x	Y	
NY	Hexachlorobutadiene	EPA TO-15	AE	x	Y	
NY	Isopropyl Alcohol	EPA TO-15	AE	x	Y	
NY	Isopropylbenzene	EPA TO-15	AE	x	Y	
NY	m+p-Xylene	EPA TO-15	AE	x	Y	
NY	Methyl Alcohol (methanol)	EPA TO-15	AE	x	Y	
NY	Methyl Methacrylate	EPA TO-15	AE	x	Y	
NY	Methyl tert-butyl ether	EPA TO-15	AE	x	Y	
NY	Methylene Chloride	EPA TO-15	AE	x	Y	
NY	Naphthalene	EPA TO-15	AE	x	Y	
NY	n-Heptane	EPA TO-15	AE	x	Y	
NY	n-Hexane	EPA TO-15	AE	x	Y	
NY	o-Xylene	EPA TO-15	AE	x	Y	
NY	Styrene	EPA TO-15	AE	x	Y	
NY	Tert-Butyl Alcohol	EPA TO-15	AE	x	Y	
NY	Tetrachloroethene	EPA TO-15	AE	x	Y	
NY	Toluene	EPA TO-15	AE	x	Y	
NY	Total Xylenes	EPA TO-15	AE	x	Y	
NY	Trans-1,2-Dichloroethene	EPA TO-15	AE	x	Y	
NY	Trans-1,3-Dichloropropene	EPA TO-15	AE	x	Y	
NY	Trichloroethene	EPA TO-15	AE	x	Y	
NY	Trichlorofluoromethane	EPA TO-15	AE	x	Y	
NY	Vinyl acetate	EPA TO-15	AE	x	Y	
NY	Vinyl Bromide	EPA TO-15	AE	x	Y	
NY	Vinyl Chloride	EPA TO-15	AE	x	Y	
NY	Turbidity	EPA 180.1	DW	Y	x	
NY	Aluminum	EPA 200.7	DW	x	Y	
NY	Barium	EPA 200.7	DW	x	Y	
NY	Beryllium	EPA 200.7	DW	x	Y	
Ny	Boron	EPA 200.7	DW	x	Y	
NY	Cadmium	EPA 200.7	DW	x	Y	
NY	Calcium	EPA 200.7	DW	x	Y	
NY	Calcium Hardness	EPA 200.7	DW	x	Y	
NY	Chromium	EPA 200.7	DW	x	Y	
NY	Copper	EPA 200.7	DW	x	Y	

Alpha Analytical

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Iron	EPA 200.7	DW	x	Y	
NY	Magnesium	EPA 200.7	DW	x	Y	
NY	Manganese	EPA 200.7	DW	x	Y	
NY	Nickel	EPA 200.7	DW	x	Y	
NY	Potassium	EPA 200.7	DW	x	Y	
NY	Silver	EPA 200.7	DW	x	Y	
NY	Sodium	EPA 200.7	DW	x	Y	
Ny	Vanadium	EPA 200.7	DW	x	Y	
NY	Zinc	EPA 200.7	DW	x	Y	
NY	Aluminum	EPA 200.8	DW	x	Y	
NY	Antimony	EPA 200.8	DW	x	Y	
NY	Arsenic	EPA 200.8	DW	x	Y	
NY	Barium	EPA 200.8	DW	x	Y	
NY	Beryllium	EPA 200.8	DW	x	Y	
NY	Cadmium	EPA 200.8	DW	x	Y	
NY	Copper	EPA 200.8	DW	x	Y	
NY	Lead	EPA 200.8	DW	x	Y	
Ny	Manganese	EPA 200.8	DW	x	Y	
NY	Nickel	EPA 200.8	DW	x	Y	
NY	Selenium	EPA 200.8	DW	x	Y	
NY	Silver	EPA 200.8	DW	x	Y	
NY	Thallium	EPA 200.8	DW	x	Y	
NY	Vanadium	EPA 200.8	DW	x	Y	
NY	Zinc	EPA 200.8	DW	x	Y	
NY	Mercury	EPA 245.1	DW	x	Y	
NY	Chloride	EPA 300.0	DW	Y	x	
NY	Fluoride	EPA 300.0	DW	Y	x	
NY	Sulfate	EPA 300.0	DW	Y	x	
NY	Perchlorate	EPA 332.0	DW	Y	x	
NY	1,2-Dibromo-3-Chloropropane (DBCP)	EPA 504.1	DW	Y	x	
NY	1,2-Dibromoethane (EDB)	EPA 504.1	DW	Y	x	
NY	1,1,1,2-Tetrachloroethane	EPA 524.2	DW	Y	x	
NY	1,1,1-Trichloroethane	EPA 524.2	DW	Y	x	
NY	1,1,2,2-Tetrachloroethane	EPA 524.2	DW	Y	x	
NY	1,1,2-Trichloroethane	EPA 524.2	DW	Y	x	
NY	1,1-Dichloroethane	EPA 524.2	DW	Y	x	
NY	1,1-Dichloroethene	EPA 524.2	DW	Y	x	
NY	1,1-Dichloropropene	EPA 524.2	DW	Y	x	
NY	1,2,3-Trichlorobenzene	EPA 524.2	DW	Y	x	
NY	1,2,3-Trichloropropane	EPA 524.2	DW	Y	x	
NY	1,2,4-Trichlorobenzene	EPA 524.2	DW	Y	x	
NY	1,2,4-Trimethylbenzene	EPA 524.2	DW	Y	x	
NY	1,2-Dichlorobenzene	EPA 524.2	DW	Y	x	
NY	1,2-Dichloroethane	EPA 524.2	DW	Y	x	
NY	1,2-Dichloropropane	EPA 524.2	DW	Y	x	
NY	1,3,5-Trimethylbenzene	EPA 524.2	DW	Y	x	
NY	1,3-Dichlorobenzene	EPA 524.2	DW	Y	x	
NY	1,3-Dichloropropane	EPA 524.2	DW	Y	x	
NY	1,4-Dichlorobenzene	EPA 524.2	DW	Y	x	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	2,2-Dichloropropane	EPA 524.2	DW	Y	x	
NY	2-Chlorotoluene	EPA 524.2	DW	Y	x	
NY	4-Chlorotoluene	EPA 524.2	DW	Y	x	
NY	Benzene	EPA 524.2	DW	Y	x	
NY	Bromobenzene	EPA 524.2	DW	Y	x	
NY	Bromochloromethane	EPA 524.2	DW	Y	x	
NY	Bromodichloromethane	EPA 524.2	DW	Y	x	
NY	Bromoform	EPA 524.2	DW	Y	x	
NY	Bromomethane	EPA 524.2	DW	Y	x	
NY	Carbon Tetrachloride	EPA 524.2	DW	Y	x	
NY	Chlorobenzene	EPA 524.2	DW	Y	x	
NY	Chloroethane	EPA 524.2	DW	Y	x	
NY	Chloroform	EPA 524.2	DW	Y	x	
NY	Chloromethane	EPA 524.2	DW	Y	x	
NY	cis-1,2-Dichloroethene	EPA 524.2	DW	Y	x	
NY	cis-1,3-Dichloropropene	EPA 524.2	DW	Y	x	
NY	Dibromochloromethane	EPA 524.2	DW	Y	x	
NY	Dibromomethane	EPA 524.2	DW	Y	x	
NY	Dichlorodifluoromethane	EPA 524.2	DW	Y	x	
NY	Ethylbenzene	EPA 524.2	DW	Y	x	
NY	Hexachlorobutadiene	EPA 524.2	DW	Y	x	
NY	Isopropylbenzene	EPA 524.2	DW	Y	x	
NY	Methyl tert-butyl ether	EPA 524.2	DW	Y	x	
NY	Methylene chloride	EPA 524.2	DW	Y	x	
NY	Naphthalene	EPA 524.2	DW	Y	x	
NY	n-Butylbenzene	EPA 524.2	DW	Y	x	
NY	n-Propylbenzene	EPA 524.2	DW	Y	x	
NY	p-Isopropyltoluene	EPA 524.2	DW	Y	x	
NY	sec-Butylbenzene	EPA 524.2	DW	Y	x	
NY	Styrene	EPA 524.2	DW	Y	x	
NY	Tert-Butylbenzene	EPA 524.2	DW	Y	x	
NY	Tetrachloroethene	EPA 524.2	DW	Y	x	
NY	Toluene	EPA 524.2	DW	Y	x	
NY	Total Trihalomethanes	EPA 524.2	DW	Y	x	
NY	Total Xylenes	EPA 524.2	DW	Y	x	
NY	Trans-1,2-Dichloroethene	EPA 524.2	DW	Y	x	
NY	Trans-1,3-Dichloropropene	EPA 524.2	DW	Y	x	
NY	Trichloroethene	EPA 524.2	DW	Y	x	
NY	Trichlorofluoromethane	EPA 524.2	DW	Y	x	
NY	Vinyl chloride	EPA 524.2	DW	Y	x	
NY	Perfluoro-n-octanoic acid (PFOA)	EPA 537	DW	x	Y	
NY	Perfluorooctanesulfonic acid (PFOS)	EPA 537	DW	x	Y	
NY	Color	SM 2120B	DW	Y	x	
NY	Turbidity	SM 2130B	DW	Y	x	
NY	Odor	SM 2150B	DW	Y	x	
NY	Alkalinity	SM 2320B	DW	Y	x	
NY	Specific Conductance	SM 2510B	DW	Y	x	
NY	Total Dissolved Solids	SM 2540C	DW	Y	x	
NY	Cyanide, Distillation	SM 4500 CN C	DW	Y	x	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Cyanide, Total	SM 4500 CN E	DW	Y	x	
NY	Fluoride	SM 4500 F-C	DW	Y	x	
NY	Nitrate-N	SM 4500 NO3-F	DW	Y	x	
NY	Nitrite-N	SM 4500 NO3-F	DW	Y	x	
NY	Total Organic Carbon	SM 5310C	DW	Y	x	
NY	Heterotrophic Plate Count	SM 9215B	DW	Y	x	
NY	Coliform, Total	SM 9223B	DW	Y	x	
NY	E. Coli	SM 9223B	DW	Y	x	P/A
NY	E. Coli	SM 9223B	DW	Y	x	Enumeration
NY	Specific Conductance	EPA 120.1	NPW	Y	x	
NY	Mercury	EPA 1631E	NPW	x	Y	
NY	Oil & Grease	EPA 1664A	NPW	Y	x	
NY	Oil & Grease (TPH)	EPA 1664A	NPW	Y	x	
NY	Turbidity	EPA 180.1	NPW	Y	x	
NY	Aluminum	EPA 200.7	NPW	x	Y	
NY	Antimony	EPA 200.7	NPW	x	Y	
NY	Arsenic	EPA 200.7	NPW	x	Y	
NY	Barium	EPA 200.7	NPW	x	Y	
NY	Beryllium	EPA 200.7	NPW	x	Y	
NY	Boron	EPA 200.7	NPW	x	Y	
NY	Cadmium	EPA 200.7	NPW	x	Y	
NY	Calcium	EPA 200.7	NPW	x	Y	
NY	Chromium	EPA 200.7	NPW	x	Y	
NY	Cobalt	EPA 200.7	NPW	x	Y	
NY	Copper	EPA 200.7	NPW	x	Y	
NY	Iron	EPA 200.7	NPW	x	Y	
NY	Lead	EPA 200.7	NPW	x	Y	
NY	Magnesium	EPA 200.7	NPW	x	Y	
NY	Manganese	EPA 200.7	NPW	x	Y	
NY	Molybdenum	EPA 200.7	NPW	x	Y	
NY	Nickel	EPA 200.7	NPW	x	Y	
NY	Potassium	EPA 200.7	NPW	x	Y	
NY	Selenium	EPA 200.7	NPW	x	Y	
NY	Silica, Dissolved	EPA 200.7	NPW	x	Y	
NY	Silver	EPA 200.7	NPW	x	Y	
NY	Sodium	EPA 200.7	NPW	x	Y	
NY	Strontium	EPA 200.7	NPW	x	Y	
NY	Thallium	EPA 200.7	NPW	x	Y	
NY	Tin	EPA 200.7	NPW	x	Y	
NY	Titanium	EPA 200.7	NPW	x	Y	
NY	Total Hardness (CaCO3)	EPA 200.7	NPW	x	Y	
NY	Vanadium	EPA 200.7	NPW	x	Y	
NY	Zinc	EPA 200.7	NPW	x	Y	
NY	Aluminum	EPA 200.8	NPW	x	Y	
NY	Antimony	EPA 200.8	NPW	x	Y	
NY	Arsenic	EPA 200.8	NPW	x	Y	
NY	Barium	EPA 200.8	NPW	x	Y	
NY	Beryllium	EPA 200.8	NPW	x	Y	
NY	Cadmium	EPA 200.8	NPW	x	Y	

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State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Chromium	EPA 200.8	NPW	x	Y	
NY	Cobalt	EPA 200.8	NPW	x	Y	
NY	Copper	EPA 200.8	NPW	x	Y	
NY	Lead	EPA 200.8	NPW	x	Y	
NY	Manganese	EPA 200.8	NPW	x	Y	
NY	Molybdenum	EPA 200.8	NPW	x	Y	
NY	Nickel	EPA 200.8	NPW	x	Y	
NY	Selenium	EPA 200.8	NPW	x	Y	
NY	Silver	EPA 200.8	NPW	x	Y	
NY	Thallium	EPA 200.8	NPW	x	Y	
NY	Vanadium	EPA 200.8	NPW	x	Y	
NY	Zinc	EPA 200.8	NPW	x	Y	
NY	Mercury	EPA 245.1	NPW	x	Y	
NY	Bromide	EPA 300.0	NPW	Y	x	
NY	Chloride	EPA 300.0	NPW	Y	x	
NY	Fluoride	EPA 300.0	NPW	Y	x	
NY	Nitrate-N	EPA 300.0	NPW	Y	x	
NY	Sulfate	EPA 300.0	NPW	Y	x	
NY	Acid Digestion of Waters	EPA 3005A	NPW	x	Y	
NY	Microwave Acid Digestion	EPA 3015A	NPW	x	Y	
NY	Acid Digestion of Waters	EPA 3020A	NPW	x	Y	
NY	Ammonia	EPA 350.1	NPW	Y	x	
NY	Nitrogen, Total Kjeldahl	EPA 351.1	NPW	Y	x	
NY	Separatory Funnel Extraction	EPA 3510C	NPW	Y	Y	
NY	Nitrate-N	EPA 353.2	NPW	Y	x	
NY	Nitrate-Nitrite	EPA 353.2	NPW	Y	x	
NY	Chemical Oxygen Demand	EPA 410.4	NPW	Y	x	
NY	Total Phenolics	EPA 420.1	NPW	Y	x	
NY	Purge & Trap Aqueous	EPA 5030C	NPW	Y	x	
NY	Aluminum	EPA 6010C	NPW	x	Y	
NY	Antimony	EPA 6010C	NPW	x	Y	
NY	Arsenic	EPA 6010C	NPW	x	Y	
NY	Barium	EPA 6010C	NPW	x	Y	
NY	Beryllium	EPA 6010C	NPW	x	Y	
NY	Boron	EPA 6010C	NPW	x	Y	
NY	Cadmium	EPA 6010C	NPW	x	Y	
NY	Calcium	EPA 6010C	NPW	x	Y	
NY	Chromium	EPA 6010C	NPW	x	Y	
NY	Cobalt	EPA 6010C	NPW	x	Y	
NY	Copper	EPA 6010C	NPW	x	Y	
NY	Iron	EPA 6010C	NPW	x	Y	
NY	Lead	EPA 6010C	NPW	x	Y	
NY	Magnesium	EPA 6010C	NPW	x	Y	
NY	Manganese	EPA 6010C	NPW	x	Y	
NY	Molybdenum	EPA 6010C	NPW	x	Y	
NY	Nickel	EPA 6010C	NPW	x	Y	
NY	Potassium	EPA 6010C	NPW	x	Y	
NY	Selenium	EPA 6010C	NPW	x	Y	
NY	Silver	EPA 6010C	NPW	x	Y	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Sodium	EPA 6010C	NPW	x	Y	
NY	Strontium	EPA 6010C	NPW	x	Y	
NY	Thallium	EPA 6010C	NPW	x	Y	
NY	Tin	EPA 6010C	NPW	x	Y	
NY	Vanadium	EPA 6010C	NPW	x	Y	
NY	Zinc	EPA 6010C	NPW	x	Y	
NY	Aluminum	EPA 6020A	NPW	x	Y	
NY	Antimony	EPA 6020A	NPW	x	Y	
NY	Arsenic	EPA 6020A	NPW	x	Y	
NY	Barium	EPA 6020A	NPW	x	Y	
NY	Beryllium	EPA 6020A	NPW	x	Y	
NY	Boron	EPA 6020A	NPW	x	Y	
NY	Cadmium	EPA 6020A	NPW	x	Y	
NY	Calcium	EPA 6020A	NPW	x	Y	
NY	Chromium	EPA 6020A	NPW	x	Y	
NY	Cobalt	EPA 6020A	NPW	x	Y	
NY	Copper	EPA 6020A	NPW	x	Y	
NY	Iron	EPA 6020A	NPW	x	Y	
NY	Lead	EPA 6020A	NPW	x	Y	
NY	Magnesium	EPA 6020A	NPW	x	Y	
NY	Manganese	EPA 6020A	NPW	x	Y	
NY	Molybdenum	EPA 6020A	NPW	x	Y	
NY	Nickel	EPA 6020A	NPW	x	Y	
NY	Potassium	EPA 6020A	NPW	x	Y	
NY	Selenium	EPA 6020A	NPW	x	Y	
NY	Silver	EPA 6020A	NPW	x	Y	
NY	Strontium	EPA 6020A	NPW	x	Y	
NY	Thallium	EPA 6020A	NPW	x	Y	
NY	Tin	EPA 6020A	NPW	x	Y	
NY	Titanium	EPA 6020A	NPW	x	Y	
NY	Vanadium	EPA 6020A	NPW	x	Y	
NY	Zinc	EPA 6020A	NPW	x	Y	
NY	4,4'-DDD	EPA 608	NPW	Y	x	
NY	4,4'-DDE	EPA 608	NPW	Y	x	
NY	4,4'-DDT	EPA 608	NPW	Y	x	
NY	Aldrin	EPA 608	NPW	Y	x	
NY	Alpha-BHC	EPA 608	NPW	Y	x	
NY	Beta-BHC	EPA 608	NPW	Y	x	
NY	Chlordane	EPA 608	NPW	Y	x	
NY	Delta-BHC	EPA 608	NPW	Y	x	
NY	Dieldrin	EPA 608	NPW	Y	x	
NY	Endosulfan I	EPA 608	NPW	Y	x	
NY	Endosulfan II	EPA 608	NPW	Y	x	
NY	Endosulfan Sulfate	EPA 608	NPW	Y	x	
NY	Endrin	EPA 608	NPW	Y	x	
NY	Endrin Aldehyde	EPA 608	NPW	Y	x	
NY	Heptachlor	EPA 608	NPW	Y	x	
NY	Heptachlor Epoxide	EPA 608	NPW	Y	x	
NY	Lindane (gamma-BHC)	EPA 608	NPW	Y	x	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Methoxychlor	EPA 608	NPW	Y	x	
NY	PCB-1016	EPA 608	NPW	Y	x	
NY	PCB-1221	EPA 608	NPW	Y	x	
NY	PCB-1232	EPA 608	NPW	Y	x	
NY	PCB-1242	EPA 608	NPW	Y	x	
NY	PCB-1248	EPA 608	NPW	Y	x	
NY	PCB-1254	EPA 608	NPW	Y	x	
NY	PCB-1260	EPA 608	NPW	Y	x	
NY	Toxaphene	EPA 608	NPW	Y	x	
NY	1,1,1-Trichloroethane	EPA 624	NPW	Y	x	
NY	1,1,2,2-Tetrachloroethane	EPA 624	NPW	Y	x	
NY	1,1,2-Trichloroethane	EPA 624	NPW	Y	x	
NY	1,1-Dichloroethane	EPA 624	NPW	Y	x	
NY	1,1-Dichloroethene	EPA 624	NPW	Y	x	
NY	1,2-Dichlorobenzene	EPA 624	NPW	Y	x	
NY	1,2-Dichloroethane	EPA 624	NPW	Y	x	
NY	1,2-Dichloropropane	EPA 624	NPW	Y	x	
NY	1,3-Dichlorobenzene	EPA 624	NPW	Y	x	
NY	1,4-Dichlorobenzene	EPA 624	NPW	Y	x	
NY	2-Chloroethyl Vinyl ether	EPA 624	NPW	Y	x	
NY	Acetone	EPA 624	NPW	Y	x	
NY	Acrolein	EPA 624	NPW	Y	x	
NY	Acrylonitrile	EPA 624	NPW	Y	x	
NY	Benzene	EPA 624	NPW	Y	x	
NY	Bromodichloromethane	EPA 624	NPW	Y	x	
NY	Bromoform	EPA 624	NPW	Y	x	
NY	Bromomethane	EPA 624	NPW	Y	x	
NY	Carbon Tetrachloride	EPA 624	NPW	Y	x	
NY	Chlorobenzene	EPA 624	NPW	Y	x	
NY	Chloroethane	EPA 624	NPW	Y	x	
NY	Chloroform	EPA 624	NPW	Y	x	
NY	Chloromethane	EPA 624	NPW	Y	x	
NY	cis-1,2-Dichloroethene	EPA 624	NPW	Y	x	
NY	cis-1,3-Dichloropropene	EPA 624	NPW	Y	x	
NY	Dibromochloromethane	EPA 624	NPW	Y	x	
NY	Dichlorodifluoromethane	EPA 624	NPW	Y	x	
NY	Ethylbenzene	EPA 624	NPW	Y	x	
NY	Methylene Chloride	EPA 624	NPW	Y	x	
NY	Methyl tert-butyl ether	EPA 624	NPW	Y	x	
NY	Styrene	EPA 624	NPW	Y	x	
NY	Tert-Butyl Alcohol	EPA 624	NPW	Y	x	
NY	Tetrachloroethene	EPA 624	NPW	Y	x	
NY	Toluene	EPA 624	NPW	Y	x	
NY	Total Xylenes	EPA 624	NPW	Y	x	
NY	Trans-1,2-Dichloroethene	EPA 624	NPW	Y	x	
NY	Trans-1,3-Dichloropropene	EPA 624	NPW	Y	x	
NY	Trichloroethene	EPA 624	NPW	Y	x	
NY	Trichlorofluoromethane	EPA 624	NPW	Y	x	
NY	Vinyl Acetate	EPA 624	NPW	Y	x	

Alpha Analytical **Summary of Certification**

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Vinyl Chloride	EPA 624	NPW	Y	x	
NY	1,2,4-Trichlorobenzene	EPA 625	NPW	Y	x	
NY	2,4,5-Trichlorophenol	EPA 625	NPW	Y	x	
NY	2,4,6-Trichlorophenol	EPA 625	NPW	Y	x	
NY	2,4-Dichlorophenol	EPA 625	NPW	Y	x	
NY	2,4-Dimethylphenol	EPA 625	NPW	Y	x	
NY	2,4-Dinitrophenol	EPA 625	NPW	Y	x	
NY	2,4-Dinitrotoluene (2,4-DNT)	EPA 625	NPW	Y	x	
NY	2,6-Dinitrotoluene (2,6-DNT)	EPA 625	NPW	Y	x	
NY	2-Chloronaphthalene	EPA 625	NPW	Y	x	
NY	2-Chlorophenol	EPA 625	NPW	Y	x	
NY	2-Methyl-4,6-dinitrophenol	EPA 625	NPW	Y	x	
NY	2-Methylphenol	EPA 625	NPW	Y	x	
NY	2-Nitrophenol	EPA 625	NPW	Y	x	
NY	3,3-Dichlorobenzidine	EPA 625	NPW	Y	x	
NY	3-Methylphenol	EPA 625	NPW	Y	x	
NY	4-Bromophenyl phenyl ether	EPA 625	NPW	Y	x	
NY	4-Chloro-3-methylphenol	EPA 625	NPW	Y	x	
NY	4-Chlorophenyl phenyl ether	EPA 625	NPW	Y	x	
NY	4-Methylphenol	EPA 625	NPW	Y	x	
NY	4-Nitrophenol	EPA 625	NPW	Y	x	
NY	Acenaphthene	EPA 625	NPW	Y	x	
NY	Acenaphthylene	EPA 625	NPW	Y	x	
NY	Acetophenone	EPA 625	NPW	Y	x	
NY	Aniline	EPA 625	NPW	Y	x	
NY	Anthracene	EPA 625	NPW	Y	x	
NY	Benzidine	EPA 625	NPW	Y	x	
NY	Benzo(a)anthracene	EPA 625	NPW	Y	x	
NY	Benzo(a)pyrene	EPA 625	NPW	Y	x	
NY	Benzo(b)fluoranthene	EPA 625	NPW	Y	x	
NY	Benzo(ghi)perylene	EPA 625	NPW	Y	x	
NY	Benzo(k)fluoranthene	EPA 625	NPW	Y	x	
NY	Bis(2-chloroethoxy) methane	EPA 625	NPW	Y	x	
NY	Bis(2-chloroethyl) ether	EPA 625	NPW	Y	x	
NY	Bis(2-chloroisopropyl) ether	EPA 625	NPW	Y	x	
NY	Bis(2-ethylhexyl) phthalate	EPA 625	NPW	Y	x	
NY	Butyl Benzyl phthalate	EPA 625	NPW	Y	x	
NY	Carbazole	EPA 625	NPW	Y	x	
NY	Chrysene	EPA 625	NPW	Y	x	
NY	Dibenzo(a,h)anthracene	EPA 625	NPW	Y	x	
NY	Diethyl phthalate	EPA 625	NPW	Y	x	
NY	Dimethyl phthalate	EPA 625	NPW	Y	x	
NY	Di-n-butyl phthalate	EPA 625	NPW	Y	x	
NY	Di-n-octyl phthalate	EPA 625	NPW	Y	x	
NY	Fluoranthene	EPA 625	NPW	Y	x	
NY	Fluorene	EPA 625	NPW	Y	x	
NY	Hexachlorobenzene	EPA 625	NPW	Y	x	
NY	Hexachlorobutadiene	EPA 625	NPW	Y	x	
NY	Hexachlorocyclopentadiene	EPA 625	NPW	Y	x	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Hexachloroethane	EPA 625	NPW	Y	x	
NY	Indeno(1,2,3-cd)pyrene	EPA 625	NPW	Y	x	
NY	Isophorone	EPA 625	NPW	Y	x	
NY	Naphthalene	EPA 625	NPW	Y	x	
NY	N-Decane	EPA 625	NPW	Y	x	
NY	Nitrobenzene	EPA 625	NPW	Y	x	
NY	N-Nitrosodimethylamine	EPA 625	NPW	Y	x	
NY	N-Nitrosodi-n-propylamine	EPA 625	NPW	Y	x	
NY	N-Nitrosodiphenylamine	EPA 625	NPW	Y	x	
NY	N-Octadecane	EPA 625	NPW	Y	x	
NY	Pentachlorophenol	EPA 625	NPW	Y	x	
NY	Phenanthrene	EPA 625	NPW	Y	x	
NY	Phenol	EPA 625	NPW	Y	x	
NY	Pyrene	EPA 625	NPW	Y	x	
NY	Pyridine	EPA 625	NPW	Y	x	
NY	Chromium VI	EPA 7196A	NPW	Y	x	
NY	Mercury	EPA 7470A	NPW	x	Y	
NY	1,2-Dibromoethane (EDB)	EPA 8011	NPW	Y	x	
NY	1,2-Dibromo-3-Chloropropane (DBCP)	EPA 8011	NPW	Y	x	
NY	Diesel Range Organics	EPA 8015C	NPW	Y	x	
NY	Gasoline Range Organics	EPA 8015C	NPW	Y	x	
NY	Amyl alcohol	EPA 8015D	NPW	x	Y	
NY	Diesel Range Organics	EPA 8015D	NPW	x	Y	
NY	Ethyl alcohol	EPA 8015D	NPW	x	Y	
NY	Ethylene glycol	EPA 8015D	NPW	x	Y	
NY	Gasoline Range Organics	EPA 8015D	NPW	x	Y	
NY	Iso-butyl Alcohol	EPA 8015D	NPW	x	Y	
NY	Methyl Alcohol (methanol)	EPA 8015D	NPW	x	Y	
NY	Tert-Butyl Alcohol	EPA 8015D	NPW	x	Y	
NY	4,4'-DDD	EPA 8081B	NPW	Y	Y	
NY	4,4'-DDE	EPA 8081B	NPW	Y	Y	
NY	4,4'-DDT	EPA 8081B	NPW	Y	Y	
NY	Aldrin	EPA 8081B	NPW	Y	Y	
NY	alpha-BHC	EPA 8081B	NPW	Y	Y	
NY	alpha-Chlordane	EPA 8081B	NPW	Y	Y	
NY	beta-BHC	EPA 8081B	NPW	Y	Y	
NY	Chlordane	EPA 8081B	NPW	Y	Y	
NY	delta-BHC	EPA 8081B	NPW	Y	Y	
NY	Dieldrin	EPA 8081B	NPW	Y	Y	
NY	Endosulfan I	EPA 8081B	NPW	Y	Y	
NY	Endosulfan II	EPA 8081B	NPW	Y	Y	
NY	Endosulfan Sulfate	EPA 8081B	NPW	Y	Y	
NY	Endrin	EPA 8081B	NPW	Y	Y	
NY	Endrin Aldehyde	EPA 8081B	NPW	Y	Y	
NY	Endrin Ketone	EPA 8081B	NPW	Y	Y	
NY	gamma-Chlordane	EPA 8081B	NPW	Y	Y	
NY	Heptachlor	EPA 8081B	NPW	Y	Y	
NY	Heptachlor Epoxide	EPA 8081B	NPW	Y	Y	
NY	Hexachlorobenzene	EPA 8081B	NPW	x	Y	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Lindane (gamma-BHC)	EPA 8081B	NPW	Y	Y	
NY	Methoxychlor	EPA 8081B	NPW	Y	Y	
NY	Mirex	EPA 8081B	NPW	x	Y	
NY	Toxaphene	EPA 8081B	NPW	Y	Y	
NY	2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB	EPA 8082A	NPW	x	Y	
NY	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	EPA 8082A	NPW	x	Y	
NY	2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)	EPA 8082A	NPW	x	Y	
NY	2,2',3,4,4',5'-Hexachlorobiphenyl (PCB 138)	EPA 8082A	NPW	x	Y	
NY	2,2',3,5'-Tetrachlorobiphenyl (PCB 44)	EPA 8082A	NPW	x	Y	
NY	2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	EPA 8082A	NPW	x	Y	
NY	2,2',5-Trichlorobiphenyl (PCB 18)	EPA 8082A	NPW	x	Y	
NY	2,3',4,4',5-Pentachlorobiphenyl (PCB 118)	EPA 8082A	NPW	x	Y	
NY	2,3',4,4'-Tetrachlorobiphenyl (PCB 66)	EPA 8082A	NPW	x	Y	
NY	PCB-1016	EPA 8082A	NPW	Y	Y	
NY	PCB-1221	EPA 8082A	NPW	Y	Y	
NY	PCB-1232	EPA 8082A	NPW	Y	Y	
NY	PCB-1242	EPA 8082A	NPW	Y	Y	
NY	PCB-1248	EPA 8082A	NPW	Y	Y	
NY	PCB-1254	EPA 8082A	NPW	Y	Y	
NY	PCB-1260	EPA 8082A	NPW	Y	Y	
NY	PCB-1262	EPA 8082A	NPW	Y	Y	
NY	PCB-1268	EPA 8082A	NPW	Y	Y	
NY	2,4,5-T	EPA 8151A	NPW	Y	x	
NY	2,4,5-TP (Silvex)	EPA 8151A	NPW	Y	x	
NY	2,4-D	EPA 8151A	NPW	Y	x	
NY	2,4-DB	EPA 8151A	NPW	Y	x	
NY	Dalapon	EPA 8151A	NPW	Y	x	
NY	Dicamba	EPA 8151A	NPW	Y	x	
NY	Dichloroprop	EPA 8151A	NPW	Y	x	
NY	Dinoseb	EPA 8151A	NPW	Y	x	
NY	1,1,1,2-Tetrachloroethane	EPA 8260C	NPW	Y	x	
NY	1,1,1-Trichloroethane	EPA 8260C	NPW	Y	x	
NY	1,1,2,2-Tetrachloroethane	EPA 8260C	NPW	Y	x	
NY	1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C	NPW	Y	x	
NY	1,1,2-Trichloroethane	EPA 8260C	NPW	Y	x	
NY	1,1-Dichloroethane	EPA 8260C	NPW	Y	x	
NY	1,1-Dichloroethene	EPA 8260C	NPW	Y	x	
NY	1,1-Dichloropropene	EPA 8260C	NPW	Y	x	
NY	1,2,3-Trichlorobenzene	EPA 8260C	NPW	Y	x	
NY	1,2,3-Trichloropropane	EPA 8260C	NPW	Y	x	
NY	1,2,4-Trichlorobenzene	EPA 8260C	NPW	Y	x	
NY	1,2,4-Trimethylbenzene	EPA 8260C	NPW	Y	x	
NY	1,2-Dibromo-3-Chloropropane (DBCP)	EPA 8260C	NPW	Y	x	
NY	1,2-Dibromoethane (EDB)	EPA 8260C	NPW	Y	x	
NY	1,2-Dichlorobenzene	EPA 8260C	NPW	Y	x	
NY	1,2-Dichloroethane	EPA 8260C	NPW	Y	x	
NY	1,2-Dichloropropane	EPA 8260C	NPW	Y	x	
NY	1,3,5-Trimethylbenzene	EPA 8260C	NPW	Y	x	
NY	1,3-Dichlorobenzene	EPA 8260C	NPW	Y	x	

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State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	1,3-Dichloropropane	EPA 8260C	NPW	Y	x	
NY	1,4-Dichlorobenzene	EPA 8260C	NPW	Y	x	
NY	1,4-Dioxane	EPA 8260C	NPW	Y	x	
NY	1-Butanol	EPA 8260C	NPW	Y	x	
NY	2,2-Dichloropropane	EPA 8260C	NPW	Y	x	
NY	2-Butanone	EPA 8260C	NPW	Y	x	
NY	2-Chloroethyl Vinyl ether	EPA 8260C	NPW	Y	x	
NY	2-Chlorotoluene	EPA 8260C	NPW	Y	x	
NY	2-Hexanone	EPA 8260C	NPW	Y	x	
NY	4-Chlorotoluene	EPA 8260C	NPW	Y	x	
NY	4-Methyl-2-Pentanone	EPA 8260C	NPW	Y	x	
NY	Acetone	EPA 8260C	NPW	Y	x	
NY	Acrolein	EPA 8260C	NPW	Y	x	
NY	Acrylonitrile	EPA 8260C	NPW	Y	x	
NY	Benzene	EPA 8260C	NPW	Y	x	
NY	Bromobenzene	EPA 8260C	NPW	Y	x	
NY	Bromochloromethane	EPA 8260C	NPW	Y	x	
NY	Bromodichloromethane	EPA 8260C	NPW	Y	x	
NY	Bromoform	EPA 8260C	NPW	Y	x	
NY	Bromomethane	EPA 8260C	NPW	Y	x	
NY	Carbon Disulfide	EPA 8260C	NPW	Y	x	
NY	Carbon Tetrachloride	EPA 8260C	NPW	Y	x	
NY	Chlorobenzene	EPA 8260C	NPW	Y	x	
NY	Chloroethane	EPA 8260C	NPW	Y	x	
NY	Chloroform	EPA 8260C	NPW	Y	x	
NY	Chloromethane	EPA 8260C	NPW	Y	x	
NY	cis-1,2-Dichloroethene	EPA 8260C	NPW	Y	x	
NY	cis-1,3-Dichloropropene	EPA 8260C	NPW	Y	x	
NY	Cyclohexane	EPA 8260C	NPW	Y	x	
NY	Dibromochloromethane	EPA 8260C	NPW	Y	x	
NY	Dibromomethane	EPA 8260C	NPW	Y	x	
NY	Dichlorodifluoromethane	EPA 8260C	NPW	Y	x	
NY	Diethyl ether	EPA 8260C	NPW	Y	x	
NY	Diisopropyl ether	EPA 8260C	NPW	Y	x	
NY	Ethanol	EPA 8260C	NPW	Y	x	
NY	Ethyl acetate	EPA 8260C	NPW	Y	x	
NY	Ethyl Methacrylate	EPA 8260C	NPW	Y	x	
NY	Ethylbenzene	EPA 8260C	NPW	Y	x	
NY	Hexachlorobutadiene	EPA 8260C	NPW	Y	x	
NY	Isopropyl Alcohol	EPA 8260C	NPW	Y	x	
NY	Isopropylbenzene	EPA 8260C	NPW	Y	x	
NY	m+p-Xylene	EPA 8260C	NPW	Y	x	
NY	Methyl Acetate	EPA 8260C	NPW	Y	x	
NY	Methyl Cyclohexane	EPA 8260C	NPW	Y	x	
NY	Iodomethane (Methyl Iodide)	EPA 8260C	NPW	Y	x	
NY	Methyl Methacrylate	EPA 8260C	NPW	Y	x	
NY	Methyl tert-butyl ether	EPA 8260C	NPW	Y	x	
NY	Methylene Chloride	EPA 8260C	NPW	Y	x	
NY	Naphthalene	EPA 8260C	NPW	Y	x	

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State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	n-Butylbenzene	EPA 8260C	NPW	Y	x	
NY	n-Propylbenzene	EPA 8260C	NPW	Y	x	
NY	o-Xylene	EPA 8260C	NPW	Y	x	
NY	p-Isopropyltoluene	EPA 8260C	NPW	Y	x	
NY	sec-Butylbenzene	EPA 8260C	NPW	Y	x	
NY	Styrene	EPA 8260C	NPW	Y	x	
NY	Tert-Amyl Methyl Ether (TAME)	EPA 8260C	NPW	Y	x	
NY	Tert-Butyl Alcohol	EPA 8260C	NPW	Y	x	
NY	tert-butyl Ethyl Ether	EPA 8260C	NPW	Y	x	
NY	Tert-Butylbenzene	EPA 8260C	NPW	Y	x	
NY	Tetrachloroethene	EPA 8260C	NPW	Y	x	
NY	Tetrahydrofuran	EPA 8260C	NPW	Y	x	
NY	Toluene	EPA 8260C	NPW	Y	x	
NY	Total Xylenes	EPA 8260C	NPW	Y	x	
NY	Trans-1,2-Dichloroethene	EPA 8260C	NPW	Y	x	
NY	Trans-1,3-Dichloropropene	EPA 8260C	NPW	Y	x	
NY	Trans-1,4-Dichloro-2-butene	EPA 8260C	NPW	Y	x	
NY	Trichloroethene	EPA 8260C	NPW	Y	x	
NY	Trichlorofluoromethane	EPA 8260C	NPW	Y	x	
NY	Vinyl acetate	EPA 8260C	NPW	Y	x	
NY	Vinyl Chloride	EPA 8260C	NPW	Y	x	
NY	1,1'-Biphenyl	EPA 8270D	NPW	x	Y	
NY	1,2,4,5-Tetrachlorobenzene	EPA 8270D	NPW	Y	Y	
NY	1,2,4-Trichlorobenzene	EPA 8270D	NPW	Y	Y	
NY	1,2-Dichlorobenzene	EPA 8270D	NPW	Y	Y	
NY	1,2-Diphenylhydrazine	EPA 8270D	NPW	Y	Y	
NY	1,3-Dichlorobenzene	EPA 8270D	NPW	Y	Y	
NY	1,4-Dichlorobenzene	EPA 8270D	NPW	Y	Y	
NY	1,4-Dioxane	EPA 8270D	NPW	x	Y	
NY	2,3,4,6-Tetrachlorophenol	EPA 8270D	NPW	Y	Y	
NY	2,4,5-Trichlorophenol	EPA 8270D	NPW	Y	Y	
NY	2,4,6-Trichlorophenol	EPA 8270D	NPW	Y	Y	
NY	2,4-Dichlorophenol	EPA 8270D	NPW	Y	Y	
NY	2,4-Dimethylphenol	EPA 8270D	NPW	Y	Y	
NY	2,4-Dinitrophenol	EPA 8270D	NPW	Y	Y	
NY	2,4-Dinitrotoluene (2,4-DNT)	EPA 8270D	NPW	Y	Y	
NY	2,6-Dinitrotoluene (2,6-DNT)	EPA 8270D	NPW	Y	Y	
NY	2-Chloronaphthalene	EPA 8270D	NPW	Y	Y	
NY	2-Chlorophenol	EPA 8270D	NPW	Y	Y	
NY	2-Methyl-4,6-dinitrophenol	EPA 8270D	NPW	Y	Y	
NY	2-Methylnaphthalene	EPA 8270D	NPW	Y	Y	
NY	2-Methylphenol	EPA 8270D	NPW	Y	Y	
NY	2-Nitroaniline	EPA 8270D	NPW	Y	Y	
NY	2-Nitrophenol	EPA 8270D	NPW	Y	Y	
NY	3,3-Dichlorobenzidine	EPA 8270D	NPW	Y	Y	
NY	3-Methylphenol	EPA 8270D	NPW	Y	Y	
NY	3-Nitroaniline	EPA 8270D	NPW	Y	Y	
NY	4-Bromophenyl phenyl ether	EPA 8270D	NPW	Y	Y	
NY	4-Chloro-3-methylphenol	EPA 8270D	NPW	Y	Y	

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State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	4-Chloroaniline	EPA 8270D	NPW	Y	Y	
NY	4-Chlorophenyl phenyl ether	EPA 8270D	NPW	Y	Y	
NY	4-Methylphenol	EPA 8270D	NPW	Y	Y	
NY	4-Nitroaniline	EPA 8270D	NPW	Y	Y	
NY	4-Nitrophenol	EPA 8270D	NPW	Y	Y	
NY	Acenaphthene	EPA 8270D	NPW	Y	Y	
NY	Acenaphthylene	EPA 8270D	NPW	Y	Y	
NY	Acetophenone	EPA 8270D	NPW	Y	x	
NY	Aniline	EPA 8270D	NPW	Y	Y	
NY	Anthracene	EPA 8270D	NPW	Y	Y	
NY	Atrazine	EPA 8270D	NPW	Y	x	
NY	Benzaldehyde	EPA 8270D	NPW	Y	Y	
NY	Benzidine	EPA 8270D	NPW	Y	Y	
NY	Benzo(a)anthracene	EPA 8270D	NPW	Y	Y	
NY	Benzo(a)pyrene	EPA 8270D	NPW	Y	Y	
NY	Benzo(b)fluoranthene	EPA 8270D	NPW	Y	Y	
NY	Benzo(ghi)perylene	EPA 8270D	NPW	Y	Y	
NY	Benzo(k)fluoranthene	EPA 8270D	NPW	Y	Y	
NY	Benzoic Acid	EPA 8270D	NPW	Y	Y	
NY	Benzyl alcohol	EPA 8270D	NPW	Y	Y	
NY	Biphenyl	EPA 8270D	NPW	Y	x	
NY	Bis(2-chloroethoxy) methane	EPA 8270D	NPW	Y	Y	
NY	Bis(2-chloroethyl) ether	EPA 8270D	NPW	Y	Y	
NY	Bis(2-chloroisopropyl) ether	EPA 8270D	NPW	Y	Y	
NY	Bis(2-ethylhexyl) phthalate	EPA 8270D	NPW	Y	Y	
NY	Butyl Benzyl phthalate	EPA 8270D	NPW	Y	Y	
NY	Caprolactam	EPA 8270D	NPW	Y	Y	
NY	Carbazole	EPA 8270D	NPW	Y	Y	
NY	Chrysene	EPA 8270D	NPW	Y	Y	
NY	Cresols, Total	EPA 8270D	NPW	Y	x	
NY	Dibenzo(a,h)anthracene	EPA 8270D	NPW	Y	Y	
NY	Dibenzofuran	EPA 8270D	NPW	Y	Y	
NY	Diethyl phthalate	EPA 8270D	NPW	Y	Y	
NY	Dimethyl phthalate	EPA 8270D	NPW	Y	Y	
NY	Di-n-butyl phthalate	EPA 8270D	NPW	Y	Y	
NY	Di-n-octyl phthalate	EPA 8270D	NPW	Y	Y	
NY	Diphenylamine	EPA 8270D	NPW	Y	x	
NY	Fluoranthene	EPA 8270D	NPW	Y	Y	
NY	Fluorene	EPA 8270D	NPW	Y	Y	
NY	Hexachlorobenzene	EPA 8270D	NPW	Y	Y	
NY	Hexachlorobutadiene	EPA 8270D	NPW	Y	Y	
NY	Hexachlorocyclopentadiene	EPA 8270D	NPW	Y	Y	
NY	Hexachloroethane	EPA 8270D	NPW	Y	Y	
NY	Indeno(1,2,3-cd)pyrene	EPA 8270D	NPW	Y	Y	
NY	Isophorone	EPA 8270D	NPW	Y	x	
NY	Naphthalene	EPA 8270D	NPW	Y	Y	
NY	Nitrobenzene	EPA 8270D	NPW	Y	Y	
NY	N-Nitrosodimethylamine	EPA 8270D	NPW	Y	Y	
NY	N-Nitrosodi-n-propylamine	EPA 8270D	NPW	Y	Y	

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State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	N-Nitrosodiphenylamine	EPA 8270D	NPW	Y	Y	
NY	Parathion	EPA 8270D	NPW	Y	x	
NY	Pentachlorophenol	EPA 8270D	NPW	Y	Y	
NY	Phenanthrene	EPA 8270D	NPW	Y	Y	
NY	Phenol	EPA 8270D	NPW	Y	Y	
NY	Pyrene	EPA 8270D	NPW	Y	Y	
NY	Pyridine	EPA 8270D	NPW	Y	Y	
NY	Thionazin	EPA 8270D	NPW	Y	x	
NY	Acenaphthene	EPA 8270D-SIM	NPW	Y	Y	
NY	Acenaphthylene	EPA 8270D-SIM	NPW	Y	Y	
NY	Anthracene	EPA 8270D-SIM	NPW	Y	Y	
NY	Benzo(a)anthracene	EPA 8270D-SIM	NPW	Y	Y	
NY	Benzo(a)anthracene	EPA 8270D-SIM	NPW	Y	x	
NY	Benzo(a)pyrene	EPA 8270D-SIM	NPW	Y	Y	
NY	Benzo(a)pyrene	EPA 8270D-SIM	NPW	Y	x	
NY	Benzo(b)fluoranthene	EPA 8270D-SIM	NPW	Y	Y	
NY	Benzo(b)fluoranthene	EPA 8270D-SIM	NPW	Y	x	
NY	Benzo(ghi)perylene	EPA 8270D-SIM	NPW	Y	Y	
NY	Benzo(k)fluoranthene	EPA 8270D-SIM	NPW	Y	x	
NY	Benzo(k)fluoranthene	EPA 8270D-SIM	NPW	Y	Y	
NY	Chrysene	EPA 8270D-SIM	NPW	Y	Y	
NY	Dibenzo(a,h)anthracene	EPA 8270D-SIM	NPW	Y	Y	
NY	Dibenzo(a,h)anthracene	EPA 8270D-SIM	NPW	Y	x	
NY	Fluoranthene	EPA 8270D-SIM	NPW	Y	Y	
NY	Fluorene	EPA 8270D-SIM	NPW	Y	Y	
NY	Indeno(1,2,3-cd)pyrene	EPA 8270D-SIM	NPW	Y	Y	
NY	Indeno(1,2,3-cd)pyrene	EPA 8270D-SIM	NPW	Y	x	
NY	Naphthalene	EPA 8270D-SIM	NPW	Y	Y	
NY	Phenanthrene	EPA 8270D-SIM	NPW	Y	Y	
NY	Pyrene	EPA 8270D-SIM	NPW	Y	Y	
NY	Formaldehyde	EPA 8315A	NPW	Y	x	
NY	Cyanide - Amenable, Distillation	EPA 9010C	NPW	Y	x	
NY	Cyanide, Distillation	EPA 9010C	NPW	Y	x	
NY	Total Cyanide	EPA 9012B	NPW	Y	x	
NY	Total Cyanide	EPA 9014	NPW	Y	x	
NY	Sulfide	EPA 9030B	NPW	Y	x	
NY	Phenolics	EPA 9065	NPW	Y	x	
NY	Ethane	EPA RSK-175	NPW	x	Y	
NY	Ethene	EPA RSK-175	NPW	x	Y	
NY	Methane	EPA RSK-175	NPW	x	Y	
NY	Propane	EPA RSK-175	NPW	x	Y	
NY	Nitrogen, Total Kjeldahl	Lachat 10-107-06-2	NPW	Y	x	
NY	Cyanide, Total	Lachat 10-204-00-1-X	NPW	Y	x	
NY	Color	SM 2120B	NPW	Y	x	
NY	Turbidity	SM 2130B	NPW	Y	x	
NY	Acidity	SM 2310B	NPW	Y	x	
NY	Alkalinity	SM 2320B	NPW	Y	x	
NY	Total Hardness (CaCO3)	SM 2340B	NPW	x	Y	
NY	Specific Conductance	SM 2510B	NPW	Y	x	

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State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Total Residue	SM 2540B	NPW	Y	x	
NY	Total Dissolved Solids	SM 2540C	NPW	Y	x	
NY	Total Suspended Solids	SM 2540D	NPW	Y	x	
NY	Volatile Solids	SM 2540E	NPW	Y	x	
NY	Total Settleable Solids	SM 2540F	NPW	Y	x	
NY	Chromium VI	SM 3500 Cr B	NPW	Y	x	
NY	Sulfate	SM 4500 SO4-E	NPW	Y	x	
NY	Chloride	SM 4500 CL-E	NPW	Y	x	
NY	Cyanide, Total	SM 4500 CN E	NPW	Y	x	
NY	Fluoride Preliminary Distillation	SM 4500 F-B	NPW	Y	x	
NY	Fluoride	SM 4500 F-C	NPW	Y	x	
NY	Ammonia	SM 4500 NH3 B	NPW	Y	x	
NY	Ammonia	SM 4500 NH3-H	NPW	Y	x	
NY	Nitrogen, Total Kjeldahl	SM 4500 NH3-H	NPW	Y	x	
NY	Nitrogen, Total Kjeldahl (Distillation)	SM 4500Norg-C	NPW	Y	x	
NY	Nitrite-N	SM 4500 NO2-B	NPW	Y	x	
NY	Nitrate-N	SM 4500 NO3-F	NPW	Y	x	
NY	Nitrate-N	SM 4500 NO3-F	NPW	Y	x	
NY	Nitrate-Nitrite	SM 4500 NO3-F	NPW	Y	x	
NY	Orthophosphate	SM 4500 P-E	NPW	Y	x	
NY	Total Phosphorus (Digestion)	SM 4500 P-B	NPW	Y	x	
NY	Total Phosphorus	SM 4500 P-E	NPW	Y	x	
NY	Sulfide	SM 4500 S2-D	NPW	Y	x	
NY	Sulfate	SM 4500 SO4-E	NPW	Y	x	
NY	Biochemical Oxygen Demand	SM 5210B	NPW	Y	x	
NY	Biochemical Oxygen Demand - Carbonaceous	SM 5210B	NPW	Y	x	
NY	Chemical Oxygen Demand	SM 5220D	NPW	Y	x	
NY	Total Organic Carbon	SM 5310C	NPW	Y	x	
NY	Surfactants (MBAS)	SM 5540C	NPW	Y	x	
NY	Heterotrophic Plate Count	SM 9215B	NPW	Y	x	
NY	Coliform, Total MPN	SM 9221B	NPW	Y	x	
NY	Coliform, Fecal MPN	SM 9221C	NPW	Y	x	
NY	Coliform, Fecal MPN	SM 9221E	NPW	Y	x	
NY	Coliform, Total MF	SM 9222B	NPW	Y	x	
Ny	Titanium	EPA 6010C	NPW	x	Y	
NY	Flashpoint	EPA 1010A	SCM	Y	x	
NY	Ignitability	EPA 1030	SCM	Y	x	
NY	TCLP	EPA 1311	SCM	Y	Y	
NY	SPLP	EPA 1312	SCM	Y	x	
NY	Microwave Acid Digestion	EPA 3050B	SCM	Y	Y	
NY	Microwave Acid Digestion	EPA 3051A	SCM	Y	Y	
NY	Chromium VI Digestion	EPA 3060A	SCM	x	Y	
NY	Soxhlet Extraction	EPA 3540C	SCM	Y	Y	
NY	Microwave Acid Digestion	EPA 3546	SCM	Y	x	
NY	Microscale Solvent Extraction (MSE)	EPA 3570	SCM	x	Y	
NY	Waste Dilution	EPA 3580A	SCM	Y	Y	
NY	Purge & Trap Soil Low/High	EPA 5035A	SCM	Y	x	
NY	Aluminum	EPA 6010C	SCM	x	Y	
NY	Antimony	EPA 6010C	SCM	x	Y	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Arsenic	EPA 6010C	SCM	x	Y	
NY	Barium	EPA 6010C	SCM	x	Y	
NY	Beryllium	EPA 6010C	SCM	x	Y	
NY	Boron	EPA 6010C	SCM	x	Y	
NY	Cadmium	EPA 6010C	SCM	x	Y	
NY	Calcium	EPA 6010C	SCM	x	Y	
NY	Chromium	EPA 6010C	SCM	x	Y	
NY	Cobalt	EPA 6010C	SCM	x	Y	
NY	Copper	EPA 6010C	SCM	x	Y	
NY	Iron	EPA 6010C	SCM	x	Y	
NY	Lead	EPA 6010C	SCM	x	Y	
NY	Magnesium	EPA 6010C	SCM	x	Y	
NY	Manganese	EPA 6010C	SCM	x	Y	
NY	Molybdenum	EPA 6010C	SCM	x	Y	
NY	Nickel	EPA 6010C	SCM	x	Y	
NY	Potassium	EPA 6010C	SCM	x	Y	
NY	Selenium	EPA 6010C	SCM	x	Y	
NY	Silver	EPA 6010C	SCM	x	Y	
NY	Sodium	EPA 6010C	SCM	x	Y	
NY	Strontium	EPA 6010C	SCM	x	Y	
NY	Thallium	EPA 6010C	SCM	x	Y	
NY	Tin	EPA 6010C	SCM	x	Y	
NY	Titanium	EPA 6010C	SCM	x	Y	
NY	Vanadium	EPA 6010C	SCM	x	Y	
NY	Zinc	EPA 6010C	SCM	x	Y	
NY	Aluminum	EPA 6020A	SCM	x	Y	
NY	Antimony	EPA 6020A	SCM	x	Y	
NY	Arsenic	EPA 6020A	SCM	x	Y	
NY	Barium	EPA 6020A	SCM	x	Y	
NY	Beryllium	EPA 6020A	SCM	x	Y	
NY	Boron	EPA 6020A	SCM	x	Y	
NY	Cadmium	EPA 6020A	SCM	x	Y	
NY	Calcium	EPA 6020A	SCM	x	Y	
NY	Chromium	EPA 6020A	SCM	x	Y	
NY	Cobalt	EPA 6020A	SCM	x	Y	
NY	Copper	EPA 6020A	SCM	x	Y	
NY	Iron	EPA 6020A	SCM	x	Y	
NY	Lead	EPA 6020A	SCM	x	Y	
NY	Magnesium	EPA 6020A	SCM	x	Y	
NY	Manganese	EPA 6020A	SCM	x	Y	
NY	Molybdenum	EPA 6020A	SCM	x	Y	
NY	Nickel	EPA 6020A	SCM	x	Y	
NY	Potassium	EPA 6020A	SCM	x	Y	
NY	Selenium	EPA 6020A	SCM	x	Y	
NY	Silver	EPA 6020A	SCM	x	Y	
NY	Sodium	EPA 6020A	SCM	x	Y	
NY	Strontium	EPA 6020A	SCM	x	Y	
NY	Thallium	EPA 6020A	SCM	x	Y	
NY	Tin	EPA 6020A	SCM	x	Y	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Vanadium	EPA 6020A	SCM	x	Y	
NY	Zinc	EPA 6020A	SCM	x	Y	
NY	Chromium VI	EPA 7196A	SCM	Y	x	
NY	Mercury	EPA 7471B	SCM	x	Y	
NY	Mercury	EPA 7474	SCM	x	Y	
NY	Diesel Range Organics	EPA 8015C	SCM	Y	x	
NY	Gasoline Range Organics	EPA 8015C	SCM	Y	x	
NY	Diesel Range Organics	EPA 8015D	SCM	x	Y	
NY	Ethylene glycol	EPA 8015D	SCM	x	Y	
NY	Gasoline Range Organics	EPA 8015D	SCM	x	Y	
NY	Iso-butyl Alcohol	EPA 8015D	SCM	x	Y	
NY	Tert-Butyl Alcohol	EPA 8015D	SCM	x	Y	
NY	4,4'-DDD	EPA 8081B	SCM	Y	Y	
NY	4,4'-DDE	EPA 8081B	SCM	Y	Y	
NY	4,4'-DDT	EPA 8081B	SCM	Y	Y	
NY	Aldrin	EPA 8081B	SCM	Y	Y	
NY	alpha-BHC	EPA 8081B	SCM	Y	Y	
NY	alpha-Chlordane	EPA 8081B	SCM	Y	x	
NY	beta-BHC	EPA 8081B	SCM	Y	Y	
NY	Chlordane	EPA 8081B	SCM	Y	Y	
NY	delta-BHC	EPA 8081B	SCM	Y	Y	
NY	Dieldrin	EPA 8081B	SCM	Y	Y	
NY	Endosulfan I	EPA 8081B	SCM	Y	Y	
NY	Endosulfan II	EPA 8081B	SCM	Y	Y	
NY	Endosulfan Sulfate	EPA 8081B	SCM	Y	Y	
NY	Endrin	EPA 8081B	SCM	Y	Y	
NY	Endrin Aldehyde	EPA 8081B	SCM	Y	Y	
NY	Endrin Ketone	EPA 8081B	SCM	Y	Y	
NY	gamma-Chlordane	EPA 8081B	SCM	Y	Y	
NY	Heptachlor	EPA 8081B	SCM	Y	Y	
NY	Heptachlor Epoxide	EPA 8081B	SCM	Y	Y	
NY	Lindane (gamma-BHC)	EPA 8081B	SCM	Y	Y	
NY	Methoxychlor	EPA 8081B	SCM	Y	Y	
NY	Mirex	EPA 8081B	SCM	x	Y	
NY	Toxaphene	EPA 8081B	SCM	Y	Y	
NY	2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB	EPA 8082A	SCM	x	Y	
NY	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	EPA 8082A	SCM	x	Y	
NY	2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)	EPA 8082A	SCM	x	Y	
NY	2,2',3,4,4',5,5'-Heptacholorbiphenyl (PCB 180)	EPA 8082A	SCM	x	Y	
NY	2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183)	EPA 8082A	SCM	x	Y	
NY	2,2',3,4,4',5'-Hexachlorobiphenyl (PCB 138)	EPA 8082A	SCM	x	Y	
NY	2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187)	EPA 8082A	SCM	x	Y	
NY	2,2',3,4,5,5'-Hexachlorobiphenyl (PCB 141)	EPA 8082A	SCM	x	Y	
NY	2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)	EPA 8082A	SCM	x	Y	
NY	2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151)	EPA 8082A	SCM	x	Y	
NY	2,2',3,5'-Tetrachlorobiphenyl (PCB 44)	EPA 8082A	SCM	x	Y	
NY	2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153)	EPA 8082A	SCM	x	Y	
NY	2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)	EPA 8082A	SCM	x	Y	
NY	2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	EPA 8082A	SCM	x	Y	

Alpha Analytical

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	2,2',5-Trichlorobiphenyl (PCB 18)	EPA 8082A	SCM	x	Y	
NY	2,3',4,4',5-Pentachlorobiphenyl (PCB 118)	EPA 8082A	SCM	x	Y	
NY	2,3',4,4'-Tetrachlorobiphenyl (PCB 66)	EPA 8082A	SCM	x	Y	
NY	2,3-Dichlorobiphenyl (PCB 5)	EPA 8082A	SCM	x	Y	
NY	2,4'-Trichlorobiphenyl (PCB 31)	EPA 8082A	SCM	x	Y	
NY	2-Chlorobiphenyl (PCB 1)	EPA 8082A	SCM	x	Y	
NY	PCB-1016	EPA 8082A	SCM	Y	Y	
NY	PCB-1221	EPA 8082A	SCM	Y	Y	
NY	PCB-1232	EPA 8082A	SCM	Y	Y	
NY	PCB-1242	EPA 8082A	SCM	Y	Y	
NY	PCB-1248	EPA 8082A	SCM	Y	Y	
NY	PCB-1254	EPA 8082A	SCM	Y	Y	
NY	PCB-1260	EPA 8082A	SCM	Y	Y	
NY	PCB-1262	EPA 8082A	SCM	Y	Y	
NY	PCB-1268	EPA 8082A	SCM	Y	Y	
NY	PCBs in Oil	EPA 8082A	SCM	Y	x	
NY	2,4,5-T	EPA 8151A	SCM	Y	x	
NY	2,4,5-TP (Silvex)	EPA 8151A	SCM	Y	x	
NY	2,4-D	EPA 8151A	SCM	Y	x	
NY	2,4-DB	EPA 8151A	SCM	Y	x	
NY	Dalapon	EPA 8151A	SCM	Y	x	
NY	Dicamba	EPA 8151A	SCM	Y	x	
NY	Dichloroprop	EPA 8151A	SCM	Y	x	
NY	Dinoseb	EPA 8151A	SCM	Y	x	
NY	MCPA	EPA 8151A	SCM	Y	x	
NY	MCPP	EPA 8151A	SCM	Y	x	
NY	1,1,1,2-Tetrachloroethane	EPA 8260C	SCM	Y	x	
NY	1,1,1-Trichloroethane	EPA 8260C	SCM	Y	x	
NY	1,1,2,2-Tetrachloroethane	EPA 8260C	SCM	Y	x	
NY	1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C	SCM	Y	x	
NY	1,1,2-Trichloroethane	EPA 8260C	SCM	Y	x	
NY	1,1-Dichloroethane	EPA 8260C	SCM	Y	x	
NY	1,1-Dichloroethene	EPA 8260C	SCM	Y	x	
NY	1,1-Dichloropropene	EPA 8260C	SCM	Y	x	
NY	1,2,3-Trichloropropane	EPA 8260C	SCM	Y	x	
NY	1,2,4-Trichlorobenzene	EPA 8260C	SCM	Y	x	
NY	1,2,4-Trimethylbenzene	EPA 8260C	SCM	Y	x	
NY	1,2-Dibromo-3-Chloropropane (DBCP)	EPA 8260C	SCM	Y	x	
NY	1,2-Dibromoethane (EDB)	EPA 8260C	SCM	Y	x	
NY	1,2-Dichlorobenzene	EPA 8260C	SCM	Y	x	
NY	1,2-Dichloroethane	EPA 8260C	SCM	Y	x	
NY	1,2-Dichloropropane	EPA 8260C	SCM	Y	x	
NY	1,3,5-Trimethylbenzene	EPA 8260C	SCM	Y	x	
NY	1,3-Dichlorobenzene	EPA 8260C	SCM	Y	x	
NY	1,3-Dichloropropane	EPA 8260C	SCM	Y	x	
NY	1,4-Dichlorobenzene	EPA 8260C	SCM	Y	x	
NY	1,4-Dioxane	EPA 8260C	SCM	Y	x	
NY	2,2-Dichloropropane	EPA 8260C	SCM	Y	x	
NY	2-Butanone	EPA 8260C	SCM	Y	x	

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	2-Chloroethyl Vinyl ether	EPA 8260C	SCM	Y	x	
NY	2-Chlorotoluene	EPA 8260C	SCM	Y	x	
NY	2-Hexanone	EPA 8260C	SCM	Y	x	
NY	4-Chlorotoluene	EPA 8260C	SCM	Y	x	
NY	4-Methyl-2-Pentanone	EPA 8260C	SCM	Y	x	
NY	Acetone	EPA 8260C	SCM	Y	x	
NY	Acrolein	EPA 8260C	SCM	Y	x	
NY	Acrylonitrile	EPA 8260C	SCM	Y	x	
NY	Benzene	EPA 8260C	SCM	Y	x	
NY	Bromobenzene	EPA 8260C	SCM	Y	x	
NY	Bromochloromethane	EPA 8260C	SCM	Y	x	
NY	Bromodichloromethane	EPA 8260C	SCM	Y	x	
NY	Bromoform	EPA 8260C	SCM	Y	x	
NY	Bromomethane	EPA 8260C	SCM	Y	x	
NY	Carbon Disulfide	EPA 8260C	SCM	Y	x	
NY	Carbon Tetrachloride	EPA 8260C	SCM	Y	x	
NY	Chlorobenzene	EPA 8260C	SCM	Y	x	
NY	Chloroethane	EPA 8260C	SCM	Y	x	
NY	Chloroform	EPA 8260C	SCM	Y	x	
NY	Chloromethane	EPA 8260C	SCM	Y	x	
NY	cis-1,2-Dichloroethene	EPA 8260C	SCM	Y	x	
NY	cis-1,3-Dichloropropene	EPA 8260C	SCM	Y	x	
NY	Cyclohexane	EPA 8260C	SCM	Y	x	
NY	Dibromochloromethane	EPA 8260C	SCM	Y	x	
NY	Dibromomethane	EPA 8260C	SCM	Y	x	
NY	Dichlorodifluoromethane	EPA 8260C	SCM	Y	x	
NY	Diethyl ether	EPA 8260C	SCM	Y	x	
NY	Ethyl acetate	EPA 8260C	SCM	Y	x	
NY	Ethyl Methacrylate	EPA 8260C	SCM	Y	x	
NY	Ethylbenzene	EPA 8260C	SCM	Y	x	
NY	Hexachlorobutadiene	EPA 8260C	SCM	Y	x	
NY	Isopropylbenzene	EPA 8260C	SCM	Y	x	
NY	m+p-Xylene	EPA 8260C	SCM	Y	x	
NY	Methyl Acetate	EPA 8260C	SCM	Y	x	
NY	Methyl Cyclohexane	EPA 8260C	SCM	Y	x	
NY	Methyl tert-butyl ether	EPA 8260C	SCM	Y	x	
NY	Methylene Chloride	EPA 8260C	SCM	Y	x	
NY	Naphthalene	EPA 8260C	SCM	Y	x	
NY	n-Butanol	EPA 8260C	SCM	Y	x	
NY	n-Butylbenzene	EPA 8260C	SCM	Y	x	
NY	n-Propylbenzene	EPA 8260C	SCM	Y	x	
NY	o-Xylene	EPA 8260C	SCM	Y	x	
NY	p-Isopropyltoluene	EPA 8260C	SCM	Y	x	
NY	sec-Butylbenzene	EPA 8260C	SCM	Y	x	
NY	Styrene	EPA 8260C	SCM	Y	x	
NY	Tert-Butyl Alcohol	EPA 8260C	SCM	Y	x	
NY	Tert-Butylbenzene	EPA 8260C	SCM	Y	x	
NY	Tetrachloroethene	EPA 8260C	SCM	Y	x	
NY	Toluene	EPA 8260C	SCM	Y	x	

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Total Xylenes	EPA 8260C	SCM	Y	x	
NY	Trans-1,2-Dichloroethene	EPA 8260C	SCM	Y	x	
NY	Trans-1,3-Dichloropropene	EPA 8260C	SCM	Y	x	
NY	Trans-1,4-Dichloro-2-butene	EPA 8260C	SCM	Y	x	
NY	Trichloroethene	EPA 8260C	SCM	Y	x	
NY	Trichlorofluoromethane	EPA 8260C	SCM	Y	x	
NY	Vinyl Acetate	EPA 8260C	SCM	Y	x	
NY	Vinyl Chloride	EPA 8260C	SCM	Y	x	
NY	1,1'-Biphenyl	EPA 8270D	SCM	x	Y	
NY	1,2,4,5-Tetrachlorobenzene	EPA 8270D	SCM	Y	Y	
NY	1,2,4-Trichlorobenzene	EPA 8270D	SCM	Y	Y	
NY	1,2-Dichlorobenzene	EPA 8270D	SCM	Y	Y	
NY	1,2-Diphenylhydrazine	EPA 8270D	SCM	Y	Y	
NY	1,3-Dichlorobenzene	EPA 8270D	SCM	Y	Y	
NY	1,4-Dichlorobenzene	EPA 8270D	SCM	Y	Y	
NY	2,3,4,6-Tetrachlorophenol	EPA 8270D	SCM	Y	Y	
NY	2,4,5-Trichlorophenol	EPA 8270D	SCM	Y	Y	
NY	2,4,6-Trichlorophenol	EPA 8270D	SCM	Y	Y	
NY	2,4-Dichlorophenol	EPA 8270D	SCM	Y	Y	
NY	2,4-Dimethylphenol	EPA 8270D	SCM	Y	Y	
NY	2,4-Dinitrophenol	EPA 8270D	SCM	Y	Y	
NY	2,4-Dinitrotoluene (2,4-DNT)	EPA 8270D	SCM	Y	x	
NY	2,6-Dinitrotoluene (2,6-DNT)	EPA 8270D	SCM	Y	x	
NY	2-Chloronaphthalene	EPA 8270D	SCM	Y	Y	
NY	2-Chlorophenol	EPA 8270D	SCM	Y	Y	
NY	2-Methyl-4,6-dinitrophenol	EPA 8270D	SCM	Y	Y	
NY	2-Methylnaphthalene	EPA 8270D	SCM	Y	Y	
NY	2-Methylphenol	EPA 8270D	SCM	Y	Y	
NY	2-Nitroaniline	EPA 8270D	SCM	Y	Y	
NY	2-Nitrophenol	EPA 8270D	SCM	Y	Y	
NY	3,3-Dichlorobenzidine	EPA 8270D	SCM	Y	Y	
NY	3-Methylphenol	EPA 8270D	SCM	Y	Y	
NY	3-Nitroaniline	EPA 8270D	SCM	Y	Y	
NY	4-Bromophenyl phenyl ether	EPA 8270D	SCM	Y	Y	
NY	4-Chloro-3-methylphenol	EPA 8270D	SCM	Y	Y	
NY	4-Chlorophenyl phenyl ether	EPA 8270D	SCM	Y	Y	
NY	4-Methylphenol	EPA 8270D	SCM	Y	Y	
NY	4-Nitroaniline	EPA 8270D	SCM	Y	Y	
NY	4-Nitrophenol	EPA 8270D	SCM	Y	Y	
NY	Acenaphthene	EPA 8270D	SCM	Y	Y	
NY	Acenaphthylene	EPA 8270D	SCM	Y	Y	
NY	Acetophenone	EPA 8270D	SCM	Y	Y	
NY	Aniline	EPA 8270D	SCM	Y	Y	
NY	Anthracene	EPA 8270D	SCM	Y	Y	
NY	Atrazine	EPA 8270D	SCM	Y	x	
NY	Benzaldehyde	EPA 8270D	SCM	Y	Y	
NY	Benzidine	EPA 8270D	SCM	Y	Y	
NY	Benzo(a)anthracene	EPA 8270D	SCM	Y	Y	
NY	Benzo(a)pyrene	EPA 8270D	SCM	Y	Y	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Benzo(b)fluoranthene	EPA 8270D	SCM	Y	Y	
NY	Benzo(ghi)perylene	EPA 8270D	SCM	Y	Y	
NY	Benzo(k)fluoranthene	EPA 8270D	SCM	Y	Y	
NY	Benzoic Acid	EPA 8270D	SCM	Y	Y	
NY	Benzyl alcohol	EPA 8270D	SCM	Y	Y	
NY	Biphenyl	EPA 8270D	SCM	Y	x	
NY	Bis(2-chloroethoxy) methane	EPA 8270D	SCM	Y	Y	
NY	Bis(2-chloroethyl) ether	EPA 8270D	SCM	Y	Y	
NY	Bis(2-chloroisopropyl) ether	EPA 8270D	SCM	Y	Y	
NY	Bis(2-ethylhexyl) phthalate	EPA 8270D	SCM	Y	Y	
NY	Butyl Benzyl phthalate	EPA 8270D	SCM	Y	Y	
NY	Caprolactam	EPA 8270D	SCM	Y	Y	
NY	Carbazole	EPA 8270D	SCM	Y	Y	
NY	Chrysene	EPA 8270D	SCM	Y	Y	
NY	Dibenzo(a,h)anthracene	EPA 8270D	SCM	Y	Y	
NY	Dibenzofuran	EPA 8270D	SCM	Y	Y	
NY	Diethyl phthalate	EPA 8270D	SCM	Y	Y	
NY	Dimethyl phthalate	EPA 8270D	SCM	Y	Y	
NY	Di-n-butyl phthalate	EPA 8270D	SCM	Y	Y	
NY	Di-n-octyl phthalate	EPA 8270D	SCM	Y	Y	
NY	Diphenylamine	EPA 8270D	SCM	Y	x	
NY	Fluoranthene	EPA 8270D	SCM	Y	Y	
NY	Fluorene	EPA 8270D	SCM	Y	Y	
NY	Hexachlorobenzene	EPA 8270D	SCM	Y	Y	
NY	Hexachlorobutadiene	EPA 8270D	SCM	Y	x	
NY	Hexachlorocyclopentadiene	EPA 8270D	SCM	Y	Y	
NY	Hexachloroethane	EPA 8270D	SCM	Y	Y	
NY	Indeno(1,2,3-cd)pyrene	EPA 8270D	SCM	Y	Y	
NY	Isophorone	EPA 8270D	SCM	Y	Y	
NY	Naphthalene	EPA 8270D	SCM	Y	Y	
NY	Nitrobenzene	EPA 8270D	SCM	Y	Y	
NY	N-Nitrosodimethylamine	EPA 8270D	SCM	Y	Y	
NY	N-Nitrosodi-n-propylamine	EPA 8270D	SCM	Y	Y	
NY	N-Nitrosodiphenylamine	EPA 8270D	SCM	Y	Y	
NY	Parathion	EPA 8270D	SCM	Y	x	
NY	Pentachloronitrobenzene	EPA 8270D	SCM	Y	Y	
NY	Pentachlorophenol	EPA 8270D	SCM	Y	Y	
NY	Phenanthrene	EPA 8270D	SCM	Y	Y	
NY	Phenol	EPA 8270D	SCM	Y	Y	
NY	Pyrene	EPA 8270D	SCM	Y	Y	
NY	Pyridine	EPA 8270D	SCM	Y	Y	
NY	Acenaphthene	EPA 8270D-SIM	SCM	Y	x	
NY	Acenaphthylene	EPA 8270D-SIM	SCM	Y	x	
NY	Anthracene	EPA 8270D-SIM	SCM	Y	x	
NY	Benzo(a)anthracene	EPA 8270D-SIM	SCM	Y	x	
NY	Benzo(a)pyrene	EPA 8270D-SIM	SCM	Y	x	
NY	Benzo(b)fluoranthene	EPA 8270D-SIM	SCM	Y	x	
NY	Benzo(ghi)perylene	EPA 8270D-SIM	SCM	Y	x	
NY	Benzo(k)fluoranthene	EPA 8270D-SIM	SCM	Y	x	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Chrysene	EPA 8270D-SIM	SCM	Y	x	
NY	Dibenzo(a,h)anthracene	EPA 8270D-SIM	SCM	Y	x	
NY	Fluoranthene	EPA 8270D-SIM	SCM	Y	x	
NY	Fluorene	EPA 8270D-SIM	SCM	Y	x	
NY	Indeno(1,2,3-cd)pyrene	EPA 8270D-SIM	SCM	Y	x	
NY	Naphthalene	EPA 8270D-SIM	SCM	Y	x	
NY	Phenanthrene	EPA 8270D-SIM	SCM	Y	x	
NY	Pyrene	EPA 8270D-SIM	SCM	Y	x	
NY	Cyanide - Amenable, Distillation	EPA 9010C	SCM	Y	x	
NY	Cyanide, Distillation	EPA 9010C	SCM	Y	x	
NY	Cyanide, Total	EPA 9012B	SCM	Y	x	
NY	Cyanide, Total	EPA 9014	SCM	Y	x	
NY	Extractable Organic Halides (EOX)	EPA 9023	SCM	Y	x	
NY	Sulfate	EPA 9038	SCM	Y	x	
NY	pH	EPA 9040C	SCM	Y	x	
NY	pH	EPA 9045D	SCM	Y	x	
NY	Specific Conductance	EPA 9050A	SCM	Y	x	
NY	Total Organic Carbon	EPA 9060	SCM	x	Y	
NY	Total Phenolics	EPA 9065	SCM	Y	x	
NY	Oil & Grease	EPA 9071B	SCM	Y	x	
NY	Chloride	EPA 9251	SCM	Y	x	
NY	Total Organic Carbon	Lloyd Kahn	SCM	x	Y	

APPENDIX C

HEALTH AND SAFETY PLAN

May 2025

SITE SPECIFIC
HEALTH & SAFETY PLAN

Hudson Valley Regional Airport Site
18 Griffith Way
Town of Wappinger
Dutchess County, New York
NYSDEC Site #C31412

Prepared by:

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SITE SPECIFIC HEALTH & SAFETY PLAN
HUDSON VALLEY REGIONAL AIRPORT SITE
18 GRIFFITH WAY, TOWN OF WAPPINGER
DUTCHESS COUNTY, NEW YORK

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SITE SPECIFIC HEALTH & SAFETY PLAN
HUDSON VALLEY REGIONAL AIRPORT SITE
18 GRIFFITH WAY, TOWN OF WAPPINGER
DUTCHESS COUNTY, NEW YORK

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1.0 GENERAL

1.1 Overview

This Health and Safety Plan (HASP) has been prepared for use during implementation of the Pre-Construction Investigation (PCI) at the Hudson Valley Regional Airport Site ("the Site") located at 18 Griffith Way in the Town of Wappinger, Dutchess County, New York. This HASP has been developed as an integral part of the PCI as prepared by C.T. Male. The PCI is being performed as part of the NYS Brownfield Cleanup Program.

A designated Office Health and Safety Officer (OHSO) and a Field Safety Officer will be responsible for implementing this HASP during the completion of the PCI field work. All persons or parties who enter the work area (support zone, decontamination zone or exclusion zone) must review, sign and comply with this HASP. A list of individuals authorized to enter the exclusion zone at the Site is presented in Section 13.0 of this HASP. Others may be added to the list as needed. A copy of this HASP will be maintained at the Site throughout the duration of the project. A complete description of the PCI work scope is presented in the PCI Work Plans. A brief description of the proposed scope of work is outlined below.
The proposed PCI will generally include the following tasks:

- Advancement of soil borings to aid in the collection of surface, near-surface, and sub-surface soil samples for subjective field evidence of contamination (FEC) screening; a visual inspection for staining, and screening for organic vapors with a photoionization detector [PID], and for laboratory analysis.; installation of groundwater monitoring wells in overburden groundwater aquifer; and hydrogeologic characterization of the Site's saturated subsurface materials.

- Collection and laboratory analysis of a sediment sample and a surface water sample within the area of proposed outfall replacement.

- Collection and laboratory analysis of soil vapor samples within the area of the proposed building footprints.

Collection and laboratory analysis of groundwater samples from the newly installed groundwater monitoring wells.

1.2 Contact Names & Numbers

For this project, the following NYSDEC, Site Representative, NYSDOH, C.T. Male and Emergency Response names and telephone numbers are presented below as project site contacts.

DUTCHESS COUNTY CONTACTS:

EHS MANAGER:	Robert H. Balkind, P.E., Commissioner	
	Dutchess County Department of Public Works	
	626 Dutchess Turnpike	
	Poughkeepsie, New York 12603	845.486.2085 (O)

HUDSON VALLEY REGIONAL AIRPORT CONTACTS:

DIRECTOR OF	Jeff Durand	845-463-6000 (O)
AVIATION:	38 Citation Drive	845-462-0083 (F)
	Wappingers Falls, New York 12590	845-337-1659 (C)

CONSULTANT CONTACTS:

CONSULTING	C.T. Male Associates	518.786.7400 (O)
ENGINEER:	12 Raymond Avenue	
	Poughkeepsie, New York 12603	
	Jim McIver, Managing Geologist	845.454.4400 (O)
		845.594.1788 (C)
	Eric White, Project Manager	845.454.4400 (O)
		917.863.6835 (C)
	Nancy Garry, PE, CSP	
	Health & Safety Officer	518.786.7541 (O)
	Jon Dippert, HSO Designee	518.786.7563 (O)
		518.469.1183 (C)

STATE CONTACTS:

NYSDEC	Greta Kowalski, Project Manager 625 Broadway Albany, NY 12233-7014	518.402.2029 (O)
NYSDOH	Angela Martin, Project Manager Empire State Plaza Corning Tower, Room 1787 Albany, NY 12237	518.473.4671 (O)

EMERGENCY PHONE NUMBERS:

PERSONAL INJURY OR EMERGENCY:	MidHudson Regional Hospital 241 North Road Poughkeepsie, New York 12601 (approx. 20 minutes)	845.483.5000
FIRE DEPARTMENT:	Emergency New Hackensack Fire Company 217 Myers Corners Road Wappinger Falls, New York 12590	911 845.297.3897
POLICE:	Emergency Dutchess County Sheriff 150 N. Hamilton Street Poughkeepsie, New York 12601	911 845.486.3800
NYS Police	Emergency NYS Police Department 18 Middlebush Road Wappinger Falls, New York 12590	911 845.298.0398
UPSTATE NEW YORK REGIONAL POISON CONTROL CENTER:	University Hospital Upstate Medical University SUNY Health Science Center 750 East Adams Street Syracuse, New York 13201	(800) 222-1222

NATIONAL RESPONSE CENTER:	c/o United States Coast Guard (G-OPF) 2100 2nd Street, Southwest - Room 2611 Washington, DC 20593-0001	(800) 424-8802
NYSDEC SPILL HOTLINE:		(800) 457-7362

2.0 HEATLH AND SAFETY PERSONNEL

The Health and Safety Officer (HSO) will be responsible for implementation of the HASP and the delegation of health and safety duties. The HSO will coordinate the resolution of safety issues that arise during site work. When field operations require only Level D protection, it will not be necessary for the HSO to be present on-site at all times. When the HSO is not present on-site, a designee will be authorized to perform the duties of the HSO, and the designee will be responsible for implementation of the HASP.

The HSO or designee has authority to stop work upon their determination of an imminent safety hazard, emergency situation or other potentially dangerous situations (e.g. weather conditions), when this action is deemed appropriate. Authorization to resume work will be issued by the HSO.

3.0 SITE LOCATION AND DESCRIPTION

The Hudson Valley Regional Airport Site is addressed as 18 Griffith Way in the Town of Wappinger, Dutchess County, New York. The Site is approximately 510.8 acres in size and is identified with tax number 135689-6259-03-225301-0000. Route 376 transects the northeastern portion of the Site. Jackson Road transects the southwestern portion of the Site.

The majority of the Site consists of an active airport that is owned and operated by Dutchess County. Two (2) closed landfills occupy northern portions of the Site. The landfills were reportedly used for the disposal of municipal wastes and have been designated as inactive hazardous waste sites by the NYS Department of Environmental Conservation (DEC). Two (2) hangars located on the southeastern portion of the Site, and currently occupied by Associated Aircraft Group, have been designated as inactive hazardous waste sites in relation to the discharge of spent solvents and petroleum to the Site's media.

The Site's topography is relatively flat within portions of the Site containing the aircraft runways and Site buildings. The topography slopes downwards towards Wappinger Creek on northern and western portions of the Site. The topography slopes sharply upwards on the northeastern portion of the Site containing the former Dutchess County landfill.

Public water and sewer are not available to the Site. Wappinger Creek is located adjacent to the Site's northern and western property boundaries. The Creek flows in a general southwesterly direction towards the Hudson River. An unnamed water body is located on the southeastern portion of the Site adjacent north of the hangars occupied by the Associated Aircraft Group. The water body appears to discharge into an unnamed creek that flows in a general northeasterly direction to low lying areas to the northeast of the Site.

4.0 POTENTIAL SITE CONTAMINANTS

Based on subjective and analytical results from previous environmental investigations, contaminants of concern include volatile and semi-volatile organic compounds, solvents, PCBs, metals, and per- and polyfluoroalkyl substances (PFAS) in soil, sediment, surface water, drinking water and groundwater.

5.0 HAZARD ASSESSMENT

5.1 General

The hazard assessment, use of specific protective equipment, and monitoring associated with each field work task of the PCI to be conducted at the subject Site are presented in following subsections.

For this project, C.T. Male will be subcontracting portions of the PCI activities. Each subcontractor will be responsible for developing and implementing a site-specific health and safety plan for their activities, for protection of their employees, and use of personal protective equipment. The subcontractor will also be responsible for developing and following their own Respiratory Protection Program, as applicable.

5.2 Media Sampling

Soil and groundwater sampling are planned for the Site. The potential hazards to personnel during this work are dermal contact. Level D protection should be sufficient to protect against dermal contact during handling of soils and water. If organic vapors are present at the action levels described in Section 5.4, on the basis of organic vapor monitoring of the area during the work, it may be necessary to upgrade to Level C respiratory protection.

5.3 Subsurface Work

Exploratory test borings (including the installation of monitoring wells) into soils and the excavation of test pits are planned for the site. The potential hazards to personnel during this work are dermal contact. Level D protection should be sufficient to protect against dermal contact during drilling of and/or handling of the subsurface soils and groundwater. If organic vapors are present at the action levels described in Section 5.4, on the basis of organic vapor monitoring of the area during the work, it may be necessary to upgrade to Level C respiratory protection.

5.4 Air Monitoring

During ground intrusive activities, the ambient air in the work area will be monitored with a photoionization detection meter (total volatile compounds – MiniRAE 2000 or 3000) prior to the start of work and periodically as conditions warrant. If a concentration of 10 ppm (sustained for 5 minutes) of total volatile compounds is detected within the work area on the instrument, relative to an isobutylene standard (used to calibrate the instrument), work will cease immediately, and the workers shall shut down equipment and leave the area immediately. The level of personal protective equipment (PPE) protection will be evaluated prior to continuing work. If a PPE upgrade to Level C is required, it will include: a half face air purifying respirator equipped with combination organic vapor and particulate cartridges for 10-15 ppm exposure levels If a concentration greater than 15 ppm is encountered, work will cease immediately, and the situation will be evaluated prior to continuation of work. Table 1 summarizes the action levels relative to the required respiratory protection.

Table 1
C.T. Male Action Levels & Required Respiratory Protection

Action Level	Level of PPE	Type of Respiratory Protection
0-10 parts per million	Level D	No respiratory protection
10-15 parts per million	Level C	Negative pressure half-face respirator
15-50 parts per million	Level C	Positive pressure full-face respirator
Greater than 50	Cease Work	Evaluate work procedures

-Facial hair is not permitted while wearing most respirators.
-Workers required to wear a respirator must have a minimum of OSHA 40 Hour training with current medical monitoring and fit test documentation.

5.5 Community Air Monitoring Plan

A site-specific Community Air Monitoring Plan (CAMP) is attached to the PCI as Appendix D.

5.6 Airport Safety Regulations and Guidelines

Work on airport property will be done in accordance with FAA regulations and guidance. Coordination of activities onsite will be done with onsite airport personnel and the airport manager. Personnel will maintain high awareness of airport traffic during mobilization and subsequent activities. At minimum personnel will wear Level D PPE, use of handheld radios for communication between staff and also the airport control tower, C.T. Male trucks used onsite will need to have working yellow caution lights on top of the truck that are on at all times. Other items may be required based upon airport requirements. Areas/locations where subsurface investigation will take place will be approved/cleared by ARA staff prior to working in that location.

- **Site Access Guidelines:** In order to ensure the safety of all participants, Hudson Valley Regional Airport Staff (Airport Staff) will approve daily work locations, provide access to the site, and escort CTM employees and associated subcontractors across site. If locations and or scope of work changes throughout the day, the Airport Staff will be contacted. For additional information on site access, refer to section 7.0.
- **Vehicular and Aircraft Traffic Guidelines:** To protect workers' safety from hazards associated with vehicular and aircraft traffic, workers are expected to wear safety vests, remain within designated work locations approved by airport personnel, and use cones and vehicles to block and define work areas. In addition to these precautions, minimum off-sets from airport runways and taxiways have been established as follows:
  - **Runways:** 200 feet from center line
  - **Runway Ends:** 300 feet
  - **Taxiways:** 66 feet from center line
- **Emergency Contact Information:** In case of emergency and/or injury, all emergency vehicles should be directed to 38 Citation Drive, and airport staff should be contacted to escort personnel to emergency vehicles. Airport staff contact information are listed in Section 1.2 and as follows:
  - Director of Aviation; Jeff Durand
    - 845-463-6000 (O)
    - 845-462-0083 (F)
    - 845-337-1659 (C)

5.7 Hazard Identification and Control

The following Table 2 presents generalized hazards potentially involved with the tasks to be completed on this project. The table identifies general procedures to follow to prevent or reduce accident, injury or illness. Any worker on-site who identifies a potential hazard must report the condition to the HSO or designee, and initiate control of the hazardous condition.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
Vehicular and Aircraft Traffic	1. Wear safety vest when vehicular/aircraft hazards exist. 2. Use cones, flags, barricades, and caution tape to define work area. 3. Use vehicle to block work area. 4. Use vehicle caution lights in all areas within the Site. 5. Contact local and/or airport police for high traffic situations. 6. Airport personnel will need to approve location or activities each day and each time field personnel move to a new sampling location with the day's activities.
Slip, Trip, and Fall Protection	1. Assess work area to determine if there is a potential for falling. 2. Make sure work area is neat and tools are staged in one general area. 3. Wear steel-toe boots with adequate tread and always watch where the individual is walking. Carry flashlight when walking in poorly lighted areas.
Inclement Weather	1. Stop outdoor work during electrical storms and other extreme weather conditions such as extreme heat or cold temperatures. 2. Take cover indoors or in vehicle. 3. Listen to local forecasts for warnings about specific weather hazards such as tornadoes, hurricanes, and flash floods.
Utility Lines Contact	1. Contact DigSafe NY to have utility lines marked prior to any underground excavation, trenching or drilling. DigSafe must be contacted at least 72 hours prior to work. 2. Refer to site drawings for utility locations. 3. Manually dig 3 to 5 feet below grade and 5 feet on each side of utility marked to avoid breaking utility lines.
Noise	1. Wear hearing protection when equipment such as a drill rig, excavator, jackhammer, or other heavy equipment is operating on-site. 2. Wear hearing protection in the vicinity of operating aircraft.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	3. Wear hearing protection whenever you need to raise your voice above normal conversational speech due to a loud noise source; as this much noise indicates the need for protection. 4. Hearing protection is required when measured sound exceeds 85 decibels (dB) where employees stand or conduct work.
Electrical Shock	1. Maintain appropriate distance between heavy equipment and overhead utilities; 20 foot minimum clearance from power lines; and 10 foot minimum clearance from shielded power lines. 2. Contact local underground utility locating service prior to penetrating the ground surface.
Physical Injury	1. Wear hard hats and safety glasses at all times when on-site. 2. Maintain visual contact with equipment and aircraft operators and wear orange safety vest when heavy equipment and aircraft are operating on-site. 3. Avoid loose clothing when working around rotary equipment. 4. Keep hands and feet away from drilling augers/casing/samplers and excavation equipment tracks/tires. 5. Test emergency shut-off switches on drill rigs and excavation equipment regularly.
Back Injury	1. Use a mechanical lifting device or a lifting aid where appropriate. 2. Ensure the route is free of obstructions. 3. Bend at the knees and use leg muscles when lifting. 4. Use the buddy system if lifting heavy or awkward objects. 5. Do not twist or jerk your body when lifting.
Heat Stress	1. Increase water intake while working. 2. Avoid excessive alcohol intake the night before working in heat stress situations. 3. Increase number of rest breaks as necessary, and rest in a shaded area. 4. Watch for signs and symptoms of heat exhaustion and fatigue. 5. Rest in cool, dry areas.

Table 2
Potential Hazards and Control

Potential Hazard	Control
	6. In the event of heat stress or heat stroke, bring the victim to a cool environment and call 911.
Cold Stress	1. Wear cotton, wool or synthetics (polypropylene) undergarments to absorb perspiration from the body. 2. Wear additional layers of light clothing as needed for warmth. The layering effect holds in air, trapping body heat, and some layers could be removed as the temperature rises during the day. 3. Pay close attention to body signals and feelings (hypothermia symptoms), especially to the extremities. Correct any problem indicators by breaking from the work activity and moving to a rest area to warm up and add additional clothing. 4. Increase water intake while working. 5. Avoid excessive alcohol intake the night before working in cold conditions. 6. Increase the number of rest breaks as necessary, and rest in a warm area. 7. In the event of hypothermia or frost bite, bring the victim to a warm environment and call 911.
Fire Control	1. Smoking is not allowed on-site. 2. Keep flammable liquids in closed containers. 3. Isolate flammable and combustible materials from ignition sources. 4. Keep fire extinguisher nearby and use only if deemed safe.
Media Sampling (water, soil, sediment, etc.)	1. Wear appropriate PPE to avoid skin, eye, and inhalation contact with contaminated media. 2. Stand upwind to minimize possible inhalation exposure, especially when opening monitoring wells or closed containers/vessels. 3. Conduct air monitoring, whenever necessary, to determine level of respiratory protection. 4. If necessary, employ engineering controls to assist in controlling chemical vapors. 5. When collecting samples on or near water bodies, wear a life jacket and employ the buddy system.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	6. When collecting samples from water bodies, assess water conditions and the water current and ensure that the sampling vessel is stabilized.
Cleaning Equipment	1. Wear appropriate PPE to avoid skin and eye contact with Alconox or other cleaning materials. 2. Stand upwind to minimize possible inhalation exposure. 3. Properly dispose of spent chemical cleaning solutions and rinse accordingly.
Deer Ticks	1. Wear pants and long sleeve shirts. 2. Wear tick repellant coated pants and long sleeve shirts. 3. Use tick repellent. 4. Perform personal body checks for the presence of ticks. 5. Notify the Health and Safety Officer immediately if you have been bitten by a tick and contact your physician.
Note: A first aid kit and fire extinguisher will be located in the C.T. Male company vehicle.	

Response actions to personal exposure from on-site contaminants include skin contact, eye contact, inhalation, ingestion, and puncture or laceration. The recommended response actions are presented in Section 11.2.

5.8 Airborne Infectious Disease Plan and COVID-19

C.T. Male COVID-19 & Airborne Infectious Disease

C.T. Male will follow applicable CDC, OSHA, New York State, and Local authorities for COVID-19 and other related infectious diseases.

To address work site safety regarding infectious disease exposure (including COVID-19), C.T. Male personnel will follow C.T. Male Associates 'Airborne Infectious Disease Exposure Prevention Plan' dated August 5, 2021, included in the PCI as Appendix A. This plan would be followed when an airborne infectious disease is designated by the NYS Health Commissioner as a highly contagious communicable disease that presents a serious risk of harm to the public health.

In addition to the above referenced Plan and SOP, C.T. Male employees will not report to work and notify their supervisor immediately if they are experiencing illness such as fever, cough, shortness of breath or difficulty breathing, chills, repeated shaking with chills, muscle aches, sore throat, loss of taste or smell, or runny/stuffy nose.

C.T. Male will also:

- Maintain Social Distancing: Six-foot distance with others, as is possible.
- Make effort to hold safety/tailgate meetings outdoors; maintain social distancing of six feet.
- Avoid sharing tools and equipment without cleaning and disinfecting.
- Avoid touching their eyes, nose, and mouth with unwashed hands.
- Cover their cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean and disinfect frequently touched objects and surfaces using a bleach solution or wipe.
- Wash their hands often with soap and water for 20 seconds and use an alcohol-based hand sanitizer that is 60% alcohol when soap and water are unavailable.

6.0 TRAINING

Site specific training of workers and personnel will be conducted and provided by the HSO or designee prior to any on-site activity. The training will specifically address the activities, procedures, monitoring and equipment for the site operations. It will include area and facility layout, hazards, emergency services (police, hospital, fire, etc.), and review of this HASP. Questions by workers, field personnel, etc. will be addressed at this time. In addition, separate training may be provided by the Hudson Valley Regional Airport.

Workers and personnel conducting and/or supervising the project must have attended and successfully completed a 24- or 40-Hour Health and Safety Training Course for Hazardous Waste Operations and an annual 8-hour Refresher Course, as applicable. Workers must take part in an employer medical surveillance program in accordance with OSHA 1910.120 requirements, including that the workers have had a medical physical within one (1) year prior to the date the work begins and that they are physically able to wear a respirator.

Documentation of training and medical surveillance will be submitted to the HSO or designee prior to the start of any on-site work. A copy of the training certificates for C.T. Male personnel are maintained at C.T. Male's place of business and are available on request.

7.0 SITE ACCESS

The PCI work will be conducted within and outside of the Site boundaries. Since the Site is an active airport, there is secure and controlled access to the Site. There is a possibility that workers from the airport or other services at the airport will be present at the time of the work. The work onsite will need to adhere to airport and FAA regulations. As such, the work area and exclusion zone will be considered as the following, dependent on the investigative tasks performed, and the regulations and operating procedures for the airport.

- Caution tape and/or cones will be used to delineate an approximate 10-30-foot square around each test boring location. All work and equipment will remain within the designated work area/exclusion zone until completion of the test boring and installation of the monitoring well.

- Caution tape or another appropriate means designated by airport personnel, will be used to delineate an approximate 10-foot square around each surface water, sediment sampling location, and each soil sampling location not originating from a test boring. All work and equipment will remain within the designated work area/exclusion zone until completion of the sampling. If a boat is utilized to aid in the collection of the surface water and sediment samples, then the boat will be considered as the designated work area/exclusion zone.

Only OSHA trained individuals who are qualified to do the work and have read and signed this Site specific HASP will be allowed within the work/exclusion zone. The HSO or designee will be responsible for limiting access to unauthorized individuals.

The Contamination Reduction Zone (decontamination area), and Support Zone (clean area, everywhere else) will be established outside the Exclusion Zone, as necessary. The exclusion, contamination reduction, and support zone during the SCI work have been identified and designated as follows:

Work/Exclusion Zone - The location of the work/exclusion zone will be determined in the field prior to the start of work and will vary depending on the work activities conducted. For the most part, the work/exclusion zone is anticipated to be defined with caution tape and/or cones, and a boat, if used (see above). Only authorized persons with proper training and protective gear will be allowed to enter the work/exclusion zone.

Contamination Reduction Zone – If applicable, this zone will generally be a 30'± x 30'± area, marked off with stakes, colored flagging, cones, or equal method, containing the decontamination pad. The location will be determined in the field prior to the start of work and will vary depending on the area(s) the work is being conducted. This zone is where decontamination of personnel and equipment will take place, as necessary, on the basis of the work being performed.

Support Zone - Area outside of the contamination reduction zone; not including the work/exclusion zone. Unauthorized or untrained individuals must remain in this zone.

Off-site work will be conducted in remote areas including hiking through forested areas adjacent to nearby streams and ponds. Safety precautions will be taken including wearing appropriate PPE such as approved sturdy hiking/work boots and wearing tick-repellant clothing. Authorized personnel shall have a designated escort or employ the buddy-system when conducting off-site remote sampling activities. A Dutchess County representative will coordinate access to off-site locations and escort authorized personnel when entering residential homes for potable well sampling activities.

8.0 PERSONAL PROTECTION

8.1 Level of Protection

Based on an evaluation of the potential hazards, the minimum level of protection to be worn by workers during implementation of the PCI activities is defined as Level D protection, and will be controlled by the HSO or designee.

The minimum level D protective equipment will consist of field clothes, rubber gloves **(NITRILE and/or PVC ONLY)**, hard hats, safety glasses, and safety boots (steel-toe preferred). As appropriate, this level of protection may be modified to include protective suits **(NOT TYVEK)**, coveralls, leg chaps, or face shield for additional protection. Both full-face and half-face air purifying respirators should be readily available. Appropriate combination organic vapor and particulate cartridge filters will be available at the Site to use, if necessary, with the air purifying respirators.

If required, level C protective equipment will consist of the items listed for Level D protection with the added protection of full-face, air purifying (organic vapor and particulate) respirator, chemical resistant clothing **(NOT TYVEK)**, inner and outer chemically resistant gloves (i.e. nitrile and/or PVC), and chemical resistant safety overboots.

Level B is not anticipated, but if required, level B protective equipment will consist of the items listed for Level D protection except a self-contained breathing apparatus (SCBA) will be worn dependent on the level of contaminants present in the work zone, and protective suits **(NOT TYVEK)** will be required. When Site conditions warrant the need for level B protective equipment, work will cease and the project will be re-evaluated to determine the necessity for employing engineering controls to reduce or eliminate the potential contaminants of concern.

8.2 Safety Equipment

Basic emergency and first aid equipment will be available at an area within the Support Zone clearly marked and available or within C.T. Male's company vehicle (if allowed onsite). This shall include a first aid kit, fire extinguisher (if allowed by airport procedures), supply of potable water, soap and towels. The HSO or designee shall be equipped with a cellular phone in case of emergencies. If the cellular phone is not available, or is inoperable, a phone in the Hudson Valley Regional Airport facility or airport security personnel will be used.

9.0 COMMUNICATIONS

The HSO or designee will be equipped with a cellular phone in case of emergencies. If the cellular phone is not available, or is inoperable, or not allowed within certain places within the airport investigation area, a phone within the Hudson Valley Regional Airport facility phone will be used, or airport security. The HSO or designee shall notify the C.T. Male Project Manager as soon as safely possible in the event of an accident, injury or emergency action.

Hand signals for certain work tasks will be employed, as necessary, and the buddy system will be employed during drilling and installation of monitoring wells, and during open surface water and open water sediment sampling activities.

10.0 DECONTAMINATION PROCEDURES

10.1 Personnel Decontamination Procedures

Decontamination procedures will be carried out by all personnel leaving the Work/Exclusion Zone (except under emergency evacuation). The amount of decontamination performed will be dependent on the level of personal protection currently being worn within the exclusion zone.

1. Do not remove respiratory protection, if donned, until all steps have been completed.
2. Clean outer protective gloves and outer boots, if worn, with water (preferably with a pressurized washer) over designated wash tubs in the exclusion zone to remove the gross amount of contamination.
3. Deposit equipment used (tools, sampling devices, and containers) at designated drop stations - on plastic drop sheets or in plastic lined containers.
4. Rinse outer boots if worn and gloves with clean water in designated rinse tubs. Remove outer boots if worn and gloves and deposit in designated area to be determined in the field for use the next day or when necessary. If disposable outer boots are worn, remove and discard in designated container.
5. Remove hard hat & safety glasses, rinse with clean water as necessary and deposit in designated area for use the next day or when necessary.
6. Remove protective suit, if worn, and discard in designated container. Remove respirator at this time, if used; wash and rinse with clean water. Organic vapor and particulate cartridges, when used, will be replaced daily. Used cartridges will be discarded in the designated waste container. Remove inner gloves and discard in designated container.

10.2 Equipment and Sample Containers Decontamination

All decontamination will be completed by personnel in protective gear appropriate for the level of protection determined by the site HSO or designee. Manual sampling equipment including scoops, hand augers, and shovels which come into contact with the site's soils and sediment, will be cleaned with a tap water/detergent wash and a bottled water rinse. The sampling equipment will be decontaminated after each sample is collected at the Contaminant Reduction Zone (Decontamination Station). The sampling equipment wash and rinse water will be captured in plastic pails or tubs and ultimately transferred to labeled DOT 17H approved 55-gallon open top steel drums and staged on-site at a secure location.

Drill rig equipment (i.e., casing, drill rods, bits, core samplers) which comes into contact with the site's soils will be decontaminated with a high pressure/hot water wash and/or other methods within the Contaminant Reduction Area. The cleaning will be performed at the completion of each boring location. Equipment decontamination wastes will be transferred to labeled DOT 17H approved 55-gallon open top steel drums and staged on-site at a secure location.

Larger equipment (i.e., drill rig) which comes into contact with the site's soils will be decontaminated with a high pressure/hot water wash and/or other methods within a decontamination pad. The decontamination procedure will focus on portions of the equipment that has come into contact with the site's soils such as the tires and tracks. The cleaning will be performed prior to the equipment leaving the site. Equipment decontamination wastes will be transferred to labeled DOT 17H approved 55-gallon open top steel drums and staged on-site at a secure location.

If a boat is utilized for collection of surface water/sediment samples, portions of the boat that comes into contact with water will be decontaminated at the shoreline by scrubbing with a tap water/detergent wash and a distilled water rinse. The wash/rinse water will be allowed to discharge to the shoreline.

Exterior surfaces of sample containers will be wiped clean with disposable paper towels in the decontamination zone and transferred to a clean cooler for transportation or shipment to the analytical laboratory. Sample identities will be noted and checked off against the chain-of-custody record. The disposable paper towels will be placed in the designated disposal container and disposed of as solid waste.

11.0 EMERGENCY RESPONSE PROCEDURES

THE PROJECT EMERGENCY COORDINATOR IS:

Site Health and Safety Officer (HSO) Jonathan Dippert

The following standard emergency procedures will be used by on-site personnel. The Project Manager and HSO shall be notified of any on-site emergencies and be responsible for assuring that the appropriate procedures are followed.

11.1 Personal Injury

Emergency first aid shall be administered on-site as deemed necessary and only by a trained individual, if available at the site. If a trained individual is not available on-site, decontaminate, if feasible, and transport individual to nearest medical facility (MidHudson Regional Hospital). The HSO will supply medical data sheets to appropriate medical personnel and be responsible for completing the incident report.

11.2 Personal Exposure

The recommended response to worker exposure from contaminants on-site includes the following:

SKIN CONTACT: Use generous amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention, as necessary.

EYE CONTACT: Wash eyes thoroughly with potable water supply provided on site. Eyes should be rinsed for at least 15 minutes subsequent to chemical contamination. Provide medical attention, as necessary.

INHALATION: Move worker to fresh air and outside of the work zone and/or, if necessary, decontaminate and transport to hospital (MidHudson Regional Hospital). If respirator use is implemented at the time of inhalation, worker must not remove respirator until completely away from the work zone.

INGESTION: Decontaminate, if feasible, and transport to hospital (MidHudson Regional Hospital).

PUNCTURE WOUND OR LACERATION: Provide first aid at the site and if wound needs medical attention, decontaminate, if feasible, and transport to hospital (MidHudson Regional Hospital).

If the affected worker is exposed to contaminants on-site and the injury or accident prevents decontamination of the individual, the emergency responders must be notified of this condition and the exposure must be kept to a minimum.

11.3 Potential or Actual Fire or Explosion

Immediately evacuate area in the event of potential or actual fire or explosion. Notify the local Fire and Police Departments, and other appropriate emergency response groups (i.e., airport security/police), as listed in Section 1.2. Perform off-site decontamination and contain wastes for proper disposal. If a fire or explosion occurs, all on-site personnel must meet in the designated area of the site (established by the HSO or designee) for an accurate head count.

11.4 Equipment Failure

Should there be any equipment failure, breakdown, etc. the Project Manager and HSO shall be contacted immediately. The Project Manager or the HSO will make every effort to replace or repair the equipment in a timely manner.

11.5 Spill Response

The site HSO or designee shall initiate a corrective action program with the subcontractors in the event of an accidental release of a hazardous material, suspected hazardous material or petroleum. The HSO or designee will act as the Emergency Coordinator with the subcontractors for the purposes of: spill prevention; identifying releases; implementing clean up measures; and notification of appropriate personnel.

The corrective action program will be implemented by the HSO and subcontractor to effectively control and minimize any impact accidental releases may have to the environment.

Effective control measures will include:

- Preliminary assessment of the release.
- Control of the release source.
- Containment of the released material.
- Effective clean-up of the released material.

Potential sources of accidental releases include: hydraulic oil spills or petroleum leaks from heavy equipment; cooling oils (potentially PCB containing) for electrical equipment handling and cleaning; and spills from drums, vats, vessels, and tanks. The HSO/Emergency Coordinator in conjunction with the subcontractor shall respond to an accidental release in the following manner:

- Identify the character, source, amount and area affected by the release.
- Have subcontractor take all reasonable steps to control the release.
- Notify facility personnel.
- Notify the NYSDEC Spill Hotline at 1-800-457-7362 if required.
- Contain the release with sorbent material which should include speedi-dry, spill socks and sorbent pads.
- Prevent the release from entering sensitive receptors (i.e., catch basins and surface water) using the specified sorbent material or sandbags.
- Coordinate cleanup of the released material.
- Oversee proper handling and storage of contaminated material for disposal.

At no time should personal health or safety be compromised or jeopardized in an attempt to control a release. All health and safety measures as outlined in this HASP should be adhered to.

12.0 ADDITIONAL WORK PRACTICES

Workers will be expected to adhere to the established safety practices. Work on the project will be conducted according to established protocol and guidelines for the safety and health of all involved. The following will be adhered to:

- Employ the buddy system when possible, and for those work tasks which require it. Establish and maintain communications.
- Minimize contact with potentially contaminated soil, sediment and water.
- Employ disposable items when possible to minimize risks during decontamination and possible cross-contamination during sample handling.
- Smoking, eating, or drinking after entering the work zone and before decontamination will not be allowed.
- Avoid heat and other work stress related to wearing personal protective equipment. Take breaks as necessary and drink plenty of fluids to prevent dehydration.
- Withdrawal from a suspected or actual hazardous situation to reassess procedures is the preferred course of action.
- The removal of facial hair (except mustaches) prior to working on-site will be required to allow for a proper respiratory face piece fit.
- The Project Manager, the HSO, and sampling personnel shall maintain records recording daily activities, meetings, facts, incidents, data, etc. relating to the project. These records will remain at the project site during the full duration of the project so that replacement personnel may add information while maintaining continuity. These daily records will become part of the permanent project file.

13.0 AUTHORIZATIONS

Personnel authorized to enter the exclusion zone at the Hudson Valley Regional Airport Site at 18 Griffith Way in the Town of Wappinger, Dutchess County, New York while operations are being conducted must be certified by the HSO. Authorization will involve completion of appropriate training courses and review and sign off of this HASP.

Personnel authorized to perform work on-site are as follows:

1. Eric White C.T. Male
2. Steve Bieber C.T. Male
3. Jim McIver C.T. Male
4. Jon Dippert C.T. Male
5. Nancy Garry C.T. Male
6. Dan Achtyl C.T. Male
7. Mary Loughlin C.T. Male
8. Elizabeth Rigby C.T. Male
9. Cliff Bondi C.T. Male
10. Chris Ormsby C.T. Male
11. Ryan Hubbard C.T. Male
12. Lucas Hufnagel C.T. Male
13. Adam Rogers C.T. Male
14. Logan Benoit C.T. Male
15. Mark Williams C.T. Male

14.0 FIELD TEAM REVIEW

Each field team member shall sign this section after site specific training is completed and before being permitted to work on-site.

I have read and understood this Site Specific Health and Safety Plan, and I will comply with the provisions contained therein.

PROJECT: Site Characterization Investigation
Hudson Valley Regional Airport Site
18 Griffith Way
Town of Wappinger
Dutchess County, New York

Name: Printed	Signature	Date

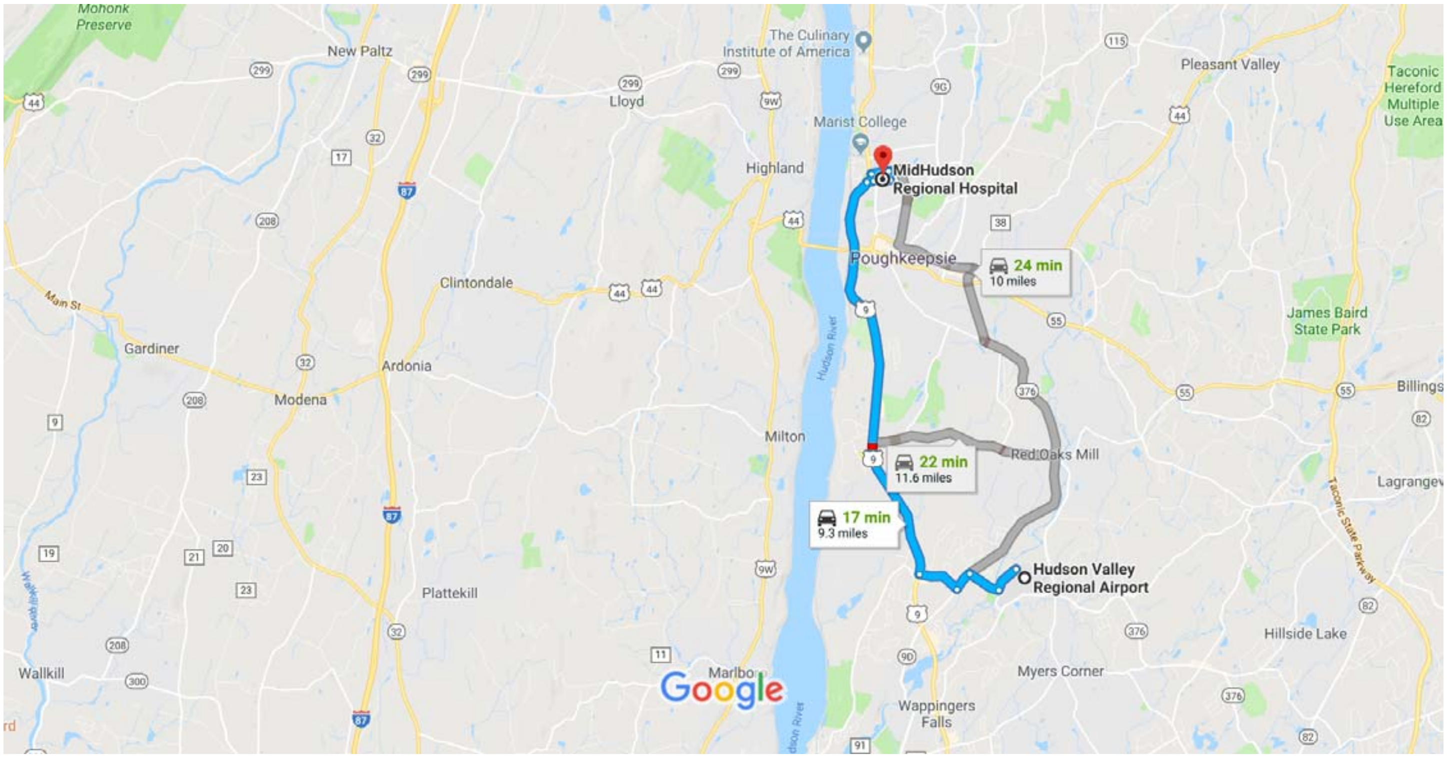
FIGURE 1

MAP SHOWING ROUTE TO MIDHUDSON REGIONAL HOSPITAL

Google Maps

Hudson Valley Regional Airport to MidHudson Regional Hospital, 241 North Rd, Poughkeepsie, NY 12601

Drive 9.3 miles, 17 min



Map data ©2018 Google 2 mi

Hudson Valley Regional Airport

263 New Hackensack Rd, Wappingers Falls, NY 12590

Take Jackson Rd and Spring Rd to U.S. 9 N in Poughkeepsie

5 min (2.0 mi)

1. Head southwest on Citation Dr toward Jackson Rd

0.4 mi

2. Turn right onto Jackson Rd

0.5 mi

3. Turn left onto Vassar Rd

0.3 mi

4. Turn right onto Spring Rd

0.7 mi

5. Turn right onto U.S. 9 N

10 min (6.6 mi)

Take North Rd, W Cedar St and Garden St Exd to your destination in Fairview

3 min (0.7 mi)

6. Turn right onto NY-9G N

0.1 mi

7. Turn left onto North Rd

0.1 mi

8. Turn right onto W Cedar St

0.3 mi

9. Turn right onto Garden St Exd

0.1 mi

10. Turn right onto Webster Ave

289 ft

11. Continue straight

Destination will be on the right

89 ft

MidHudson Regional Hospital

241 North Rd, Poughkeepsie, NY 12601

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

APPENDIX D

SITE SPECIFIC COMMUNITY AIR MONITORING PLAN

May 2025

SITE SPECIFIC
COMMUNITY AIR MONITORING PLAN

Hudson Valley Regional Airport
18 Griffith Way
Town of Wappinger
Dutchess County, New York
NYSDEC Site #C31412

Prepared by:

C.T. MALE ASSOCIATES
12 Raymond Avenue
Poughkeepsie, New York 12603
(845) 454-4400

C.T. Male Associates Project No: 18.8090-220

SITE SPECIFIC COMMUNITY AIR MONITORING PLAN
HUDSON VALLEY REGIONAL AIRPORT SITE
18 GRIFFITH WAY, TOWN OF WAPPINGER
DUTCHESS COUNTY, NEW YORK

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1.0 GENERAL

1.1 Overview

This site-specific Community Air Monitoring Plan (CAMP) has been prepared for use during implementation of the Pre-Construction Investigation (PCI) and subsequent hangar construction work that will be completed as an Interim Remedial Measure (IRM) at the Hudson Valley Regional Airport Site ("the Site") located at 18 Griffith Way in the Town of Wappinger, Dutchess County, New York. This PCI and IRM are being performed under the NYS Brownfield Cleanup Program, NYSDEC Site No. C314129, Brownfield Site Cleanup Agreement Index Number C314129-08-24.

A CT Male Geologist or Environmental Scientist will be responsible for implementing this CAMP during the PCI and IRM field work. A copy of this CAMP will be maintained at the Site for the duration of the project. A description of the proposed scope of work for the PCI and IRM is outlined below:

<u>Pre-Construction Investigation Scope:</u>

- Oversee the drilling of soil borings for soil classification/sampling, and installation of groundwater monitoring wells.
- Installation of soil vapor points.
- Collection of soil, soil vapor, surface water, and groundwater samples for laboratory analysis.
- Oversee development of newly installed on-site monitoring wells.
- On-site well gauging.
- Groundwater purging and sampling for laboratory analyses from newly installed monitoring wells.
- Sampling and laboratory analysis of investigation derived waste (IDW).

<u>IRM Scope (Construction Observation):</u>

- Oversee construction activities during construction of the proposed hangar buildings and appurtenances.
- Oversee sampling or construction derived waste (CDW).

1.2 Contact Names & Numbers

For this project, the following NYSDEC, Site Representative, NYSDOH, C.T. Male and Emergency Response names and telephone numbers are presented below as project site contacts.

DUTCHESS COUNTY CONTACTS:

EHS MANAGER:	Robert H. Balkind, P.E., Commissioner Dutchess County Department of Public Works 626 Dutchess Turnpike Poughkeepsie, New York 12603	845.486.2085 (O)

CONSULTANT CONTACTS:

CONSULTING ENGINEER:	C.T. Male Associates 12 Raymond Avenue Poughkeepsie, New York 12603	518.786.7400
	Jim McIver, Managing Geologist	845.454.4400 (O) 845.594.1788 (C)
	Eric White, Project Manager	845.762.4578 (O) 917.863.6835 (C)

STATE CONTACTS:

NYSDEC	Greta White, Project Manager 625 Broadway Albany, NY 12233-7014	518.402.2029 (O)
NYSDOH	Angela Martin, Project Manager Empire State Plaza Corning Tower, Room 1787 Albany, NY 12237	518.473.4671 (O)

2.0 SITE LOCATION AND DESCRIPTION

The Hudson Valley Regional Airport Site is addressed as 18 Griffith Way in the Town of Wappinger, Dutchess County, New York. The Site is approximately 510.8 acres in size and is identified with tax number 135689-6259-03-225301-0000. Route 376 transects the northeastern portion of the Site. Jackson Road transects the southwestern portion of the Site.

The majority of the Site consists of an active airport that is owned and operated by Dutchess County. Two (2) closed landfills occupy northern portions of the Site. The landfills were reportedly used for the disposal of municipal wastes and have been designated as inactive hazardous waste sites by the NYS Department of Environmental Conservation (DEC). Two (2) hangars located on the southeastern portion of the Site, and currently occupied by Tradewind Aviation, have been designated as inactive hazardous waste sites in relation to the discharge of spent solvents and petroleum to the Site's media. NYSDEC was considering classifying the Site as potential IHWS P-Site #314129 due to the presence of the per- and polyfluoroalkyl substances (PFAS) perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) detected in May 2016 at concentrations exceeding regulatory criteria in a potable drinking water supply well then located at the Site but has since reconsidered and allowed the Site to enter into the BCP.

The Site's topography is relatively flat within portions of the Site containing the aircraft runways and Site buildings. The topography slopes downwards towards Wappinger Creek on northern and western portions of the Site. The topography slopes sharply upwards on the northeastern portion of the Site containing the former Dutchess County landfill.

Wappinger Creek is located adjacent to the Site's northern and western property boundaries. The Creek flows in a general southwesterly direction towards the Hudson River. An unnamed water body is located on the southeastern portion of the Site adjacent north of the hangars occupied by Tradewind Aviation. The water body appears to discharge into an unnamed creek that flows in a general northeasterly direction, existing the eastern property boundary and passing beneath New Hackensack Road. An unnamed stream transects the airport parcel located east of New Hackensack Road, in a northeast to southwest orientation and flow direction.

3.0 POTENTIAL SITE CONTAMINANTS

Based on subjective and analytical results from previous environmental investigations, contaminants of concern include volatile and semi-volatile organic compounds, solvents, PCBs, metals, and per- and polyfluoroalkyl substances (PFAS) in soil, sediment, surface water, drinking water and groundwater.

4.0 POTENTIAL RECEPTORS

Fifteen (15) on-site building structures are present on the airport parcel, that are occupied at varying frequencies including daily during business hours, weekly, nightly, and sporadic monthly occupancy. Table 1 below summarizes these potential receptors. Figure 1 - Community Air Monitoring Plan Location Map, depicts the location of these potential receptors.

Table 1 – Potential Receptors in Work Area Vicinity
Pre-Construction Investigation and IRM Construction Activities
Sky Harbour North Hangar Project

Potential Receptor Number	Potential Receptor Name	Approximate Distance from Work Area (Ft.)	Anticipated Occupant Type	Occupancy Frequency	Additional Monitoring Point Proposed?
PR1	Whitefield Hangar, Aero Mechanical	22	Non-Sensitive, Company Employees	Daily	Yes, monitoring station (M2) located north of the work area exclusion zone.
PR2	Frank Reiss Hangar	22	Non-Sensitive, General Public	Sporadic, Monthly	No, this building is located within the work area and is scheduled for demolition.
PR3	T-Hangars, North	50	Non-Sensitive, General Public	Daily	Yes, monitoring station (M1) located west of the work area exclusion zone.
PR4	Hangar, Precision Avionics Inc.	660	Non-Sensitive, Company Employees	Daily	Not required due to the distance from the work area.
PR5	ARFF/SRE Building	829	Non-Sensitive, County Employees	Daily	Not required due to the distance from the work area.
PR6	Angel's Power Equipment	1,200	Non-Sensitive, Company Employees	Daily	Not required due to the distance from the work area.

Table 1 – Potential Receptors in Work Area Vicinity Pre-Construction Investigation and IRM Construction Activities Sky Harbour North Hangar Project					
Potential Receptor Number	**Potential Receptor Name**	**Approximate Distance from Work Area (Ft.)**	**Anticipated Occupant Type**	**Occupancy Frequency**	**Additional Monitoring Point Proposed?**
PR7	Airport Education Building, DCCC	1,300	Non-Sensitive, General Public	Daily	Not required due to the distance from the work area.
PR8	HVRA Terminal Building	1,345	Non-Sensitive, County Employees	Daily	Not required due to the distance from the work area.
PR9	HVRA Air Traffic Control Tower / FAA Offices	1,352	Non-Sensitive, County Employees	Daily	Not required due to the distance from the work area.
PR10	T-Hangars, South	2,518	Non-Sensitive, General Public	Daily	Not required due to the distance from the work area.
PR11	Former ARFF Maintenance Building	2,607	Non-Sensitive, County Employees	Weekly	Not required due to the distance from the work area.
PR12	AAG Hangars, North and South	2,148 and 2,383	Non-Sensitive, General Public	Daily	Not required due to the distance from the work area.
PR13	Line Services Offices / Pilot's Lounge	1,775	Non-Sensitive, General Public	Daily	Not required due to the distance from the work area.
PR14	Civil Air Patrol	289	Non-Sensitive, General Public	Nights after 5 pm	No, not occupied during construction work hours
PR15	Richmor Hangar, FBO Offices	65	Non-Sensitive, General Public	Daily	Yes, monitoring station (M3) located east of the work area exclusion zone

Five of the fifteen potential receptors are located within five hundred feet of the work area. These include potential receptors PR1, PR2, PR3, PR14 and PR15. Potential receptor location numbers PR1, PR3, and PR15 are occupied daily by company employees or the general public. Neither population is anticipated to be a sensitive receptor. Potential receptor location number PR2 is occupied sporadically on a monthly basis by the general public and not anticipated to be a sensitive receptor. Potential receptor number PR14 is only occupied nightly after construction work hours by the general public. This population is not anticipated to be a sensitive receptor.

Monitoring station location M1 has been proposed to collect data for potential receptor location PR3. Monitoring station location M2 has been proposed to collect data for potential receptor locations number PR1. Monitoring station location M3 has been proposed to collect data for potential receptor location number PR15. Monitoring station location M4 has been proposed to collect downwind data, unless M1, M2, or M3 are located downwind.

No off-site potential receptors are located within 1,000 feet of the proposed work area.

5.0 AIR MONITORING

5.1 Overview

This Community Air Monitoring Plan (CAMP) was prepared in accordance with the New York State Department of Health Generic Community Air Monitoring Plan included as Appendix A. This CAMP requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of the designated work area when certain activities are in progress at the Site. This CAMP is not intended for use in establishing action levels for worker respiratory protection. All contractors are responsible for developing and implementing their own respiratory protection plan in accordance with applicable OSHA regulations. The intent of this CAMP is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities.

The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

Since investigations performed to date within the proposed work area have primarily identified semi-volatile organic compounds (PFAS) and metals contamination in site media, chemical-specific monitoring is not required at this time. Since all identified potentially receptors are located beyond 20 feet from the proposed work area, and no potential sensitive receptors have been identified, special requirements for potentially exposed individuals or structures have not been proposed. Common-sense measures to keep VOCs, dust, and odors at a minimum around the work area will be employed during the PCI and IRM.

5.2 Community Air Monitoring Plan

Real-time air monitoring for VOCs and/or particulate levels will be performed at the perimeter of the exclusion zone or work area.

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

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Periodic monitoring for VOCs for organic vapors will be completed with a photoionization detector [PID].

5.2.1 VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. 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.

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

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

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

5.2.2 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.

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. All readings will be recorded and made available for State (DEC and NYSDOH) personnel to review upon request.

Figure 1 - Community Air Monitoring Plan Location Map, depicts the proposed locations of CAMP monitoring stations. Stations M1, M2 and M3 will be deployed daily, and additional CAMP station M4 will be deployed as necessary based on wind direction.

6.0 FUGITIVE DUST AND PARTICULATE MONITORING

A program for suppressing fugitive dust and particulate matter monitoring at the Sites will be employed by the contractors during the PCI and IRM. These procedures will be incorporated into the PCI and IRM work plans. The following fugitive dust suppression and particulate monitoring program will be employed at the Site during intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques will be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring will be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring will be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration),

STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50o C (14 to 122o F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there will be appropriate Quality Assurance/Quality Control (QA/QC). QA/QC Plans will include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level will be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques will be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work will be stopped and DER will be notified as provided in the PCI and IRM work plans. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. If dust is observed leaving the working site, additional dust suppression techniques will be employed. Activities that have a high dusting potential—such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques may be employed to control the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

When techniques involving water application are used, care will be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. Weather conditions will be evaluated as fugitive dust control measures are employed. When extreme wind conditions make dust control ineffective, as a last resort remedial actions will be suspended.

FIGURE 1

Community Air Monitoring Plan Potential Receptor and Monitoring Station Map

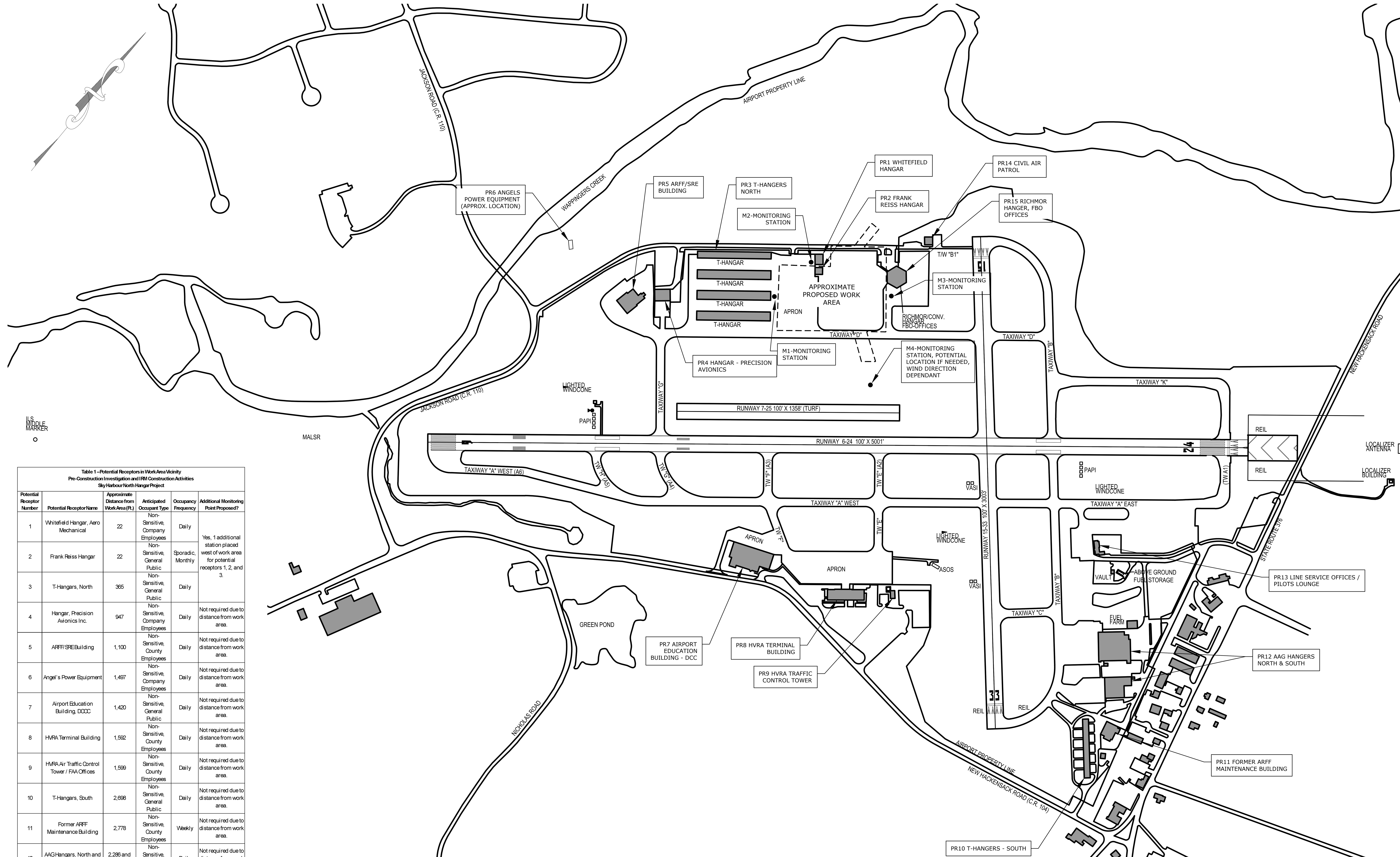

Table 1 – Potential Receptors in Work Area Vicinity
Pre-Construction Investigation and IRM Construction Activities
Sky Harbour North Hangar Project

Potential Receptor Number	Potential Receptor Name	Approximate Distance from Work Area (Ft.)	Anticipated Occupant Type	Occupancy Frequency	Additional Monitoring Point Proposed?
1	Whitefield Hangar, Aero Mechanical	22	Non-Sensitive, Company Employees	Daily	Yes, 1 additional station placed west of work area for potential receptors 1, 2, and 3.
2	Frank Reiss Hangar	22	Non-Sensitive, General Public	Sporadic, Monthly	
3	T-Hangars, North	365	Non-Sensitive, General Public	Daily	
4	Hangar, Precision Avionics Inc.	947	Non-Sensitive, Company Employees	Daily	Not required due to distance from work area.
5	ARFF/SRE Building	1,100	Non-Sensitive, County Employees	Daily	Not required due to distance from work area.
6	Angel's Power Equipment	1,497	Non-Sensitive, Company Employees	Daily	Not required due to distance from work area.
7	Airport Education Building, DCCC	1,420	Non-Sensitive, General Public	Daily	Not required due to distance from work area.
8	HVRA Terminal Building	1,592	Non-Sensitive, County Employees	Daily	Not required due to distance from work area.
9	HVRA Air Traffic Control Tower / FAA Offices	1,599	Non-Sensitive, County Employees	Daily	Not required due to distance from work area.
10	T-Hangars, South	2,698	Non-Sensitive, General Public	Daily	Not required due to distance from work area.
11	Former ARFF Maintenance Building	2,778	Non-Sensitive, County Employees	Weekly	Not required due to distance from work area.
12	AAG Hangars, North and South	2,286 and 2,533	Non-Sensitive, General Public	Daily	Not required due to distance from work area.
13	Line Services Offices / Pilot's Lounge	1,868	Non-Sensitive, General Public	Daily	Not required due to distance from work area.
14	Civil Air Patrol	547	Non-Sensitive, General Public	Nights after 5 pm	No, not occupied during construction work hours
15	Richmor Hangar, FBO Offices	230	Non-Sensitive, General Public	Daily	Yes, 1 additional station placed east of work area for potential receptor 15.

Figure 1 - COMMUNITY AIR MONITORING PLAN AND STATIONING MAP
HUDSON VALLEY REGIONAL AIRPORT

18 Griffith Way

DATE: May 19, 2025 **SCALE - 1"=300'**

TOWN OF WAPPINGER DUTCHESS COUNTY, NEW YORK

C.T. MALE ASSOCIATES
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JOHNSTOWN, NY • SYRACUSE, NY
www.ctmale.com

APPENDIX A

DER-10
APPENDIX 1A - NYSDOH GENERIC CAMP and Appendix 1B - Fugitive Dust and Particulate Monitoring

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

<u>Overview</u>

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

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

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

<u>Community Air Monitoring Plan</u>

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

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

Periodic monitoring for VOCs will be required during <u>non-intrusive</u> activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. APeriodic@ monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

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

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

EXHIBITS

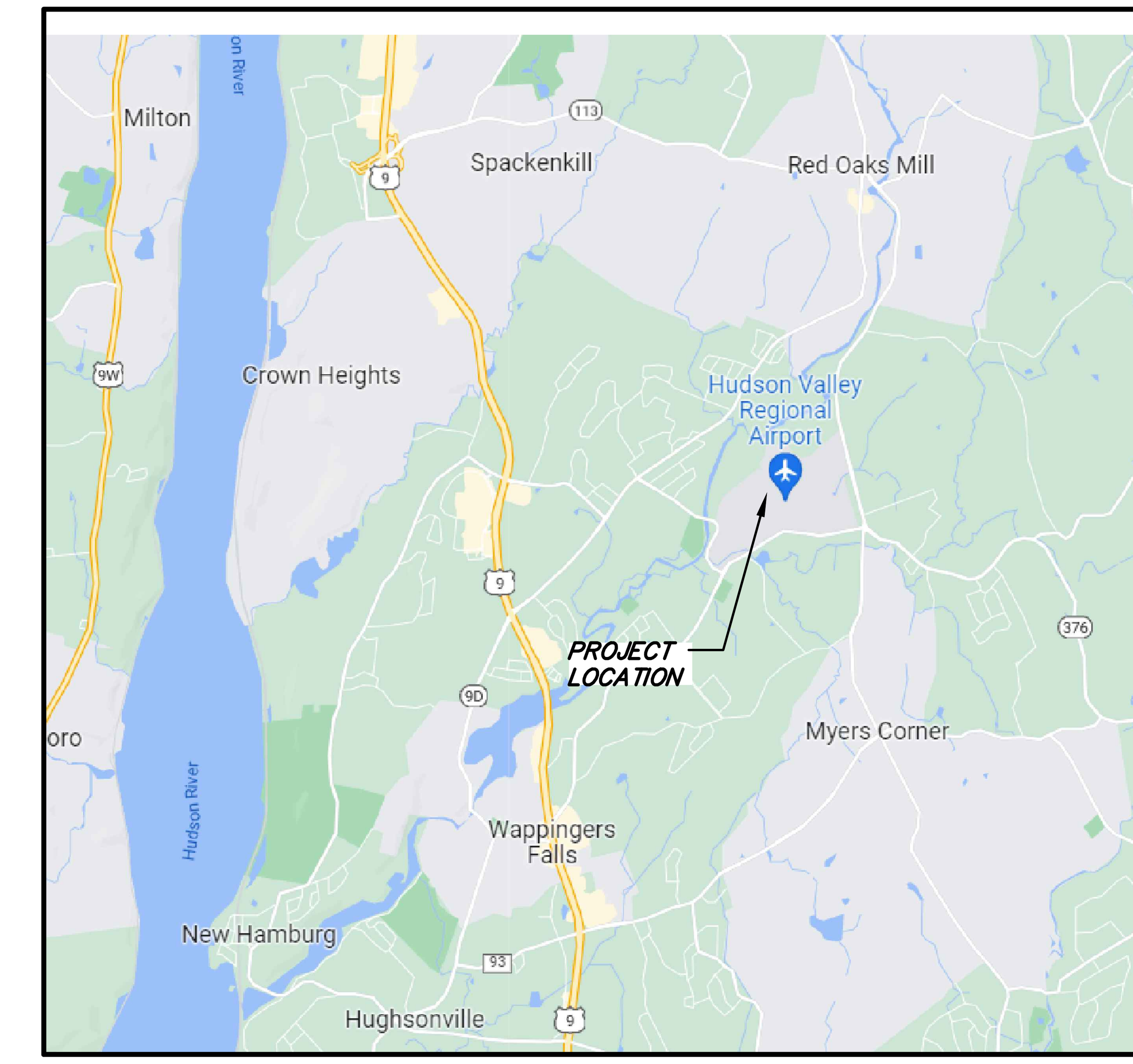
EXHIBIT 1

Foundation Plans and Permit Drawings

SITE/UTILITY PERMIT DRAWINGS FOR:

COMMERCIAL HANGAR DEVELOPMENT

HUDSON VALLEY REGIONAL AIRPORT (POU)



LOCATION MAP
NOT TO SCALE

PASSERO ASSOCIATES
engineering architecture

SUBMITTED BY: MATT J. NISSEN
LICENSE NUMBER 104260
DATE: March, 2025

DUTCHESS COUNTY
POUGHKEEPSIE, NY 12601
APRIL 2025

BID SET

LEGEND

Symbol	Description
R.O.W.	RIGHT OF WAY LINE
	EXISTING PROPERTY LINE
EAPL	EXISTING AIRPORT PROPERTY LINE
957	EXISTING CONTOUR
950	PROPOSED CONTOUR
× 956.1	EXISTING SPOT ELEVATION
956.5 X	PROPOSED SPOT ELEVATION
TW: 151.00' BW (EX): 145.94' BW (NEW): 149.99'	PROPOSED WALL SPOT ELEVATION TOP OF WALL (TW), BOTTOM OF WALL (BW): PROPOSED GRADE SIDE (NEW), EXISTING GRADE SIDE (EX) *RETAINING WALL DESIGN TO BE PERFORMED BY TOHERS AND BY A LICENSED ENGINEER. BOTTOM OF WALL ELEVATION TO BE ELEVATION AT GRADE, NOT BOTTOM FOUNDATION COURSE OF THE WALL
	EXISTING WATERWAY/SWALE
	PROPOSED SWALE W/FLOW DIRECTION
TOFA — TOFA	TAXIWAY OBJECT FREE AREA
TSA — TSA	TAXIWAY SAFETY AREA
ROFA — ROFA	RUNWAY OBJECT FREE AREA
RSA — RSA	RUNWAY SAFETY AREA
	EXISTING BUILDING
x — x — x	EXISTING FENCE
	SILT FENCE
	EXISTING EDGE OF TREES / BRUSH
	EXISTING TAXIWAY EDGE LIGHT
E	EXISTING ELECTRICAL
E — E — E	PROPOSED ELECTRICAL
G	EXISTING GAS MAIN
GAS — GAS	PROPOSED GAS SERVICE
	EXISTING DUCT BANK
T — T — T	PROPOSED TELECOMMUNICATIONS LINE
W	EXISTING WATERMAIN, HYDRANT, AND VALVE
W	PROPOSED WATERMAIN, HYDRANT, VALVE, AND DISINFECTION/SAMPLING TAP
	EXISTING STORM DRAINAGE PIPE W/ END SECTIONS
PP	EXISTING POWER POLE
	EXISTING LIGHT POLE
CB	EXISTING CATCH BASIN
D	EXISTING STORM MANHOLE
HH	EXISTING HANDHOLE
JC	EXISTING JUNCTION CAN
	PROPOSED JUNCTION CAN
	PROPOSED NEW LIGHT POLE W/ OBSTRUCTION LIGHT
PT-1	PERC. TEST LOCATION W/ IDENTIFICATION NUMBER
DT-1	DEEP TEST W/ IDENTIFICATION NUMBER
	SURVEY CONTROL POINT
SS — SS	PROPOSED SILT SOCK
SF — SF	PROPOSED SILT FENCE
	PROPOSED SEDIMENT CONTROL AT STRUCTURES

ABBREVIATIONS

&	AND
ABND	ABANDONED
ADJ	ADJUST
AOBE	AS ORDERED BY THE ENGINEER
ASPH	ASPHALT
BIT	BITUMINOUS
B/L	BASELINE
BM	BENCH MARK
CATV	CABLE TV LINE
CB	CATCH BASIN
℄	CENTERLINE
CLF	CHAIN LINK FENCE
CMP	CORRUGATED METAL PIPE
CMPA	CORRUGATED METAL PIPE (ARCH)
CP	CONTROL POINT
Δ	DELTA
D	DEGREE OF CURVATURE
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DR	DRIVEWAY / DRAINAGE STRUCTURE WITH No. e.g. DR 6
E	ELECTRICAL LINE
EAPL	EXISTING AIRPORT PROPERTY LINE
EL / ELEV	ELEVATION
EP	EDGE OF PAVEMENT
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL STATION
EXIST / EX	EXISTING
FBO	FIXED BASE OPERATOR
FI	FIELD INLET
G	GAS LINE
GR	GRAVEL
GV	GAS VALVE
HCL	HORIZONTAL CONTROL LINE
HDPE	CORRUGATED POLYETHYLENE PIPE
HORIZ / HORZ	HORIZONTAL
HP	HIGH POINT
HH	HAND HOLE
HYD	HYDRANT
INV	INVERT
IP	IRON PIPE
LF	LINEAR FEET
LP / L POLE	LIGHT POLE
LP	LOW POINT
MH	MANHOLE
MAX	MAXIMUM
MIRL	MEDIUM INTENSITY RUNWAY LIGHT
MON	MONUMENT
M/L	MONUMENT LINE
N/F	NOW OR FORMERLY
N.I.C.	NOT IN CONTRACT
NOTAM	NOTICE TO AIRMEN
OHE	OVERHEAD ELECTRIC
P	PARCEL
PAPI	PRECISION APPROACH PATH INDICATOR
PAVT	PAVEMENT
PB	PULL BOX
PC	POINT OF CURVATURE
PCC	PORTLAND CONCRETE CEMENT / POINT OF COMPOUND CURVE
PI	POINT OF INTERSECTION
PK	PK NAIL (SURVEY MARKER)
P/L	PROPERTY LINE
PP	POWER POLE
PROP	PROPOSED
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE PIPE / POINT OF VERTICAL CURVE
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS OF CURVE
RCP	REINFORCED CONCRETE PIPE
RE	RESIDENT ENGINEER
(REC)	RECORD
REIL	RUNWAY END IDENTIFICATION LIGHTS
ROFA	RUNWAY OBJECT FREE AREA
ROW	RIGHT-OF-WAY
RPZ	RUNWAY PROTECTION ZONE
RR	RAILROAD
RSA	RUNWAY SAFETY AREA
RW	RETAINING WALL
R/W / RWY	RUNWAY
S	SANITARY SEWER LINE
SFCMPA	SMOOTH FLOW CORRUGATED METAL PIPE (ARCH)
ST	STORM LINE
STA	STATION
STD	STANDARD
STY	STORY
SW	SIDEWALK
T	TELEPHONE LINE / TANGENT LENGTH
TG	TOP OF GRATE
TGL	THEORETICAL GRADE LINE
TSA	TAXIWAY SAFETY AREA
TRAN	TRANSITION
TYP	TYPICAL
T/W / TWY	TAXIWAY
U.D.	UNDERDRAIN
USC&GS	UNITED STATES COASTAL AND GEODETIC SURVEY
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
W	WATER LINE
WV	WATER VALVE

INDEX TO SHEETS

PASSERO
engineering architecture

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Designed by: LDS, ZJH

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SKY HARBOUR HANGAR DEVELOPMENT

Stamp:
STATE OF NEW YORK · MATTHEW JAMES NISSEN · 104260 · LICENSED PROFESSIONAL ENGINEER

Site:
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263 New Hackensack Rd.
Wappingers Falls, NY 12590

Client:
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Revisions:

MARK	DATE	DESCRIPTION

PROJECT NO: 23000149.0019
CAD DWG FILE: 23000149.0019 C-001 Index Sheet.dwg
DRAWN BY: AG, ZJH
CHECKED BY: MJN

Sheet Title:
Index Sheet

C-001

April 2025

GENERAL NOTES:

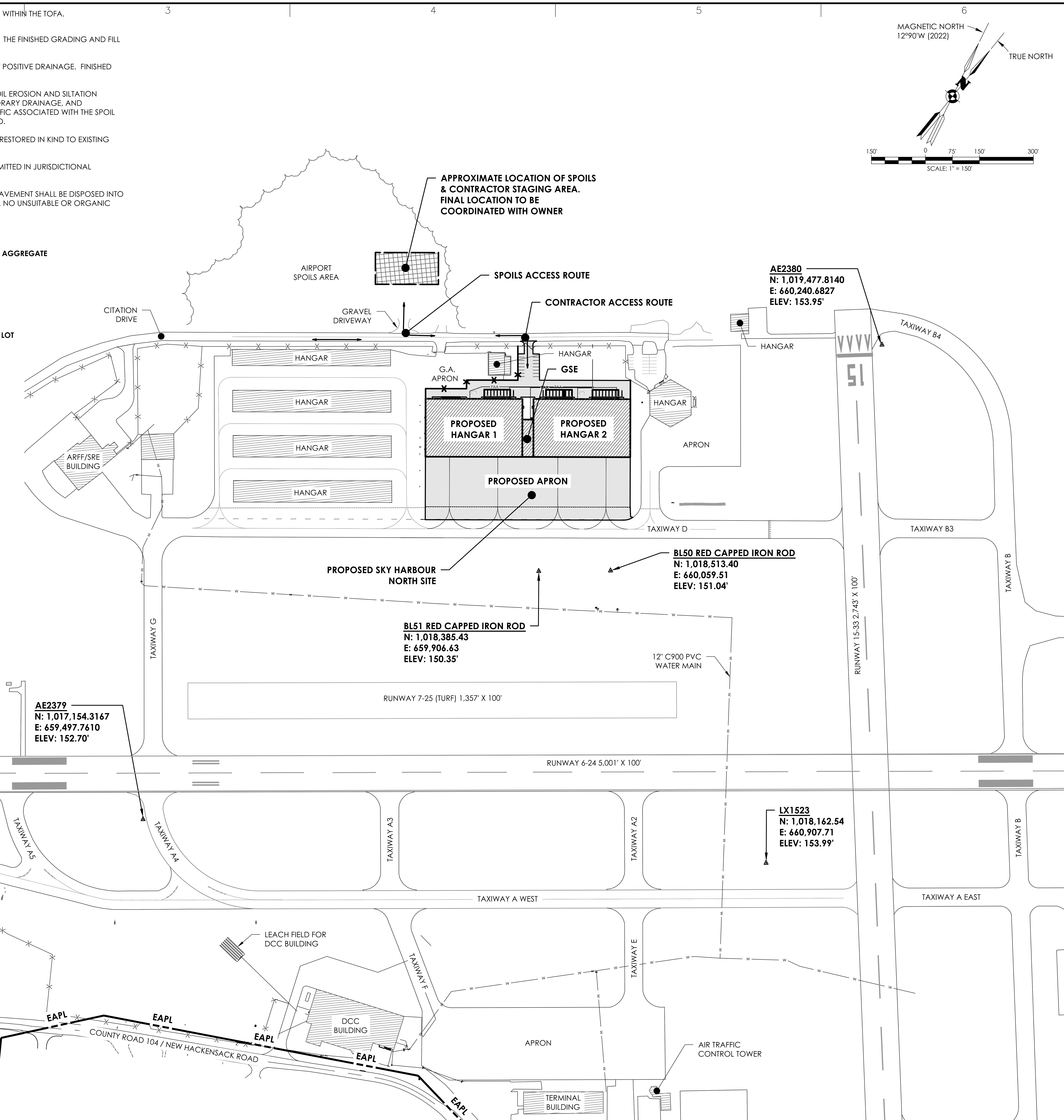
1. THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES AND APPURTENANCES, BOTH ABOVE AND BELOW GROUND, SHOWN ON THE PLANS ARE APPROXIMATE AND ARE NOT GUARANTEED. THE DATA FOR EXISTING UTILITIES HAS BEEN OBTAINED FROM THE UTILITY OWNER'S RECORD MAPS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES AND APPURTENANCES IN THE PATH OF, ADJACENT TO AND UNDER THE PATH OF THE PROPOSED WORK.
2. THE OWNERS OF THE VARIOUS UTILITIES WILL FIELD LOCATE AND MARK THE LOCATION OF THE FACILITIES. THE CONTRACTOR IS CAUTIONED TO NOTIFY CENTRAL STAKE OUT FOR LOCATION OF UNDERGROUND UTILITIES BEFORE UNDERTAKING ANY CONSTRUCTION IN THIS AREA.
3. PROPERTY LINES, RIGHT-OF-WAY LINES, AND OWNER NAMES SHOWN ON THE PLANS ARE TAKEN FROM RECORDS.
4. CONTRACTORS SHALL BE RESPONSIBLE FOR ALL DAMAGE TO EXISTING PAVEMENT, CURBS, SIDEWALKS, LAWN AREAS, TREES AND OTHER EXISTING FEATURES CAUSED BY HIS OPERATION. ALL SUCH DAMAGE SHALL BE REPAIRED OR REPLACED IN KIND BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.
5. ANY IRON PINS, CONCRETE MONUMENTS, SURVEY MONUMENTS, OR OTHER ITEMS DEFINING PROPERTY LINES OR BASELINES WHICH ARE DISTURBED BY CONSTRUCTION OPERATIONS SHALL BE PROPERLY TIED AND ACCURATELY RESET UPON COMPLETION OF WORK BY THE CONTRACTOR AT NO COST TO THE OWNER.
6. ELEVATIONS ARE BASED ON U.S.C. & G.S. DATUM. THE CONTRACTOR WILL BE RESPONSIBLE TO MAINTAIN THESE SITE BENCH MARKS OR MOVE THEM IF THEY ARE IN THE LINE OF CONSTRUCTION.
7. ALL AREAS DISTURBED BY THE CONTRACTOR'S OPERATION SHALL BE FINE GRADED, TOPSOILED, SEEDED AND MULCHED. FINE GRADING SHALL BE SHAPED TO ALLOW POSITIVE DRAINAGE.
8. SITE DRAINAGE SHALL BE MAINTAINED THROUGHOUT THE PERIOD OF CONSTRUCTION.
9. THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN THE CONSTRUCTION SITE IN A SAFE AND ORDERLY FASHION THROUGHOUT THE PERIOD OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SECURE AIRSIDE BOUNDARIES SUCH AS FENCING AND GATES TO KEEP PEDESTRIANS AND ANIMALS OUT OF AIRSIDE OPERATIONS THROUGHOUT THE DURATION OF CONSTRUCTION.
10. THE CONTRACTOR IS CAUTIONED TO KEEP HIS CONSTRUCTION VEHICLES OFF OF ALL LOCAL SUBDIVISION ROADS AND EXISTING AIRFIELD PAVEMENTS.
11. THE CONTRACTOR SHALL NOT LEAVE HIS CONSTRUCTION EQUIPMENT RUNNING OR UNATTENDED.
12. THE CONTRACTOR SHALL KEEP EQUIPMENT THAT IS NOT NECESSARY FOR HIS OPERATIONS OUT OF THE EXISTING TERMINAL AND AIR OPERATIONS AREA.
13. CONTRACTOR ACCESS GATE SHALL BE CLOSED AND LOCKED AT THE END OF EACH WORK DAY. ACCESS DRIVEWAYS SHALL BE RESTORED TO ORIGINAL OR BETTER SUBSEQUENT TO PROJECT COMPLETION.
14. GATES WITH LOCKS SHALL BE MAINTAINED AT CONTRACTOR ACCESS ROUTES. NO ACCESS WILL BE PERMITTED BY ANYONE OTHER THAN AIRPORT EMPLOYEES, CONTRACTOR'S WORKERS AND EQUIPMENT INCLUDING DELIVERIES AND THE RESIDENT ENGINEER. ALL ACCESS GATES SHALL BE LOCKED AT THE END OF EACH WORK DAY. CONTRACTOR LOCKS SHALL BE DOUBLE LOCKED WITH OWNERS LOCK.
15. AIRPORT PAVEMENTS SHALL BE CLEANED PRIOR TO RE-OPENING TO AIRCRAFT. PAVEMENT SHALL BE FREE OF DUST, STONES, DIRT AND/OR DEBRIS.
16. DUE TO KNOWN LOCATIONS OF PFA CHEMICALS ON SITE, EXCESS SOIL SHALL BE STOCKPILED AT A LOCATION DETERMINED BY THE COUNTY ENVIRONMENTAL CONSULTANT. THE CONSULTANT WILL TEST AND DETERMINE DISPOSAL REQUIREMENTS OF ANY CONTAMINATED SOILS.
17. PROVIDE ON-SITE POWERED BROOM FOR DURATION OF WORK. DUST CONTROL IS REQUIRED AT ALL TIMES. WATERING IS REQUIRED AS NEEDED TO CONTROL DUST TO AVOID ANY RISK FOR AIR TRAFFIC AND TO CONTROL POLLUTION.
18. NOTAMS SHALL BE COORDINATED WITH THE OWNER AT MINIMUM 72 HOURS PRIOR TO TAXIWAY CLOSURES AND WORK WITHIN THE TOFA.

SPOIL AREA NOTES:

1. THE SPOIL AREA LIMITS ARE APPROXIMATE. THE FINISHED GRADING AND FILL LIMITS SHALL BE APPROVED BY OWNER.
3. SPOIL AREAS SHALL BE GRADED TO PERMIT POSITIVE DRAINAGE. FINISHED SLOPE SHALL BE NO STEEPER THAN 1 ON 4.
4. COSTS FOR CLEARING AND GRUBBING, SOIL EROSION AND SILTATION CONTROL, SURVEY AND STAKEOUT, TEMPORARY DRAINAGE, AND MAINTENANCE AND PROTECTION OF TRAFFIC ASSOCIATED WITH THE SPOIL AREA SHALL BE INCLUDED IN LUMP SUM BID.
5. THE CONTRACTOR HAUL ROUTE SHALL BE RESTORED IN KIND TO EXISTING CONDITION OR BETTER.
6. NO FILL OR GROUND DISTURBANCE IS PERMITTED IN JURISDICTIONAL WETLANDS.
7. ONLY EXCESS SOIL, ROCK, AND BROKEN PAVEMENT SHALL BE DISPOSED INTO THE DESIGNATED ON AIRPORT SPOIL AREA. NO UNSUITABLE OR ORGANIC MATTER IS ALLOWED.

GENERAL WORK SCOPE:

1. **EXCAVATION, PLACEMENT OF CRUSHED AGGREGATE BASE COURSE**
2. **UTILITY INSTALLATION**
3. **CONCRETE FOUNDATION**
4. **HANGAR INSTALLATION**
5. **INSTALL ASPHALT APRON AND PARKING LOT**
6. **PAVEMENT MARKINGS**
7. **EMBANKMENT IN PLACE**



CONTROL POINTS (NAD 83)

POINT NUMBER	DESCRIPTION	ELEVATION (FT)	NORTHING	EASTING
AE2379	CGS MAG. STATION DISC (RUNWAY END OF T/W G)	152.70	1,017,154.3167	659,497.7610
LX1523	STATION DISC (BETWEEN R/W 15-33 & T/W E	153.99	1,018,162.5400	660,907.7100
AE2380	STATION DISK (NEAR RUNWAY 15 END)	153.95	1,019,477.8140	660,240.6827
BL 50	RED CAPPED IRON ROD	151.04	1,018,513.4000	660,059.5100
BL 51	RED CAPPED IRON ROD	150.35	1,018,385.4300	659,906.6300

PASSERO
engineering architecture

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Principal-in-Charge: Andrew Holesko
Project Manager: Matt Nissen, P.E.
Designed by: LDS, ZJH

Project:

SKY HARBOUR HANGAR DEVELOPMENT

Stamp:

Site:

Hudson Valley Regional Airport
263 New Hackensack Rd.
Wappingers Falls, NY 12590

Client:

Sky Harbour LLC
136 Tower Rd., Suite 205
White Plains, NY 10604

Revisions:

MARK	DATE	DESCRIPTION

PROJECT NO: 23000149.0019
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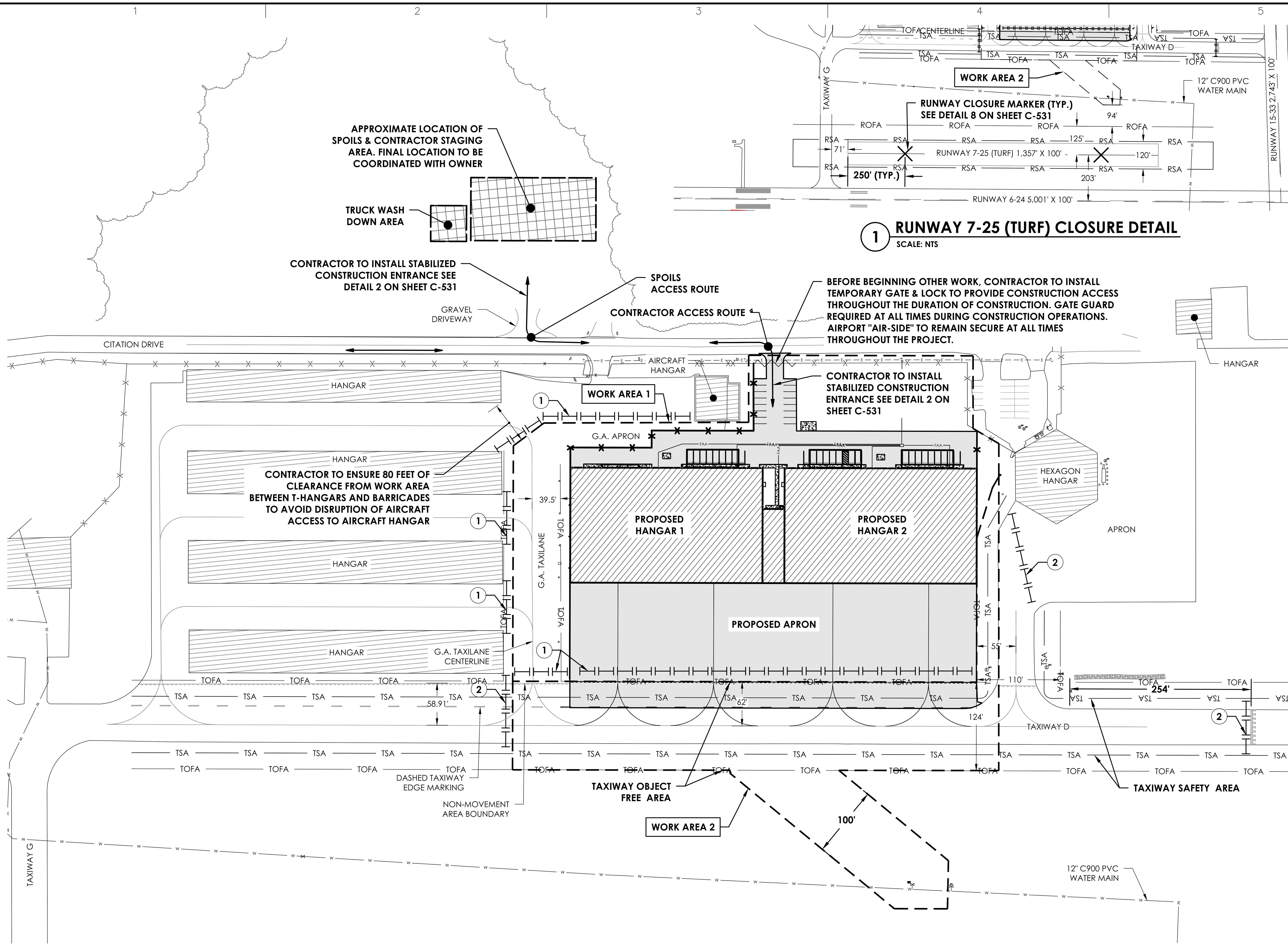
DRAWN BY: AG, ZJH
CHECKED BY: MJN

Sheet Title:

General Plan & Survey Control

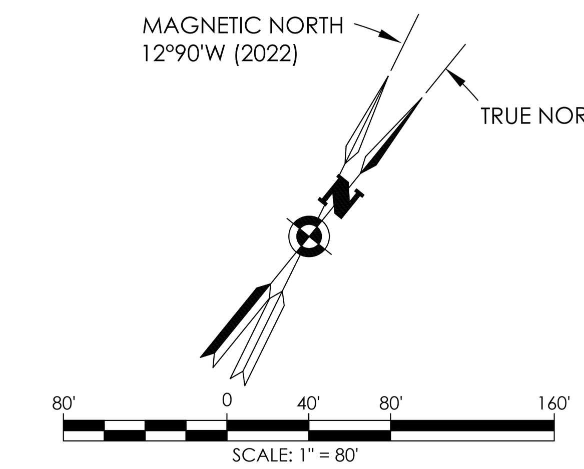
C-002

April 2025



1 RUNWAY 7-25 (TURF) CLOSURE DETAIL

SCALE: NTS



GENERAL PHASING & WORK AREA NOTES:

1. THE CONTRACTOR'S SPECIAL ATTENTION IS DIRECTED TO ac 150/5370-2 "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION"
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL BUILDING AND OTHER PERMITS NEEDED FOR WORK AT THE SITE, IF REQUIRED.
3. THE CONTRACTOR SHALL PROVIDE AIRPORT OPERATIONS A 72-HOUR NOTICE FOR CLOSURE OR REOPENING OF ANY RUNWAYS OR TAXIWAYS.
4. TAXIWAY LIGHTING IN CLOSED AREAS SHALL BE DEACTIVATED OR COVERED AS DIRECTED BY THE ENGINEER/AIRPORT MANAGER.
5. CONSTRUCTION VEHICLE LOADS SHALL NOT EXCEED 16,000 LBS. PER AXLE AT ANY TIME ON AIRPORT PAVEMENT. CONTRACTOR SHALL NOT SUBJECT ANY PAVEMENT TO REMAIN TO EXCESS CONSTRUCTION LOADS. PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITY SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
6. BARRICADE PLACEMENT IN ALL WORK AREAS SHALL BE APPROVED BY THE AIRPORT MANAGER OR ENGINEER ON A DAILY BASIS.
7. A MAXIMUM 1.5" DROP OFF MUST BE PROVIDED AT ALL PAVEMENT EDGES PRIOR TO REOPENING ANY RUNWAY OR TAXIWAY.
8. CONTRACTOR PERSONNEL AND VEHICLES SHALL YIELD TO ALL AIRCRAFT AND MOVE ALL PERSONS AND EQUIPMENT OUTSIDE OF SAFETY AREAS TO ALLOW SAFE PASSAGE OF AIRCRAFT.
9. THE CONTRACTOR IS ADVISED THAT THE WORK AREAS OF THE CONTRACT ARE ON THE AIRPORT OPERATING SURFACES. THE CONTRACTOR SHALL MAINTAIN OPERATION OF THE AIRPORT ACCESS ROAD AND AIRCRAFT APRONS AT ALL TIMES. THE CONTRACTOR IS RESPONSIBLE FOR ALL SAFETY AND PROTECTION OF WORK AREAS.
10. CONTRACTOR'S EQUIPMENT SHALL NOT EXCEED 20 FEET IN HEIGHT UNLESS OTHERWISE APPROVED.
11. PAYMENT FOR ALL PHASING WORK ITEMS SHALL BE INCLUDED IN ITEM M-100, UNLESS OTHERWISE SPECIFIED.
12. SAFETY AREAS SHALL BE FREE OF RUTS AND DEPRESSIONS IN EXCESS OF 3 INCHES PRIOR TO OPENING A RUNWAY OR TAXIWAY.
13. AIRPORT PAVEMENTS SHALL BE CLEANED PRIOR TO RE-OPENING TO AIRCRAFT. PAVEMENTS SHALL BE FREE OF DUST, STONES, DIRT AND/OR DEBRIS.
14. ASPHALT REMOVAL SHALL BE EXCAVATED IN BULK AND DISPOSED OF AT THE SPOILS LOCATION. SPOILS SHALL BE PLACED, GRADED AND STABILIZED AT THE SPOILS LOCATION SHOWN ON THIS SHEET.
15. CONTRACTOR IS RESPONSIBLE FOR INSTALLING/MAINTAINING EROSION CONTROL MEASURES AT ACCESS, FILL AREAS AND STAGING AREAS. (COST INCLUDED IN ITEM C-102)
16. VEHICLES OR PERSONNEL ARE NOT ALLOWED OUTSIDE DESIGNATED WORK AREAS WITHOUT THE PERMISSION OF THE AIRPORT OPERATOR.
17. NO OPEN TRENCHES OR EXCAVATIONS WILL BE ALLOWED WITHIN AN ACTIVE RSA, ROFA, TSA OR TOFA.
18. EQUIPMENT AND/OR MATERIAL SHALL NOT BE STORED INSIDE THE OBJECT FREE AREA OF ANY TAXIWAY.
19. IT IS THE CONTRACTORS RESPONSIBILITY TO MAINTAIN THE PROJECT SITE AND ADHERE TO ALL OSHA REQUIREMENTS.
20. EQUIPMENT NOT IN USE SHALL BE SHUT OFF.
21. THE CONTRACTOR SHALL AT ALL TIMES CONTROL DUST, MUD, AND RUNOFF RESULTING FROM OPERATIONS. WATERING IS REQUIRED AS NEEDED TO CONTROL DUST TO AVOID ANY RISK FOR AIR TRAFFIC AND TO CONTROL POLLUTION.
22. DEBRIS AND DUST CONTROL - DEBRIS, WASTE AND LOOSE MATERIAL SHALL NOT BE ALLOWED IN THE AOA. IF OBSERVED, THE MATERIAL WILL BE REMOVED IMMEDIATELY BY THE CONTRACTOR. ALL COST RELATED TO DEBRIS AND DUST CONTROL SHALL BE INCLUDED IN BID.
23. INSPECTION BY AIRPORT - PRIOR TO OPENING TO AIRCRAFT USE AND THE DEPARTURE OF THE CONTRACTORS WORK CREWS, THE CONTRACTOR WILL ARRANGE FOR INSPECTION BY THE AIRPORT OF CONTRACTOR ACTIVITY AREAS. THESE AREAS MUST COMPLY WITH THE SAFETY REQUIREMENTS DEFINED BY FEDERAL AVIATION REGULATIONS PART 139 (AND INTERPRETED BY THE DESIGNATED AIRPORT INSPECTOR) BEFORE PERMISSION FOR THE CONTRACTORS WORK CREWS TO DEPART WILL BE GRANTED. ANY VIOLATIONS IDENTIFIED BY THE AIRPORT ARE TO BE CORRECTED IMMEDIATELY BY THE CONTRACTOR PRIOR TO THE WORK CREW DEPARTING.
24. PLACE TEMPORARY RUNWAY CLOSURE MARKERS, A YELLOW FABRIC "X" SIZE 8' X 60' AS SHOWN ON DETAIL 1 OF THIS SHEET. CONTRACTOR WILL PROVIDE UNLIT RUNWAY CLOSURE MARKERS FOR THE DURATION OF CONSTRUCTION. SEE DETAIL 8 ON SHEET C-531 FOR DETAIL SPECIFICS. THE CONTRACTOR IS RESPONSIBLE FOR SETTING UP/REMOVAL AND MAINTENANCE OF MARKERS. IN THE EVENT MARKERS ARE DAMAGED, CONTRACTOR SHALL REPLACE AT NO ADDITIONAL COST TO THE OWNER. SECURE MARKERS IN PLACE WITH YELLOW SAND BAGS.

KEY NOTES:

1 INSTALL LOW PROFILE BARRICADES WHEN WORKING IN WORK AREA 1.

2 INSTALL LOW PROFILE BARRICADES WHEN WORKING IN WORK AREA 2.

WORK AREA PHASE NOTES:

WORK AREA 1

- INCLUDES ALL WORK OUTSIDE THE TAXIWAY D TOFA AND HEXAGON HANGAR TOFA.
- INCLUDES CLOSURE OF G.A. TAXILANE FOR WORK WITHIN G.A. TAXILANE
- INSTALL WORK AREA 1 BARRICADES ON G.A. APRON & G.A. TAXILANE AS SHOWN.
- INSTALL EROSION AND SEDIMENT CONTROL.
- COORDINATION SHALL BE ACTIVELY COMMUNICATED WITH THE AIRPORT FOR NOTAMS TO BE IN PLACE FOR TAXILANE CLOSURE. AIRPORT TO ENSURE WORK AREA IS READY FOR REOPENING PRIOR TO OPENING OF A TAXIWAY OR TAXILANE.

WORK AREA 2

- INCLUDES ALL WORK WITHIN THE TAXIWAY D TOFA AND HEXAGON HANGAR TOFA. WORK INCLUDES LIGHTING RECONFIGURATION, WATER MAIN INSTALLATION, DRAINAGE STRUCTURE & PIPE REMOVAL/REPLACEMENTS, SUBBASE AND PAVEMENT PLACEMENT AND PAVEMENT MARKINGS WITHIN THIS WORK AREA.
- WORK WITHIN WORK AREA 2 THAT SHALL BE COMPLETED PRIOR TO ONLY WORKING IN WORK AREA 1 INCLUDES TAXIWAY LIGHTING RECONFIGURATION, WATER MAIN INSTALLATION, DRAINAGE STRUCTURE & PIPE REMOVAL/REPLACEMENTS, AND SUBBASE PLACEMENT WITH TAPERED EDGE.
- RUNWAY 7-25 IS REQUIRED TO BE CLOSED FOR WATERMAIN INSTALLATION WORK WITHIN THE WORK AREA. CONTRACTOR TO COMMUNICATE RUNWAY CLOSURE WITH AIRPORT. SEE DETAIL 1 THIS SHEET FOR RUNWAY CLOSURE "X" LOCATION OF PLACEMENT.
- PRIOR TO OPENING OF A TAXIWAY OR TAXILANE SUBBASE PLACEMENT SHALL BE TAPERED, NO OPEN EXCAVATIONS ARE ALLOWED WITHIN THE TOFA OR TSA OF AN OPEN TAXIWAY OR TAXILANE.

WORK AREA 2 (CONT.)

- COORDINATION SHALL BE ACTIVELY COMMUNICATED WITH THE AIRPORT FOR NOTAMS TO BE IN PLACE FOR RUNWAY/TAXIWAY/TAXILANE CLOSURES. AIRPORT TO ENSURE WORK AREA IS READY FOR REOPENING PRIOR TO OPENING OF A RUNWAY, TAXIWAY OR TAXILANE.
- INCLUDES CLOSURES OF RUNWAY 7-25, TAXIWAY D AND HEXAGON HANGAR TAXILANE.
- INSTALL WORK AREA 1 & WORK AREA 2 BARRICADES AS SHOWN FOR CLOSURES.
- INSTALL SILT FENCE/EROSION CONTROL.
- MINIMIZE DOWN TIME FOR TAXIWAY LIGHTING RECONFIGURATION AND ALL OTHER WORK WITHIN THIS WORK AREA.
- DEACTIVATE/COVER TAXIWAY LIGHTS AND SIGNS ON EXISTING TAXIWAY D WITHIN WORK AREA.
- ALL WORK IN WORK AREA 2 SHALL BE COMPLETED IN 10 CONSECUTIVE WORKING DAYS.

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Project: SKY HARBOUR HANGAR DEVELOPMENT

Stamp: STATE OF NEW YORK · MATTHEW JAMES NISSEN · LICENSED PROFESSIONAL ENGINEER · 104260

Site: Hudson Valley Regional Airport
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Revisions:

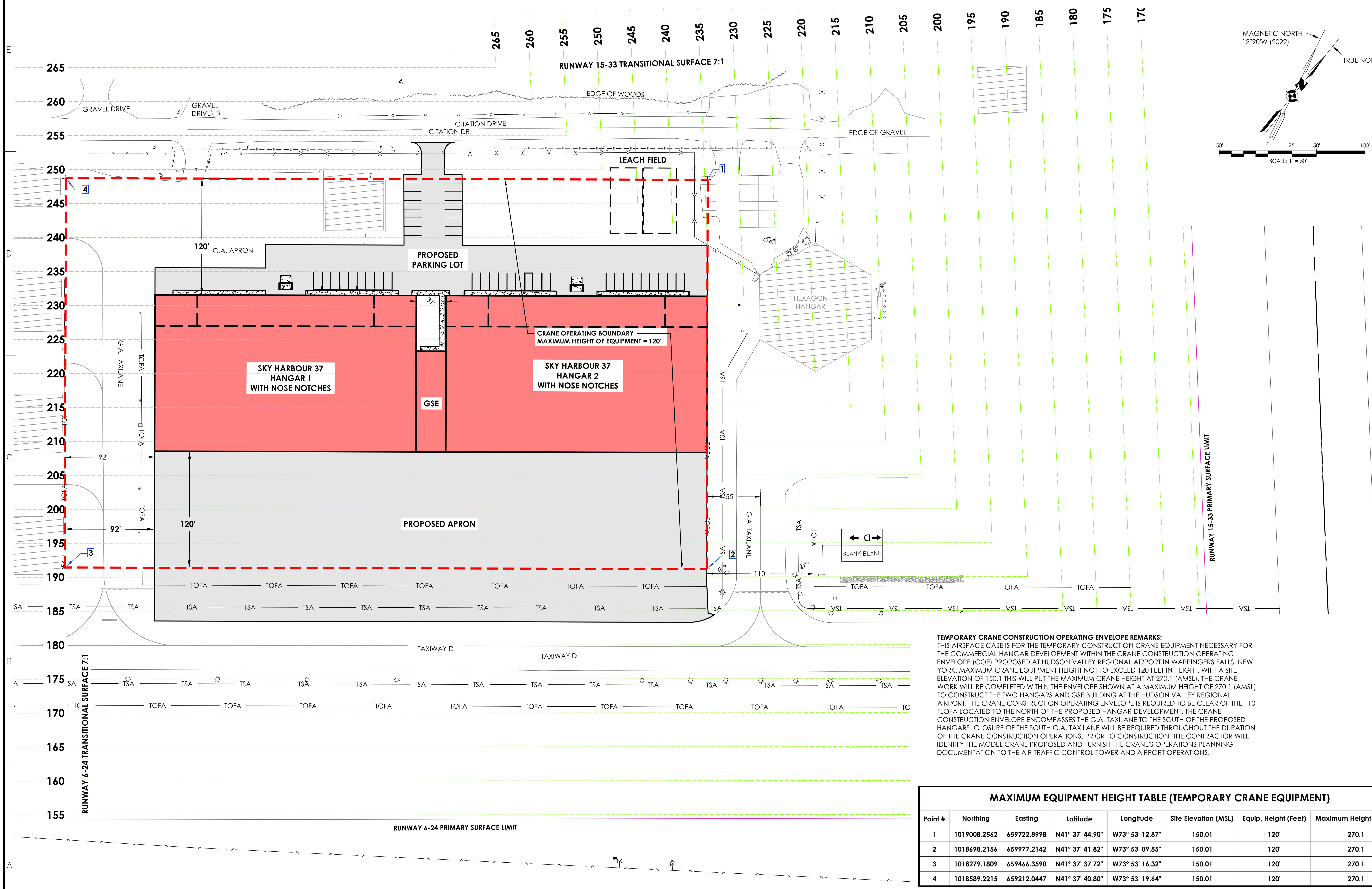
MARK	DATE	DESCRIPTION

PROJECT NO: 23000149.0019
CAD DWG FILE: 23000149.0019 C-031 CSPP.dwg
DRAWN BY: AG, ZJH
CHECKED BY: MJN

Sheet Title: Construction Safety & Phasing Plan

C-031

April 2025



TEMPORARY CRANE CONSTRUCTION OPERATING ENVELOPE REMARKS:

THIS AIRSPACE CASE IS FOR THE TEMPORARY CONSTRUCTION CRANE EQUIPMENT NECESSARY FOR THE COMMERCIAL HANGAR DEVELOPMENT WITHIN THE CRANE CONSTRUCTION OPERATING ENVELOPE (COE) PROPOSED AT HUDSON VALLEY REGIONAL AIRPORT IN WAPPINGERS FALLS, NEW YORK. MAXIMUM CRANE EQUIPMENT HEIGHT NOT TO EXCEED 120 FEET IN HEIGHT. WITH A SITE ELEVATION OF 150.1 THIS WILL PUT THE MAXIMUM CRANE HEIGHT AT 270.1 (AMSL). THE CRANE WORK WILL BE COMPLETED WITHIN THE ENVELOPE SHOWN AT A MAXIMUM HEIGHT OF 270.1 (AMSL) TO CONSTRUCT THE TWO HANGARS AND GSE BUILDING AT THE HUDSON VALLEY REGIONAL AIRPORT. THE CRANE CONSTRUCTION OPERATING ENVELOPE IS REQUIRED TO BE CLEAR OF THE 110' TLOFA LOCATED TO THE NORTH OF THE PROPOSED HANGAR DEVELOPMENT. THE CRANE CONSTRUCTION ENVELOPE ENCOMPASSES THE G.A. TAXILANE TO THE SOUTH OF THE PROPOSED HANGARS. CLOSURE OF THE SOUTH G.A. TAXILANE WILL BE REQUIRED THROUGHOUT THE DURATION OF THE CRANE CONSTRUCTION OPERATIONS. PRIOR TO CONSTRUCTION, THE CONTRACTOR WILL IDENTIFY THE MODEL CRANE PROPOSED AND FURNISH THE CRANE'S OPERATIONS PLANNING DOCUMENTATION TO THE AIR TRAFFIC CONTROL TOWER AND AIRPORT OPERATIONS.

MAXIMUM EQUIPMENT HEIGHT TABLE (TEMPORARY CRANE EQUIPMENT)

Point #	Northing	Easting	Latitude	Longitude	Site Elevation (MSL)	Equip. Height (Feet)	Maximum Height (AMSL)
1	1019008.2562	659722.8998	N41° 37' 44.90"	W73° 53' 12.87"	150.01	120'	270.1
2	1018698.2156	659977.2142	N41° 37' 41.82"	W73° 53' 09.55"	150.01	120'	270.1
3	1018279.1809	659466.3590	N41° 37' 37.72"	W73° 53' 16.32"	150.01	120'	270.1
4	1018589.2215	659212.0447	N41° 37' 40.80"	W73° 53' 19.64"	150.01	120'	270.1

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Project:
SKY HARBOUR HANGAR DEVELOPMENT

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Revisions:

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Sheet Title:
Crane Temporary Construction Operating Envelope

C-032

April 2025

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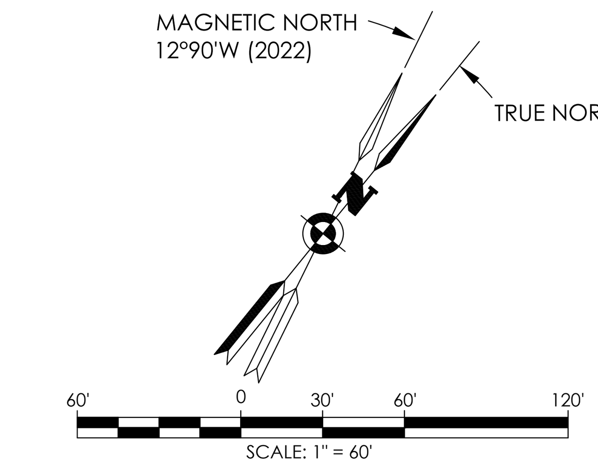

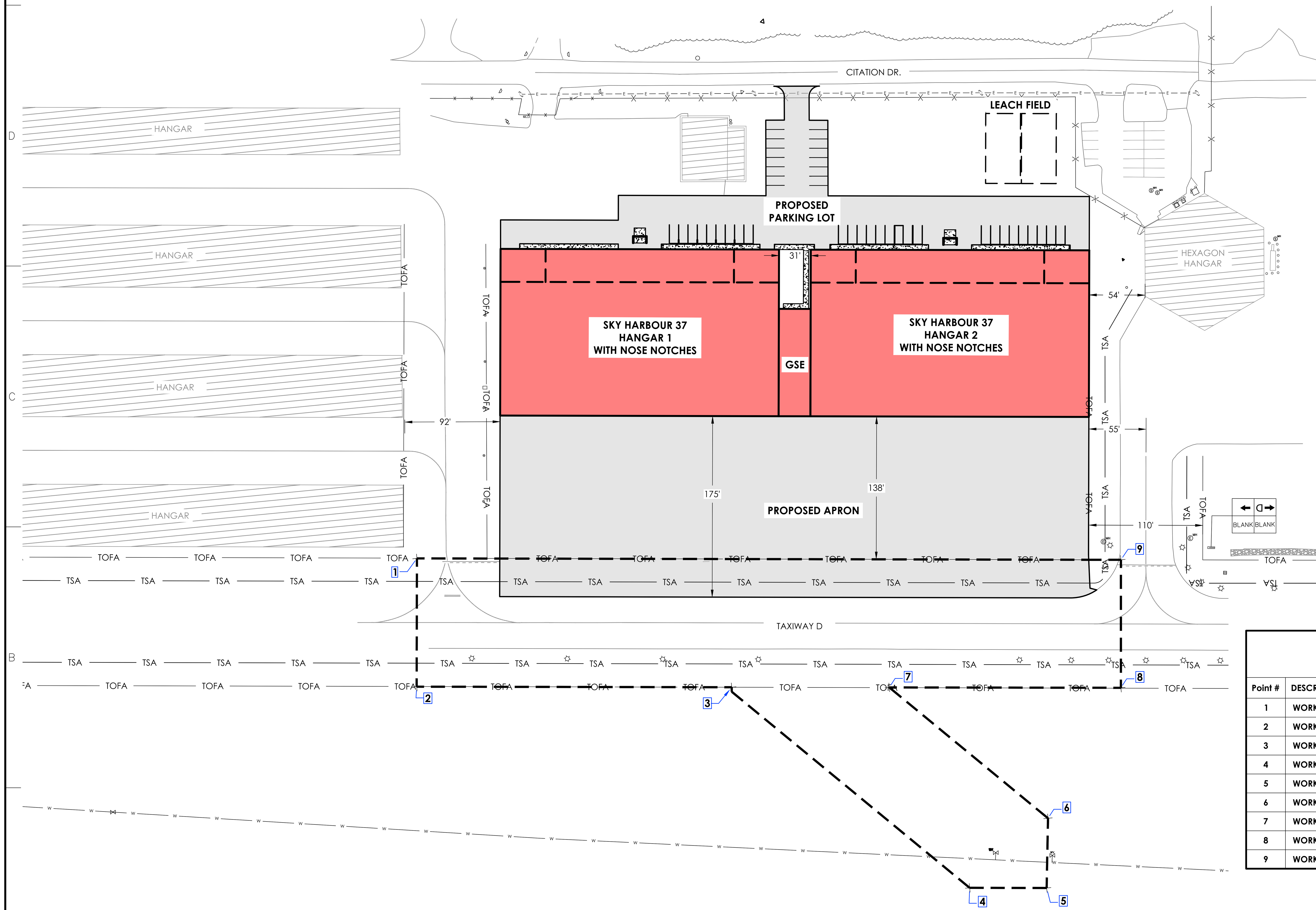

TEMPORARY CONSTRUCTION ENVELOPE REMARKS:
THIS AIRSPACE CASE IS FOR THE TEMPORARY CONSTRUCTION OPERATING ENVELOPE (COE) FOR MOBILE EQUIPMENT NECESSARY FOR THE SKY HARBOUR COMMERCIAL HANGAR DEVELOPMENT WORK WITHIN THE TAXIWAY D TOFA AND WATER MAIN INSTALLATION ON THE SOUTH SIDE OF TAXIWAY D AT HUDSON VALLEY REGIONAL AIRPORT IN WAPPINGERS FALLS, NEW YORK. ANTICIPATED MOBILE TEMPORARY CONSTRUCTION EQUIPMENT HEIGHT NOT TO EXCEED 20 FEET. WORK INCLUDED WITHIN THE TAXIWAY D TOFA AND SOUTH OF TAXIWAY D INCLUDES EXCAVATION, UTILITY INSTALLATION, PAVEMENT SECTION INSTALLATION, GRADING AND PAVEMENT MARKINGS. WHEN WORKING WITHIN THIS COE COORDINATION WITH THE AIR TRAFFIC CONTROL TOWER AND AIRPORT OPERATIONS IS REQUIRED FOR THE CLOSURE OF TAXIWAY D. RUNWAY 7-25 CLOSURE IS REQUIRED FOR WORK IN THIS COE AND SHALL BE COORDINATED WITH THE AIR TRAFFIC CONTROL TOWER AND OPERATIONS.

MAXIMUM EQUIPMENT HEIGHT TABLE
(MOBILE TEMP. CONSTRUCTION EQUIPMENT)

Point #	DESCRIPTION	Northing	Easting	Latitude	Longitude	Site Elevation (MSL)	Equip. Height (Feet)
1	WORK AREA	1018272.7121	659487.1736	N41° 37' 37.65"	W73° 53' 16.04"	147.02	20'
2	WORK AREA	1018176.9161	659565.7926	N41° 37' 36.70"	W73° 53' 15.02"	147.38	20'
3	WORK AREA	1018370.0946	659801.0057	N41° 37' 38.59"	W73° 53' 11.90"	149.30	20'
4	WORK AREA	1018366.7645	660101.5813	N41° 37' 38.54"	W73° 53' 07.95"	151.73	20'
5	WORK AREA	1018413.9438	660159.0998	N41° 37' 39.00"	W73° 53' 07.18"	152.14	20'
6	WORK AREA	1018466.7645	660117.2649	N41° 37' 39.52"	W73° 53' 07.73"	151.48	20'
7	WORK AREA	1018466.7645	659918.5432	N41° 37' 39.54"	W73° 53' 10.35"	150.10	20'
8	WORK AREA	1018608.7956	660091.3975	N41° 37' 40.93"	W73° 53' 08.06"	151.00	20'
9	WORK AREA	1018704.2440	660012.7818	N41° 37' 41.88"	W73° 53' 09.08"	151.00	20'

Project:
SKY HARBOUR HANGAR DEVELOPMENT

Stamp:

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Revisions:

MARK	DATE	DESCRIPTION

PROJECT NO: 23000149.0019
CAD DWG FILE: 7460 Temp Constr. Equip-TWD TOFA..dwg
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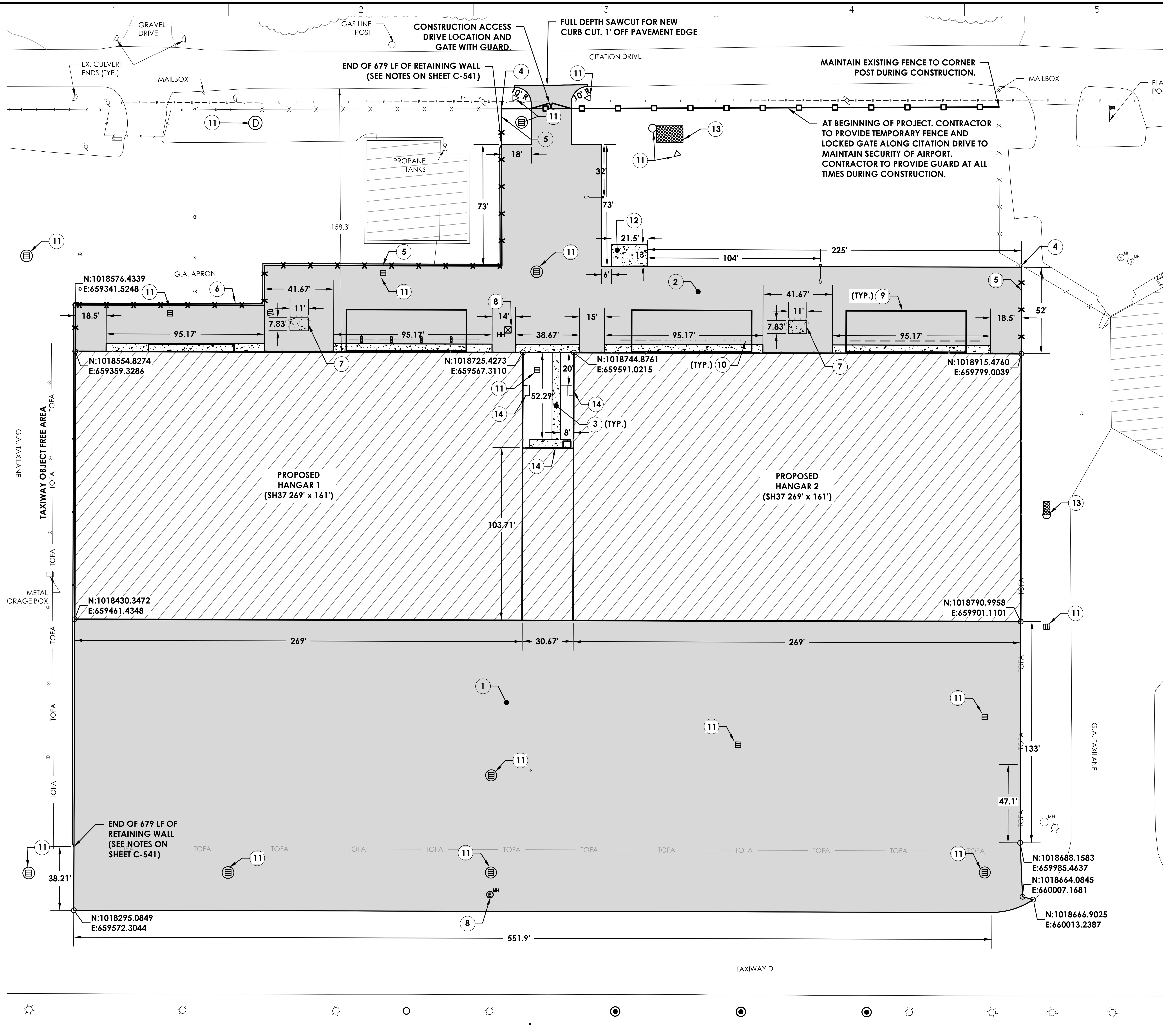
CHECKED BY: MJN

Sheet Title:
Taxiway D Temporary Construction Equip. Envelope

C-033

April 2025



MAGNETIC NORTH 12°90'W (2022)

TRUE NORTH

30' 0 15' 30' 60'

SCALE: 1" = 30'

KEYNOTES:

1. FULL DEPTH ASPHALT APRON CONSTRUCTION (NYSDOT) SEE TYPICAL SECTION 1 ON DRAWING C-501
2. FULL DEPTH ASPHALT PARKING LOT CONSTRUCTION (NYSDOT). SEE TYPICAL SECTION 4 ON DRAWING C-501
3. PROPOSED 5' WIDE SIDEWALK, SEE DETAIL 5 ON DRAWING C-501
4. PROVIDE CORNER POST AT CONNECTION POINT TO EXISTING FENCE
5. INSTALL 8' HIGH CHAIN LINK FENCE WITH BARBED WIRE, SEE DETAIL 1 ON DRAWING C-512
6. PROPOSED RETAINING WALL. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL BY CIVIL ENGINEER OF RECORD (E.O.R.) & ARCHITECT. SEE SHEET C-541 FOR ADDITIONAL RETAINING WALL NOTES.
7. 11' x 7' 10" CONCRETE TRANSFORMER PAD W/ BOLLARDS SPACED AS SHOWN. SEE E-SERIES SHEETS FOR PAD DETAILS. A-SERIES SHEETS FOR BOLLARD DETAILS.
8. PROPOSED ELECTRIC MANHOLE. SEE UTILITY SHEET C-121
9. PROPOSED CANOPY STRUCTURE. SEE ARCHITECTURAL PLANS
10. PROPOSED RUBBER WHEEL STOP WITH REBAR PINS INTO ASPHALT
11. PROPOSED STORM STRUCTURE. SEE UTILITY SHEET C-121.
12. O/W/S CONCRETE PAD. SEE DETAIL 51 ON SHEET C-501.
13. PROPOSED GREEN INFRASTRUCTURE. SEE C-550 SERIES SHEETS.
14. PROPOSED GAS METER, SEE UTILITY DRAWINGS.

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Revisions:

MARK	DATE	DESCRIPTION

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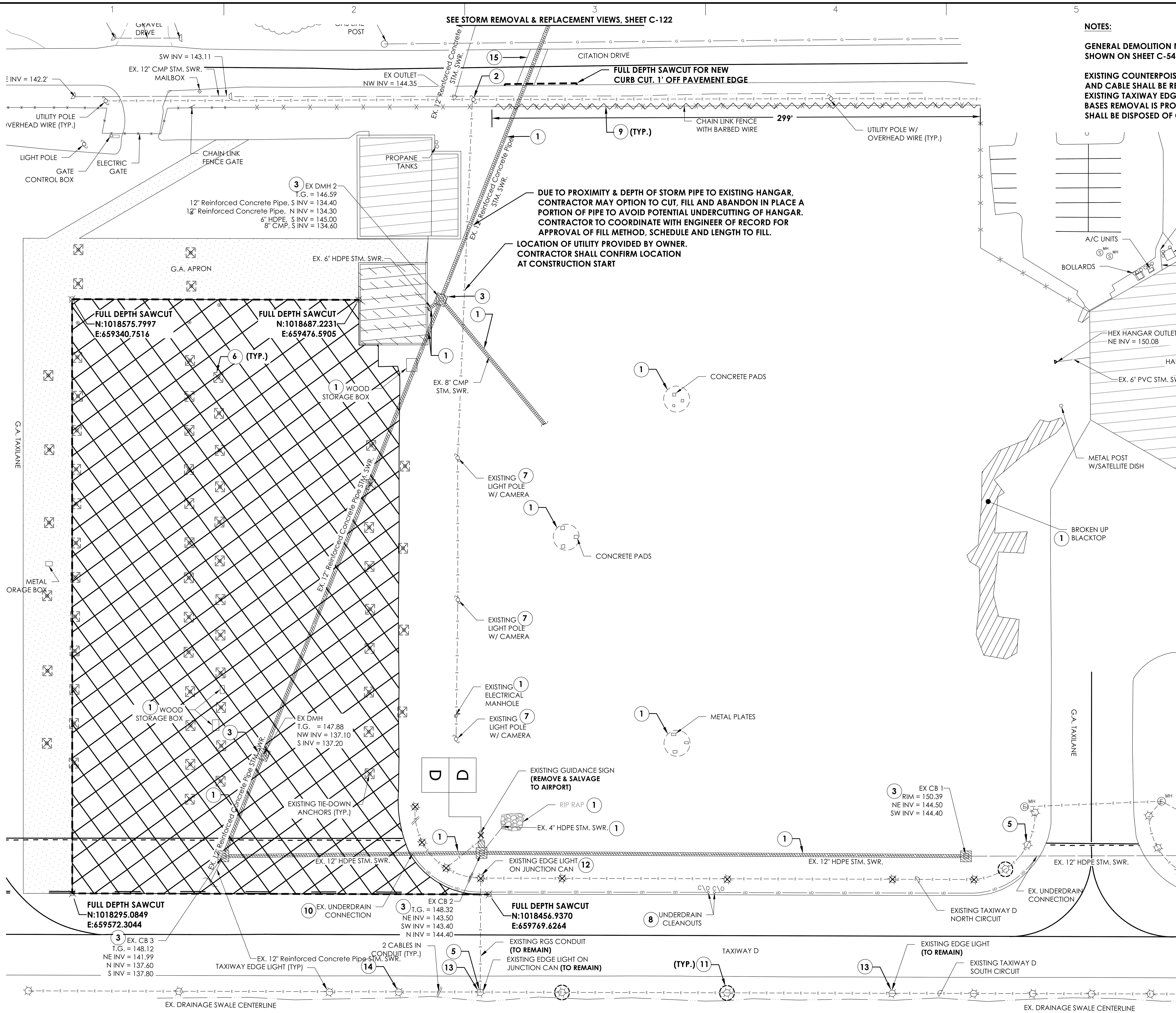
CAD DWG FILE:	23000149.0019 C-101 Site Plan.dwg
DRAWN BY:	AG, ZJH
CHECKED BY:	MJN

Sheet Title:

Site Plan

C-101

April 2025



NOTES:

GENERAL DEMOLITION NOTES ARE SHOWN ON SHEET C-541.

EXISTING COUNTERPOISE, CONDUIT AND CABLE SHALL BE REMOVED WHERE EXISTING TAXIWAY EDGE LIGHTS AND BASES REMOVAL IS PROPOSED AND SHALL BE DISPOSED OF OFF SITE.

MAGNETIC NORTH 12°90'W (2022)

TRUE NORTH

30' 0 15' 30' 60'

SCALE: 1" = 30'

LEGEND

- REMOVE EXISTING LIGHTS AND SIGN AND SALVAGE TO OWNER. DISPOSE BASES OFF-SITE
- FULL DEPTH ASPHALT REMOVAL
- PIPE & CATCH BASIN REMOVAL REMOVAL
- BUILDING DEMOLITION
- FULL DEPTH SAWCUT
- REMOVE EXISTING TIE DOWN ANCHOR
- PAVEMENT TO BE RETURNED IN KIND (INCLUDE IN BID)
- EXISTING EDGE LIGHT, BASE AND TRANSFORMER TO BE REMOVED AND RELOCATED

KEYNOTES:

1. REMOVE AND DISPOSE OF OBJECT
2. DISCONNECT POWER TO "LIGHT POLE WITH CAMERA" FROM EXISTING UTILITY POLES
3. REMOVE EXISTING DRAINAGE STRUCTURE
4. TO REMAIN
5. SPLICE FOR TAXIWAY D NORTH CIRCUIT AT EXISTING TAXIWAY EDGE LIGHT AND ESTABLISH RECONNECTION OF TAXIWAY LIGHTING CIRCUIT
6. REMOVE AND DISPOSE OF EXISTING TIE DOWN ANCHORS
7. REMOVE EXISTING LIGHT POLE LAMPS AND SALVAGE TO OWNER. DISPOSE POLES & UNDERGROUND CONDUIT OFF-SITE.
8. REMOVE AND DISPOSE OF EXISTING UNDERDRAIN CLEANOUTS. EXPOSE AND CONNECT EXISTING UNDERDRAINS. SEE UTILITY PLAN SHEET C-121.
9. REMOVE AND DISPOSE OF ~299' OF EXISTING FENCE. CONTRACTOR TO INSTALL TEMPORARY GATE TO PROVIDE CONSTRUCTION ACCESS THROUGHOUT THE DURATION OF CONSTRUCTION
10. EXPOSE AND DISCONNECT EXISTING UNDERDRAIN FROM EXISTING 12" HDPE AND PREPARE EXISTING UNDERDRAIN FOR CONNECTION TO PROPOSED STORM PIPE. SEE UTILITY PLAN SHEET C-121.
11. EXISTING EDGE LIGHT FIXTURE, BASE AND TRANSFORMER TO BE RELOCATED, SEE PROPOSED LOCATION ON UTILITY PLAN SHEET C-121.
12. REMOVE EXISTING ELECTRICAL JUNCTION CAN AND REPLACE WITH PROPOSED ELECTRICAL MANHOLE, SEE UTILITY PLAN ON SHEET C-121.
13. SPLICE FOR TAXIWAY D SOUTH CIRCUIT AT EXISTING TAXIWAY EDGE LIGHT AND ESTABLISH RECONNECTION OF TAXIWAY LIGHTING CIRCUIT.
14. REMOVE EXISTING LIGHT FIXTURE, RECONNECT CIRCUIT AND REPLACE WITH BLANK COVER
15. OPEN CUT CITATION DRIVE FOR STORM PIPE REPLACEMENT. REPLACE ROAD SECTION IN KIND. NO OPEN EXCAVATION OVERNIGHT.

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Revisions:

MARK	DATE	DESCRIPTION

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DRAWN BY:	AG, ZJH
CHECKED BY:	MJN

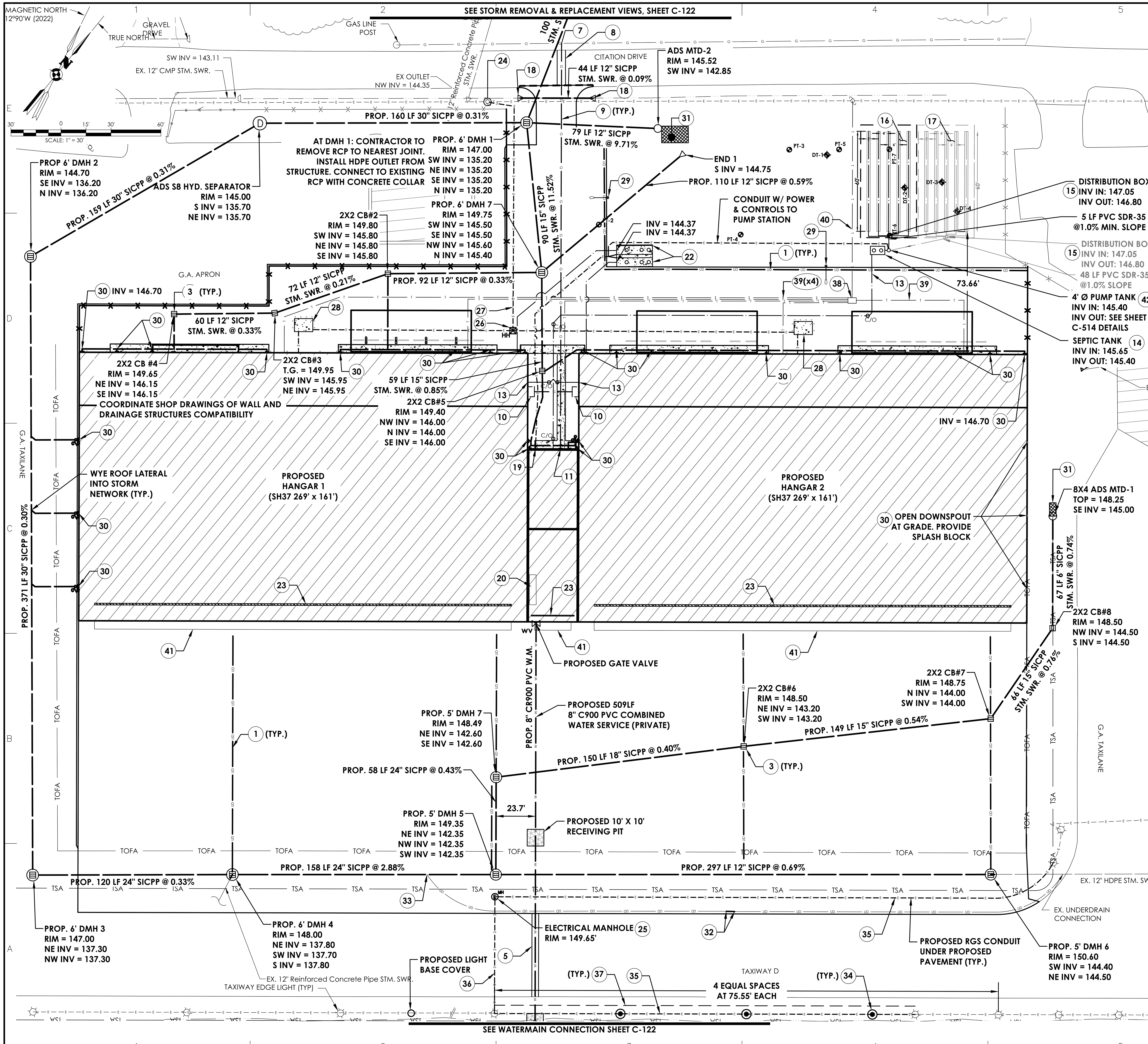
Sheet Title:

Existing Conditions & Demo Plan

C-102

April 2025

Y:\Projects--New\2003\23000149\23000149.0019\01_CAD-BIM-Models\Airport\23000149.0019 C-102 Existing Conditions.dwg Apr 29, 2025 - 10:45am



KEYNOTES:

1. 6 INCH UNDERDRAIN, SEE DETAIL 2 ON DRAWING C-501
2. CONNECT NEW DRAINAGE PIPE TO DRAINAGE STRUCTURE, SEE DETAIL 7 ON DRAWING C-501
3. PROPOSED 24 INCH SQUARE CATCH BASIN, SEE DETAIL 6 ON DRAWING C-501
4. CONNECT TO EXISTING WATER VALVE WITH PROPOSED WATER SERVICE LINE AND CONNECTION TO HANGAR. COORDINATE WITH UTILITY COMPANY FOR PROPOSED SERVICE. SEE SHEET C-122
5. DIRECTIONAL DRILL FOR PROPOSED WATER LINE
6. 8 INCH C900 PVC WATER LINE, SEE DETAIL 2 ON DRAWING C-511
7. CONNECT TO EXISTING GAS MAIN WITH PROPOSED GAS SERVICE LINE AND CONNECTION TO HANGAR, SEE MEP DRAWINGS. COORDINATE WITH UTILITY COMPANY FOR PROPOSED SERVICE.
8. OPEN CUT AND REPAIR ASPHALT
9. GAS LINE, SEE DETAIL 4 ON DRAWING C-512.
10. LOCATION OF GAS METER FOR HANGAR 1 AND HANGAR 2. COORDINATE WITH UTILITY PROVIDER.
11. LOCATION OF GAS METER FOR GSE BUILDING. COORDINATE WITH UTILITY.
12. 12 INCH SICPP STORM PIPE, SEE DETAIL 8 ON DRAWING C-501
13. 8 INCH Ø PVC SDR-35 SANITARY SEWER @ 0.50%, SEE DETAIL 3 ON DRAWING C-512
14. 1,000-GALLON SEPTIC TANK, SEE DETAIL 1 ON DRAWING C-513.
15. DISTRIBUTION BOX, SEE DETAIL 3 ON DRAWING C-513.
16. SANITARY SUBSURFACE DISPOSAL SYSTEM . SEE SHEET C-513.
17. SANITARY SUBSURFACE DISPOSAL SYSTEM FUTURE EXPANSION/REPLACEMENT AREA. NOT IN CONTRACT.
18. MATCH INVERTS TO EXISTING SWALE.
19. BANK OF 4 ELECTRIC CONDUITS. 1 FEED INTO GSE. 1 FEED OUT TO O/W SEPARATORS FLUID LEVEL ALARMS. 1 FEED WITH POWER OUT TO DOSING CHAMBER & RELAY CONTROLS. O/W SEPARATOR CONTROL PANELS & PUMP STATION CONTROL PANEL INSTALLED INSIDE GSE.
20. PROPOSED BACKFLOW PREVENTION DEVICE WITHIN BUILDING SEE PLUMBING PLANS.
21. INSTALLATION OF THRUST BLOCKS, SEE DETAIL 6 AND 7 ON SHEET C-511.
22. 3000 GALLON OIL/WATER/SEPARATOR WITH VENTED COVERS. SEE DETAIL 7 ON SHEET C-521. NOTE: NOT PART OF DCDOH APPROVAL.
23. TRENCH DRAINS.
24. CONNECT TO EXISTING ELECTRICAL WITH PROPOSED ELECTRIC SERVICE LINE AND CONNECTION TO HANGAR, SEE MEP DRAWINGS. COORDINATE WITH UTILITY COMPANY FOR PROPOSED SERVICE.
25. 24" DIAMETER ELECTRICAL MANHOLE LOAD RATED, SEE DETAIL 3 ON DWG C-515.
26. 24" DIAMETER ELECTRICAL MANHOLE LOAD RATED, SEE DETAIL 3 ON DWG C-515 3 INLET FEEDS. 1 FEED TO HANGAR 1 TRANSFORMER. 1 FEED TO HANGAR 2 TRANSFORMER. 1 FEED TO GSE.
27. BANK OF ELECTRIC FEEDS. COORDINATE WITH UTILITY PROVIDER.
28. PAD MOUNTED TRANSFORMER AND BOLLARDS, REFER TO E-SERIES SHEETS FOR TRANSFORMER PAD. A-SERIES FOR BOLLARD DETAILS.
29. LIGHT POLE SEE DETAIL 5 ON SHEET C-515. SEE MECHANICAL PLANS FOR POWER AND CABLE TRENCHING REQUIREMENTS.
30. ROOF DOWNSPOUTS WITH UNDERGROUND DRAINAGE LATERAL. SEE DETAIL 10 ON SHEET C-501.
31. INFILTRATION BASIN GREEN INFRASTRUCTURE, SEE C-550 SERIES SHEETS.
32. CONNECT EXISTING UNDERDRAIN PIPE TO PROPOSED UNDERDRAIN.
33. CONNECT EXISTING 6" UNDERDRAIN TO PROPOSED 12" STORM PIPE. SEE DETAIL 9 ON SHEET C-501.
34. PROPOSED RELOCATED LED TAXIWAY EDGE LIGHT, CONCRETE BASE, AND TRANSFORMER. SEE DETAIL 1 ON DWG C-515.
35. PROPOSED 1/C, #8 AWG, 5KV, L-824, TYPE "C" CABLE IN NEW 2" PVC ELECTRICAL CONDUIT IN TURF AND IN NEW 2" RGS CONDUIT UNDER PAVEMENT. SEE DETAILS 2 AND 4 ON DWG C-515.
36. PROPOSED CABLE TO BE FED THROUGH EXISTING RGS CONDUIT.
37. PROPOSED #6 AWG COUNTERPOISE, SEE DETAIL 4 ON DWG C-515.
38. 28"x50"x41" IT DISTRIBUTION HANDHOLE. SEE IT SERIES SHEETS.
39. 2" CONDUIT WITH (1) 3-CELL MAXCELL FABRIC INNERDUCT. SEE IT-SERIES FOR DESTINATION.
40. (1) 4" U/G CONDUIT WITH (2) 4-CELL MAXCELL FABRIC INNERDUCTS TO UTILITY POLE. SEE IT SERIES SHEETS.
41. ALTERNATE 1 SNOW MELT SYSTEM, SEE SHEETS E-102 AND A-312 FOR ADDITIONAL INFORMATION REGARDING THE BASE BID AND ALTERNATE 1 SNOW MELT SYSTEMS.
42. 4' Ø SEPTIC PUMP TANK. PROVIDE VENT. SEE SHEET C-514 FOR DETAILS.

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Revisions:

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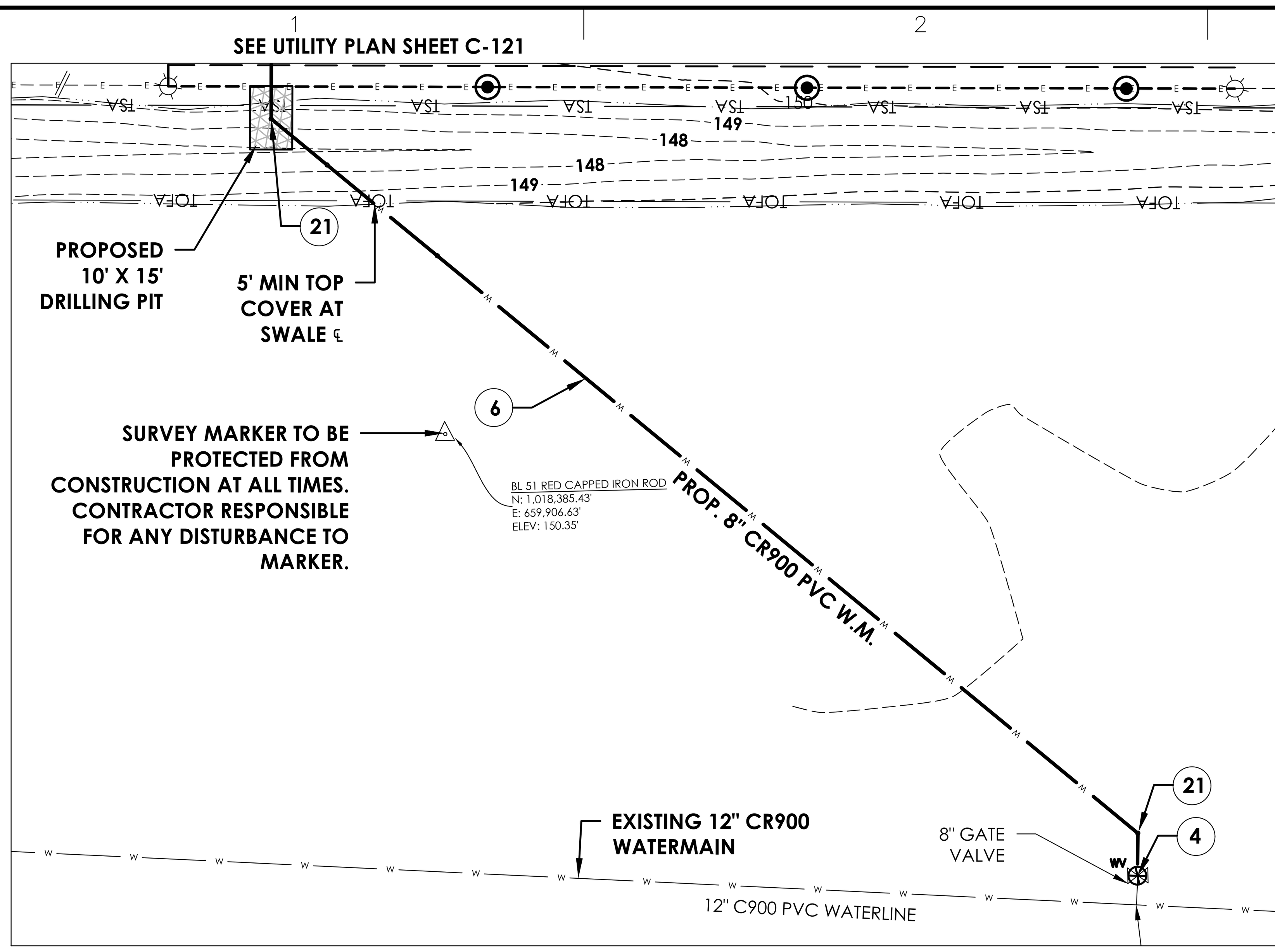
DRAWN BY:	AG, ZJH
CHECKED BY:	MJN

Sheet Title:

Utility Plan

C-121

April 2025

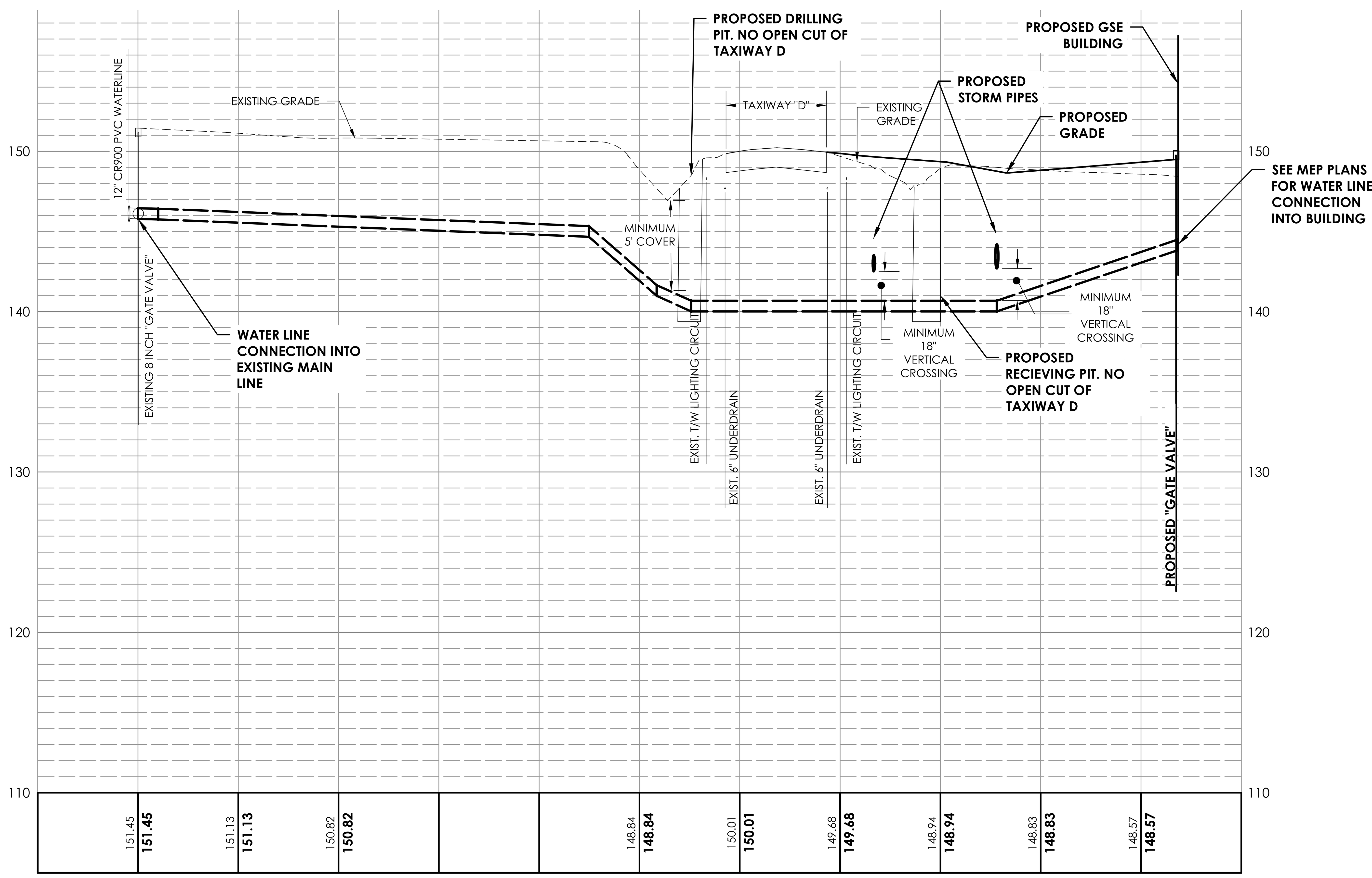


1 WATERMAIN CONNECTION

SCALE: 1" = 30'

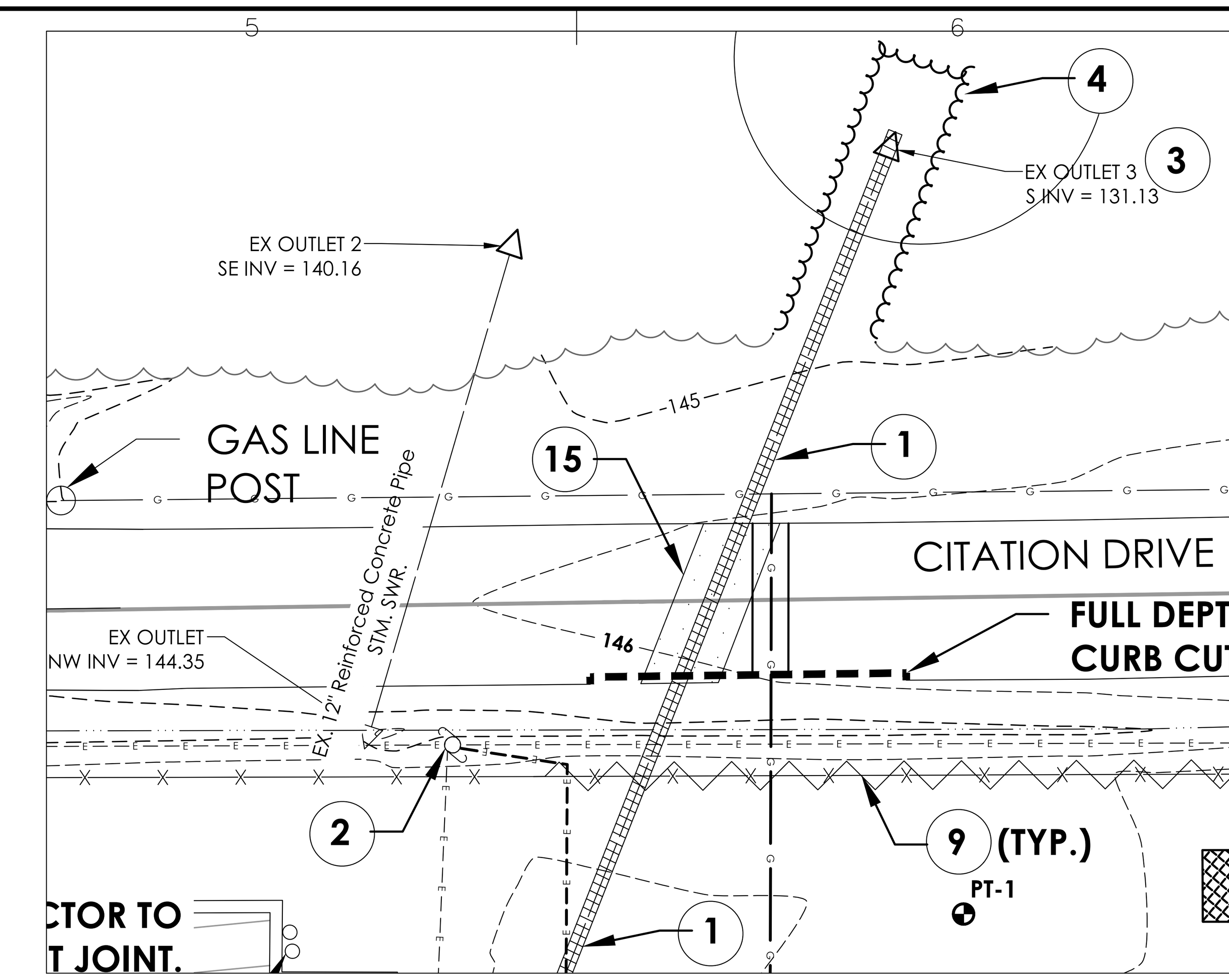
WATERMAIN KEYNOTES:

4. CONNECT TO EXISTING WATER VALVE WITH PROPOSED WATER SERVICE LINE AND CONNECTION TO HANGAR. COORDINATE WITH UTILITY COMPANY FOR PROPOSED SERVICE.
6. 8 INCH C900 PVC WATER LINE, SEE DETAIL 2 ON DRAWING C-511
21. INSTALLATION OF THRUST BLOCKS, SEE DETAIL 6 AND 7 ON SHEET C-511



PROPOSED WATER MAIN EXTENSION PROFILE

SCALE: HORIZONTAL - 1" = 40'
VERTICAL - 1" = 5'

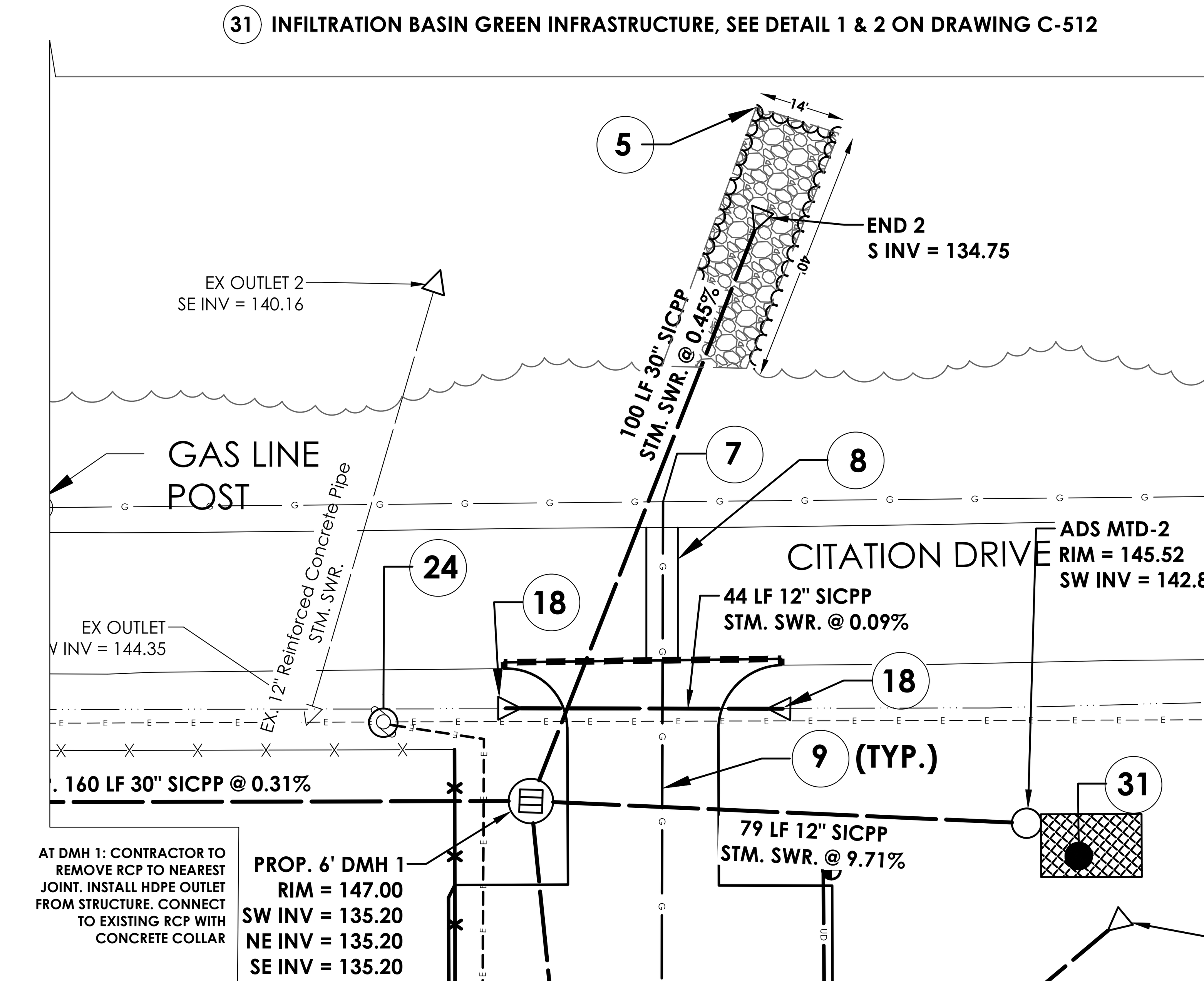


2 STORM LINE REMOVAL

SCALE: 1" = 20'

STORM LINE KEYNOTES:

1. REMOVE AND DISPOSE OF OBJECT
2. DISCONNECT POWER TO "LIGHT POLE WITH CAMERA" FROM EXISTING UTILITY POLE
3. REMOVE EXISTING DRAINAGE STRUCTURE
4. LIMITS OF VEGETATION REMOVAL
5. PROVIDE STONE RIP RAP AND GEOTEXTILE FABRIC ALONG HILLSIDE WITHIN EXTENTS OF VEGETATION REMOVAL. SEE DETAIL #9 ON SHEET C-531.
9. REMOVE AND DISPOSE OF ~299' OF EXISTING FENCE. CONTRACTOR TO INSTALL TEMPORARY GATE TO PROVIDE CONSTRUCTION ACCESS UNTIL AIR-SIDE IS SECURED BY INSTALLATION OF NEW FENCE AND HANGARS.
15. OPEN CUT CITATION DRIVE FOR STORM PIPE REPLACEMENT. FULL DEPTH SAWCUT PAVEMENT AND REPLACE ROAD SECTION IN KIND. NO OPEN EXCAVATION OVERNIGHT. UPON PAVEMENT RESTORATION, JOINTS SHALL BE HOT SEALED WITH ASPHALT SEALING MATERIAL ITEM 418.7603 OR APPROVED EQUAL.
24. CONNECT TO EXISTING ELECTRICAL WITH PROPOSED ELECTRIC SERVICE LINE AND CONNECTION TO HANGAR, SEE MEP DRAWINGS. COORDINATE WITH UTILITY COMPANY FOR PROPOSED SERVICE.
31. INFILTRATION BASIN GREEN INFRASTRUCTURE, SEE DETAIL 1 & 2 ON DRAWING C-512



3 STORM LINE REPLACEMENT

SCALE: 1" = 20'

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Project: SKY HARBOUR HANGAR DEVELOPMENT

Stamp: STATE OF NEW YORK — MATTHEW JAMES NISSEN — 104260 — LICENSED PROFESSIONAL ENGINEER

Site: Hudson Valley Regional Airport
263 New Hackensack Rd.
Wappingers Falls, NY 12590

Client: **Sky Harbour LLC**
136 Tower Rd., Suite 205
White Plains, NY 10604

Revisions:

MARK	DATE	DESCRIPTION

PROJECT NO:	23000149.0019
CAD DWG FILE:	23000149.0019 C-121 Utility Plan.dwg
DRAWN BY:	AG, ZJH
CHECKED BY:	MJN

Sheet Title: Water Main Profile & Storm Replacement

C-122

April 2025

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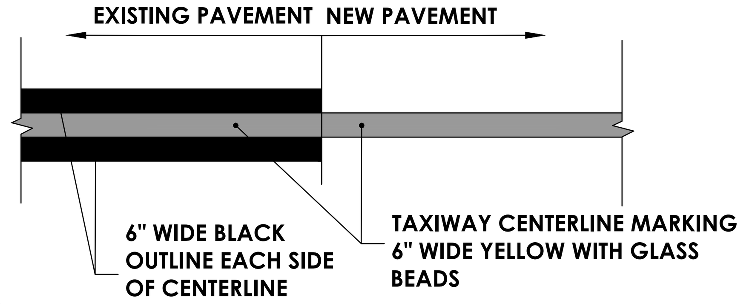
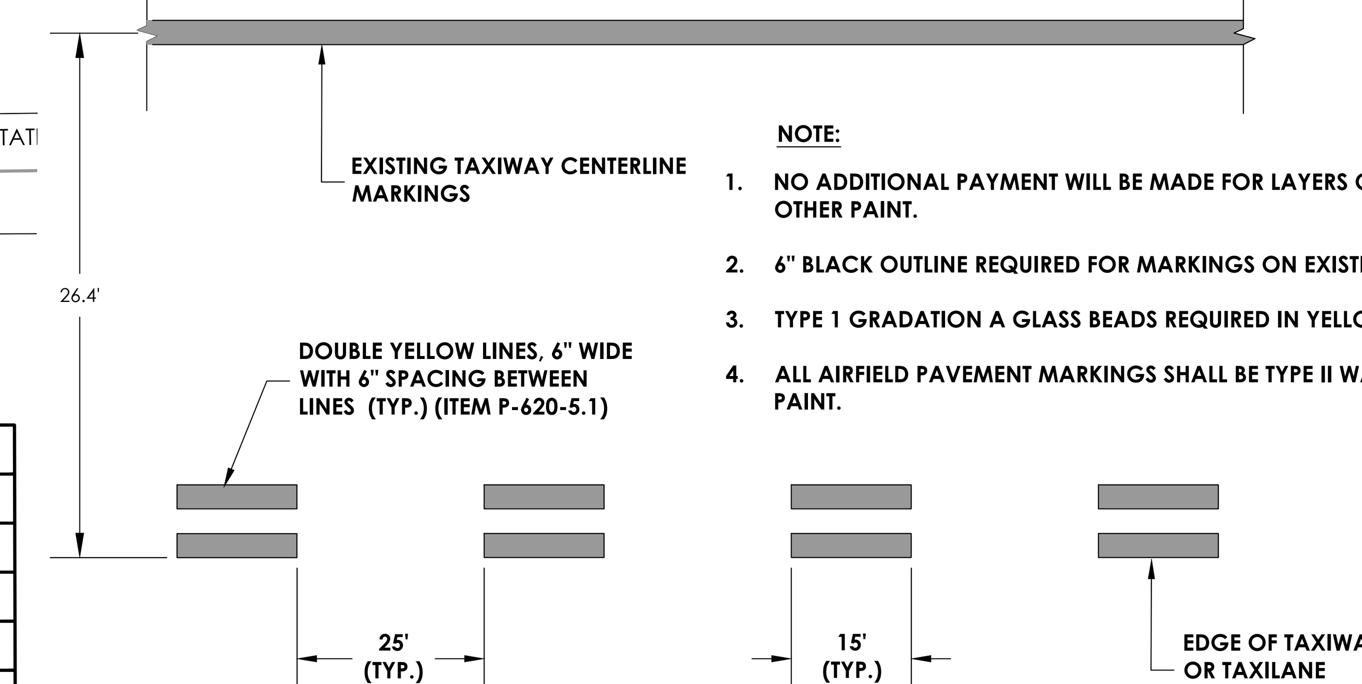


NOTES:

1. NO ADDITIONAL PAYMENT WILL BE MADE FOR LAYERS OF PAINT OVER OTHER PAINT.
2. 6" BLACK OUTLINE REQUIRED FOR MARKINGS ON EXISTING PAVEMENT.
3. TYPE 1 GRADATION A GLASS BEADS REQUIRED IN YELLOW PAINT ONLY.
4. ALL AIRFIELD PAVEMENT MARKINGS SHALL BE TYPE II WATERBORNE PAINT.

1 TAXIWAY CENTERLINE STRIPING DETAIL

SCALE: NTS

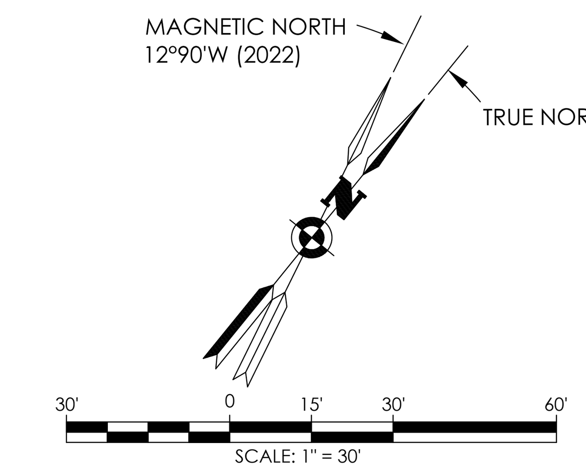


NOTE:

1. NO ADDITIONAL PAYMENT WILL BE MADE FOR LAYERS OF PAINT OVER OTHER PAINT.
2. 6" BLACK OUTLINE REQUIRED FOR MARKINGS ON EXISTING PAVEMENT.
3. TYPE 1 GRADATION A GLASS BEADS REQUIRED IN YELLOW PAINT ONLY.
4. ALL AIRFIELD PAVEMENT MARKINGS SHALL BE TYPE II WATERBORNE PAINT.

2 DASHED TAXIWAY EDGE STRIPING DETAIL

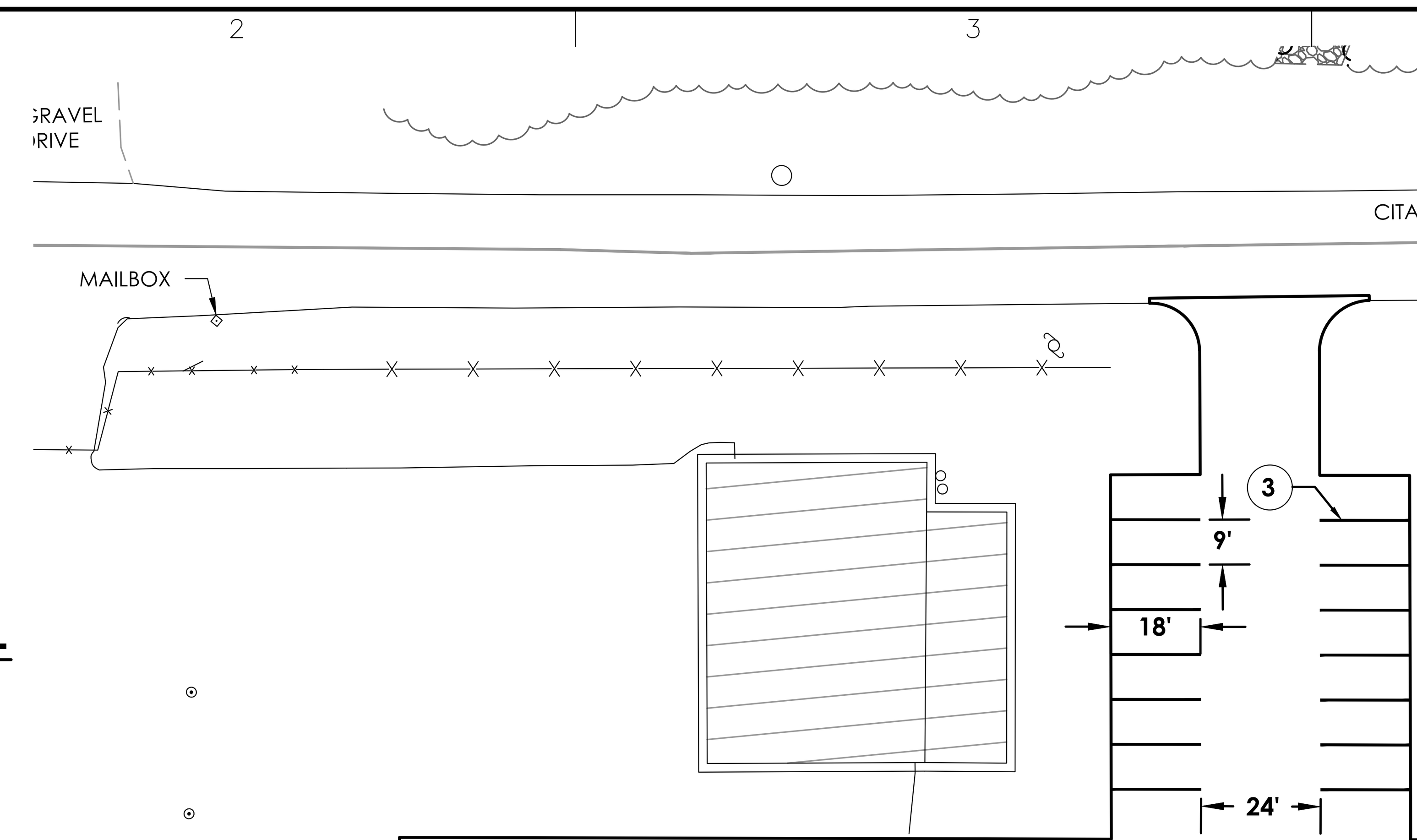
SCALE: NTS

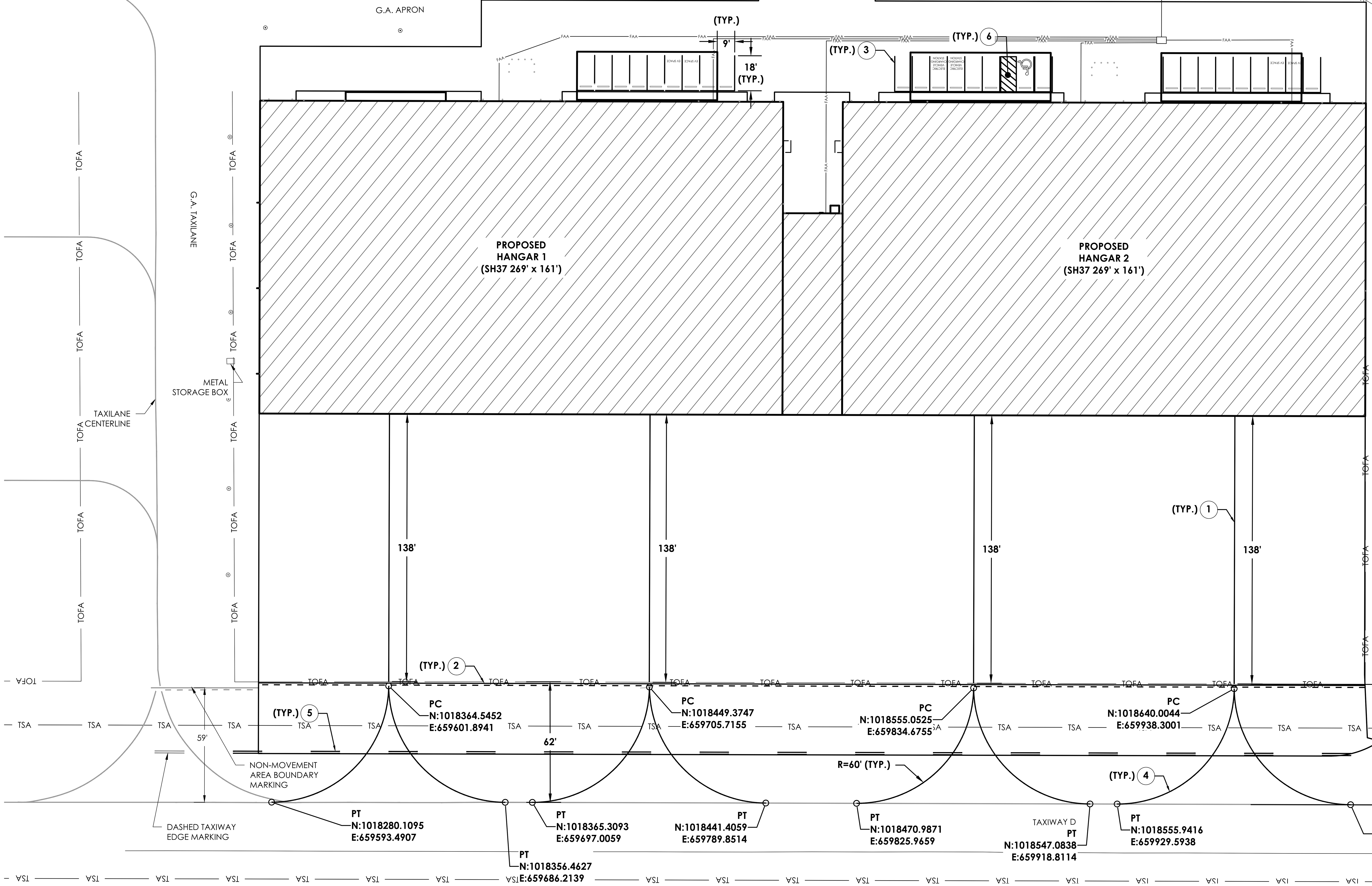


KEYNOTES:

1. PROPOSED 6" WIDE YELLOW TAXIWAY CENTERLINE MARKING, SEE DETAIL 1 ON THIS SHEET.
2. PROPOSED NON-MOVEMENT AREA BOUNDARY MARKING SEE DETAIL 2 ON SHEET C-521.
3. PROPOSED 4" WHITE PAVEMENT MARKING.
4. PROPOSED 6" WIDE YELLOW TAXIWAY CENTERLINE MARKING WITH 6" WIDE BLACK OUT LINE ON BOTH SIDES. SEE DETAIL 1 ON THIS SHEET
5. PROPOSED DASHED TAXIWAY EDGE MARKING, SEE DETAIL 2 ON THIS SHEET.
6. RESERVED PARKING AREA, BUILDING MOUNTED SIGNAGE, ADA STRIPING AND DETECTABLE WARNING SYSTEM PER DETAILS 3, 4, & 5 ON SHEET C-521.

3 MODIFIED INTERNATIONAL SYMBOL OF ACCESS





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Project:

SKY HARBOUR HANGAR DEVELOPMENT

Stamp:

STATE OF NEW YORK — MATTHEW JAMES NISSEN — 104260 — LICENSED PROFESSIONAL ENGINEER

Site:

Hudson Valley Regional Airport
263 New Hackensack Rd.
Wappingers Falls, NY 12590

Client:

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White Plains, NY 10604

Revisions:

MARK	DATE	DESCRIPTION

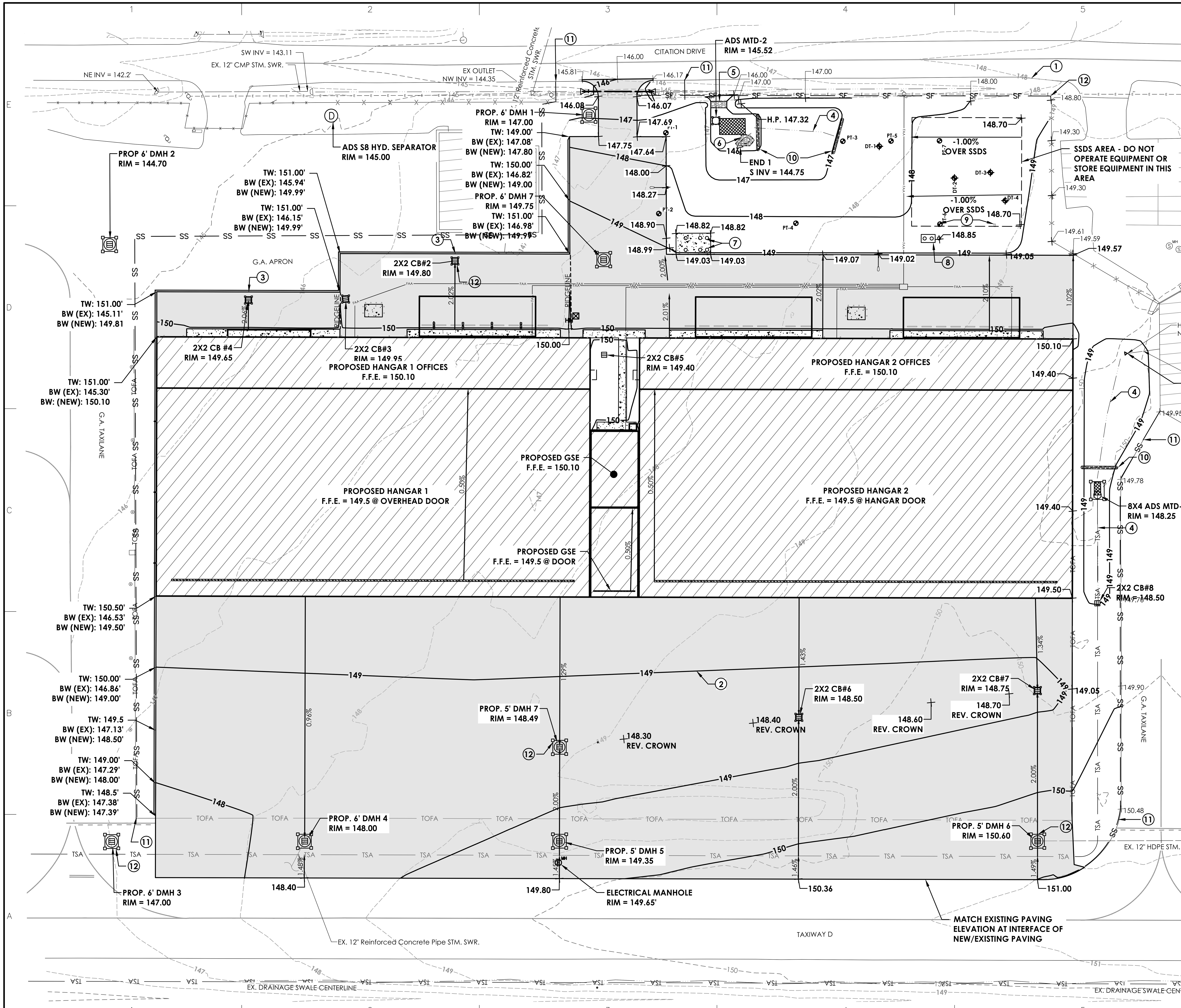
PROJECT NO: 23000149.0019
CAD DWG FILE: 23000149.0019 C-161 Marking Plan.dwg
DRAWN BY: AG, ZJH
CHECKED BY: MJN

Sheet Title:

Marking Plan

C-161

April 2025



KEYNOTES:

1. EXISTING GRADE CONTOURS
2. PROPOSED GRADE CONTOURS
3. TOP OF RETAINING WALL GRADE REMAINS THE SAME. WALL EXPOSURE INCREASES ON PROPOSED PAVEMENT SIDE FOR DRAINAGE INTO STRUCTURES
4. PROPOSED SWALE ℄
5. 10' RIP RAP STONE WEIR. ELEV = 146.00
6. RIP RAP LINED SEDIMENT BASIN. BOTTOM OF BASIN = 143.75
7. O/W/S #1 RIMS = 148.87
   O/W/S #2 RIMS = 148.97
8. SEPTIC TANK & PUMP STATION RIMS = 148.85
9. DIST TANKS 1' MAX BELOW GRADE. TOP OF BOX = 147.70. GRADE = 148.70
10. TEMPORARY SEDIMENT RIP RAP CHECK DAM PER DETAIL.
11. EROSION CONTROL SILT SOCK (SS) / SILT FENCE (SF)
12. SEDIMENT CONTROL AT DRAINAGE STRUCTURES (TYP.)

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Project:
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Stamp:
STATE OF NEW YORK · MATTHEW JAMES NISSEN · 104260 · LICENSED PROFESSIONAL ENGINEER

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White Plains, NY 10604

Revisions:

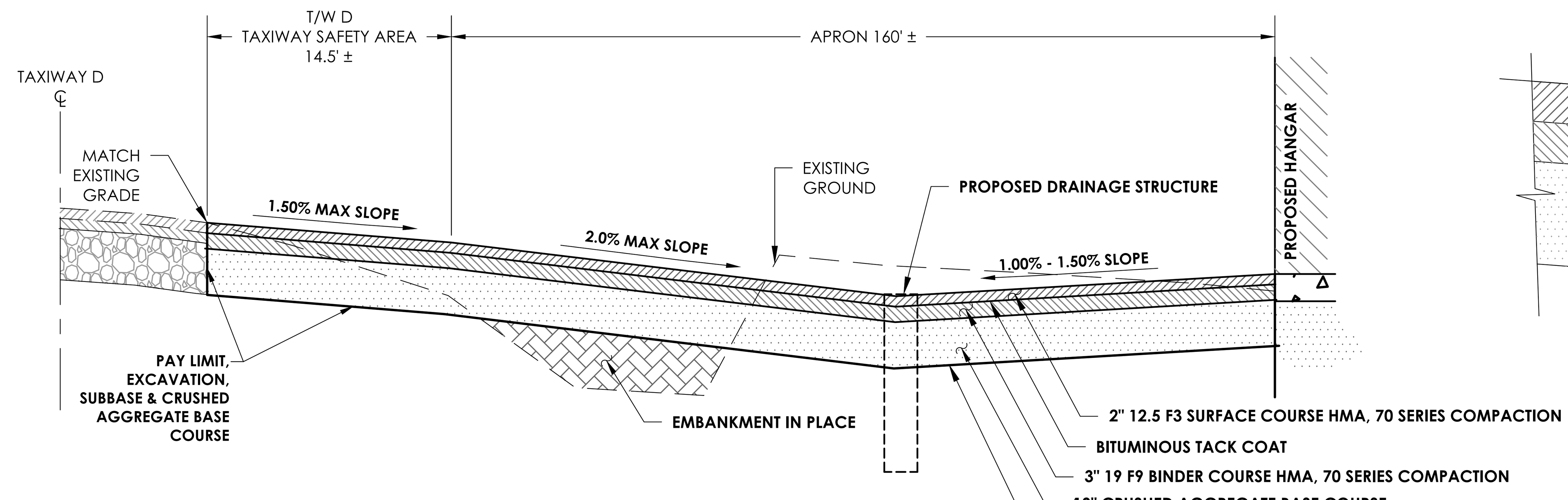
MARK	DATE	DESCRIPTION

PROJECT NO:	23000149.0019
CAD DWG FILE:	23000149.0019 C-201 Grading Plan.dwg
DRAWN BY:	AG, ZJH
CHECKED BY:	MJN

Sheet Title:
Grading and Erosion Control Plan

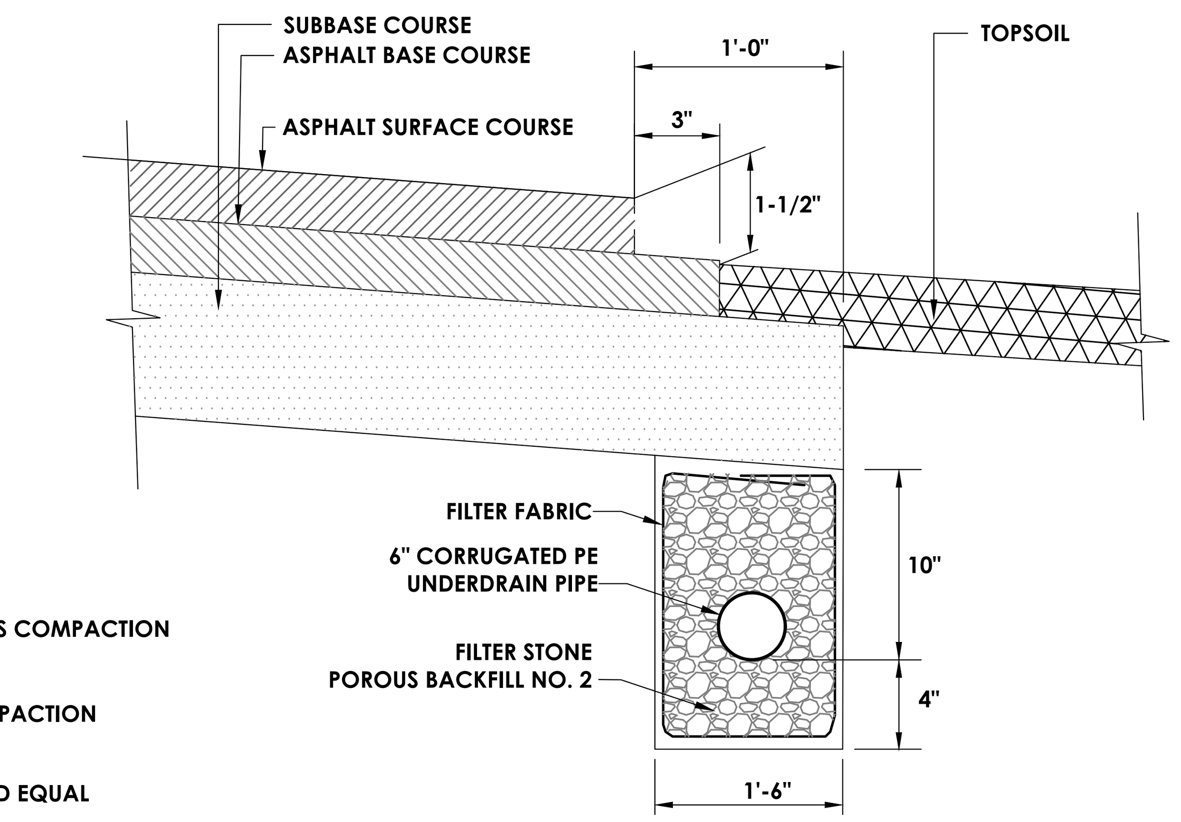
C-201

April 2025



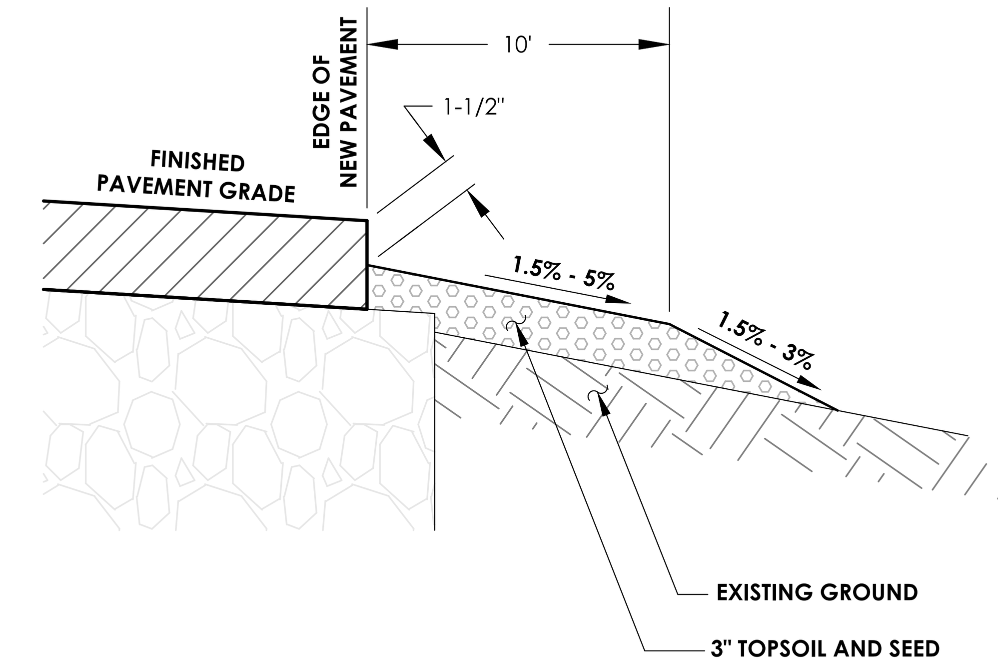
1 APRON TYPICAL SECTION

SCALE: NTS



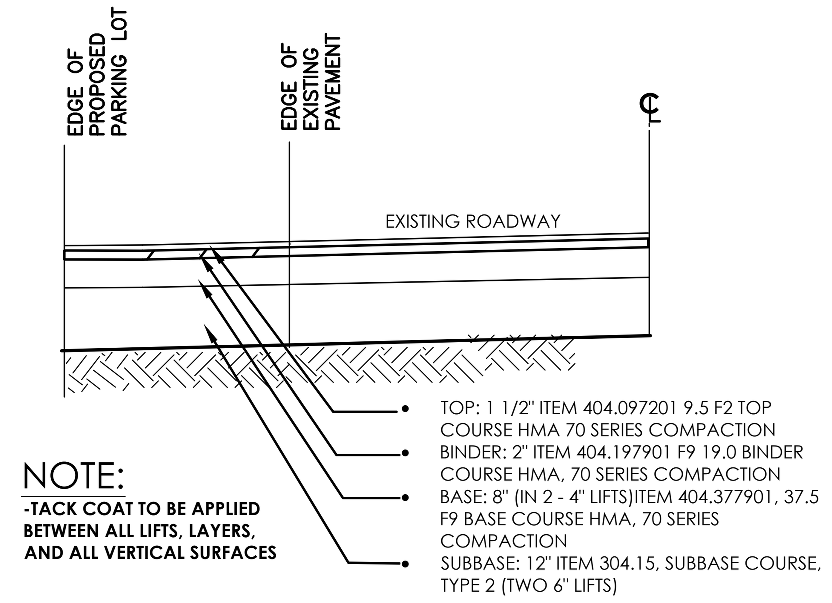
2 PAVEMENT EDGE AND UNDERDRAIN DETAIL

SCALE: NTS



3 TOPSOIL EDGE SECTION

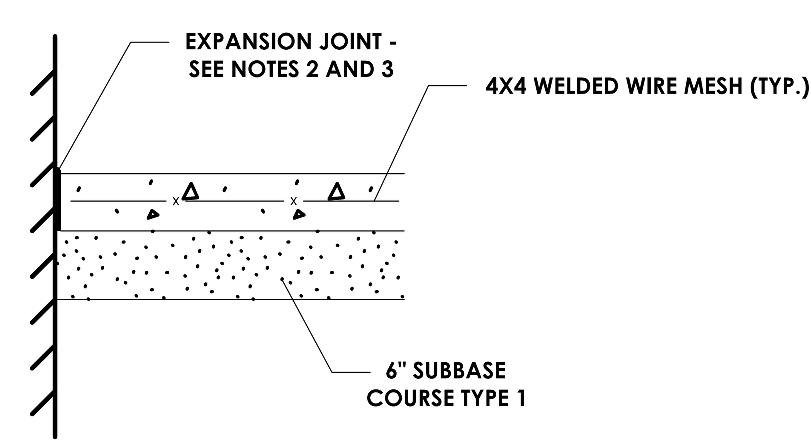
SCALE: NTS



NOTE:
-TACK COAT TO BE APPLIED BETWEEN ALL LIFTS, LAYERS, AND ALL VERTICAL SURFACES

4 PARKING LOT/ DRIVEWAY SECTION

SCALE: NTS



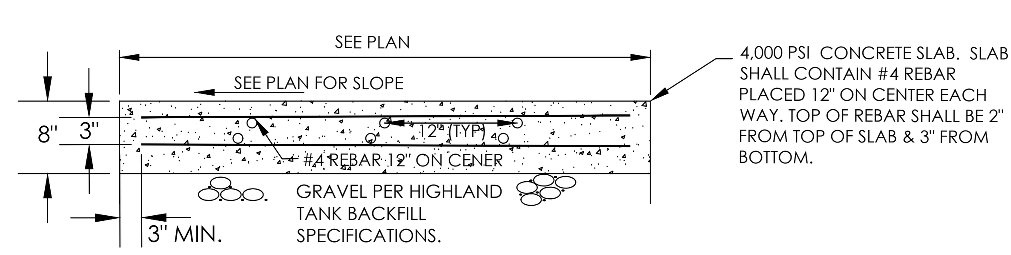
ADJACENT TO WALL OR BUILDING

NOTES:

1. MAXIMUM CROSS-SLOPE OF CONCRETE SIDEWALK IS 1:50.
2. PROVIDE 0.5 INCH WIDE EXPANSION JOINT BETWEEN NEW CONCRETE CONSTRUCTION AND BACK EDGE CURB, CONCRETE GUTTER, OTHER PAVED AREAS, BUILDINGS, WALLS, POLE BASES AND OTHER STRUCTURES /APPURTENANCES.
3. FOR EXPANSION JOINT USE 0.5 INCH WIDE PREMOULDED EXPANSION JOINT MATERIAL, SEALED WITH 0.5 INCH WIDE CAULKING SEALANT 1 INCH DEEP.

5 CONCRETE SIDEWALK SECTION

SCALE: NTS

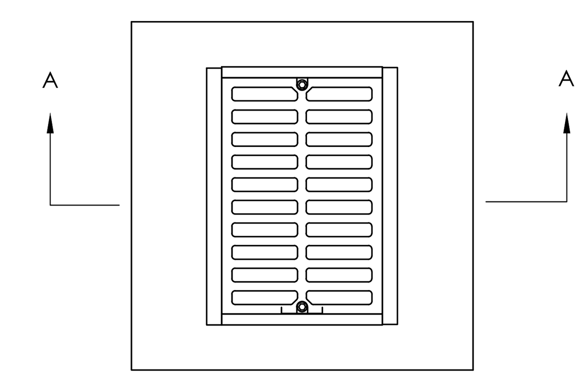


1. EACH LIFT TO BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY PER ASTM D-1557.

5A O/W/S CONCRETE PAD SECTION

SCALE: NTS

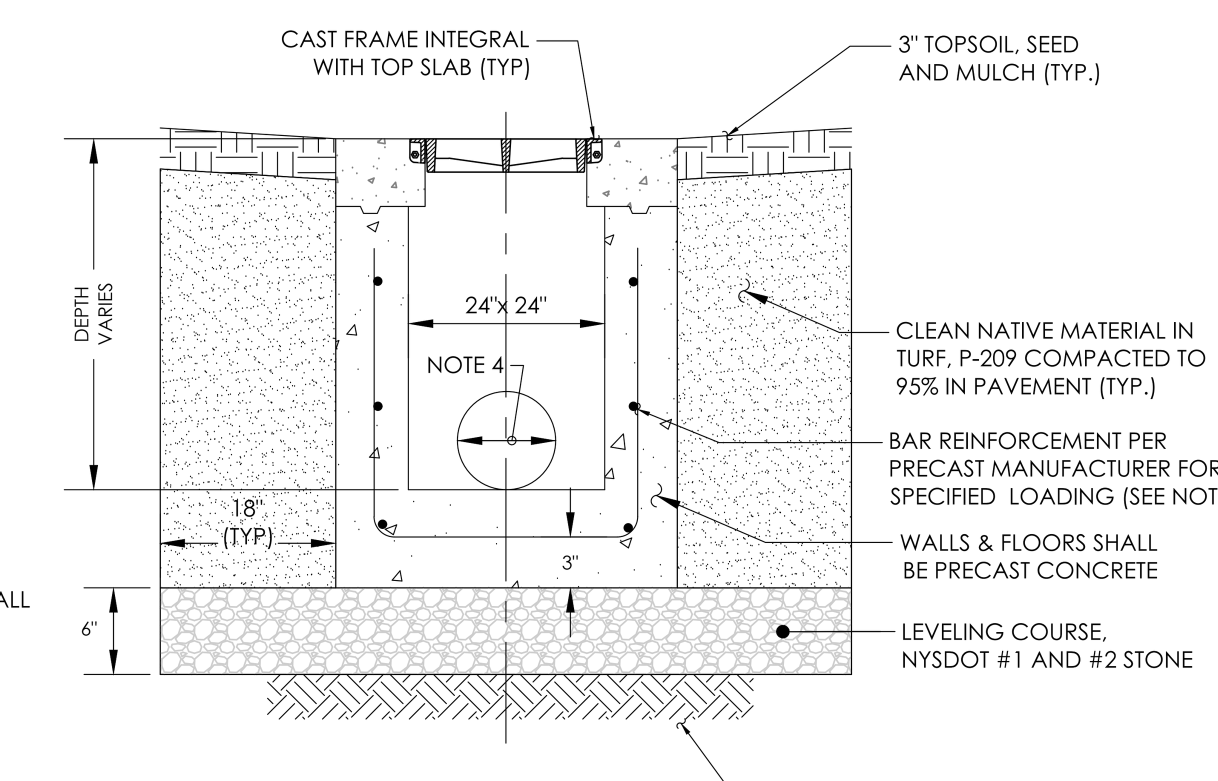
FRAME AND GRATE:
EAST JORDAN IRON WORKS, #5630, EXTRA HEAVY DUTY AIRPORT CASTING OR EQUAL



PLAN

NOTES:

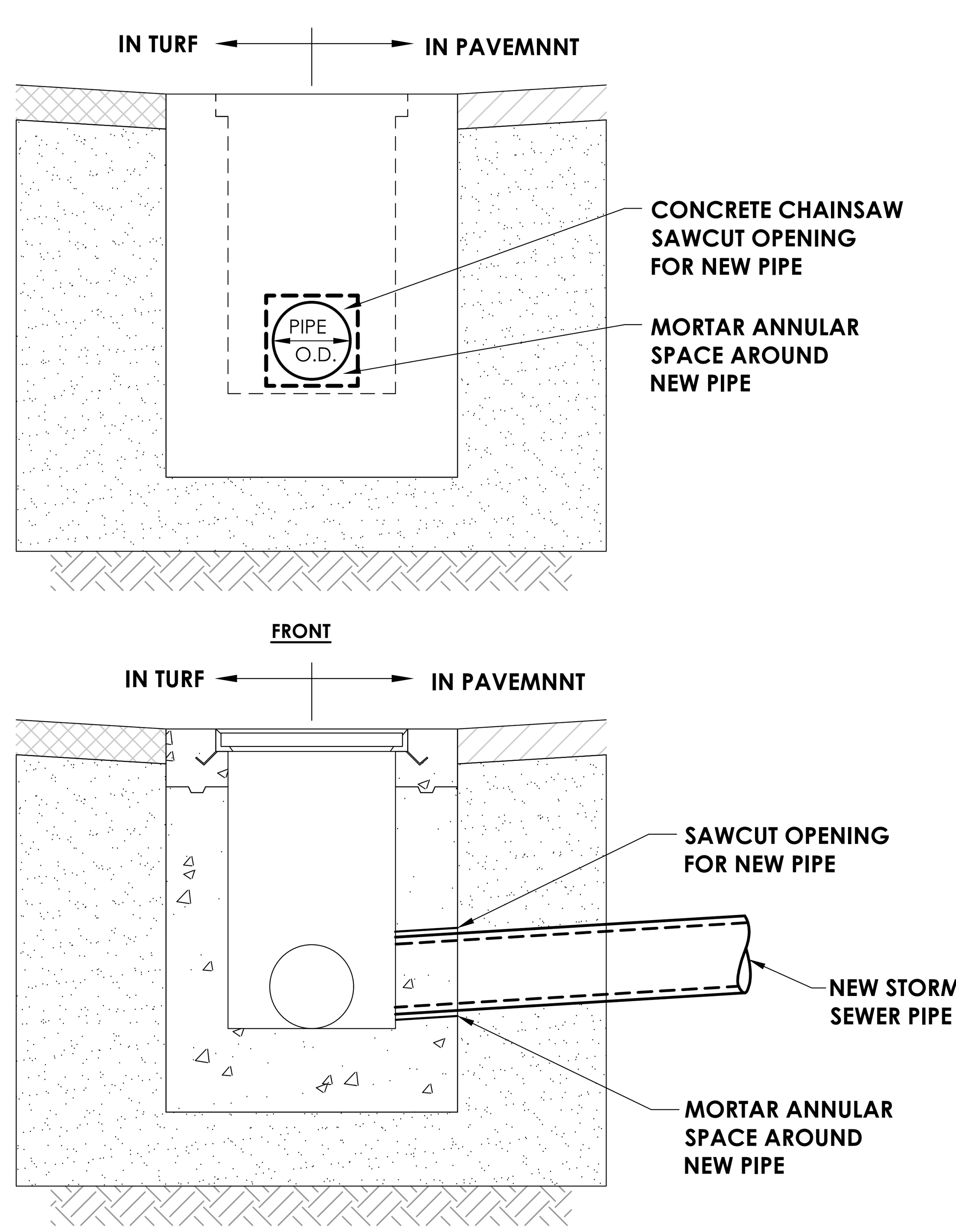
1. PRECAST CATCH BASINS AND FRAMES AND GRATES SHALL BE DESIGNED FOR ~100,000 LB DUAL WHEEL GEAR AIRCRAFT LOADING.
2. GRATE SHALL BE BOLTED CLOSED WITH STAINLESS STEEL FASTNERS.
3. APPLY BITUMINOUS COATING INSIDE AND OUT.
4. PROVIDE ADEQUATE KNOCKOUTS FOR SPECIFIED PIPE SIZES AND TYPE SUCH THAT PIPE CAN BE INSTALLED AT INVERT ELEVATIONS GIVEN IN THE DRAWINGS. SEAL PIPE CONNECTIONS AT KNOCKOUTS WITH MORTAR.



SECTION A-A

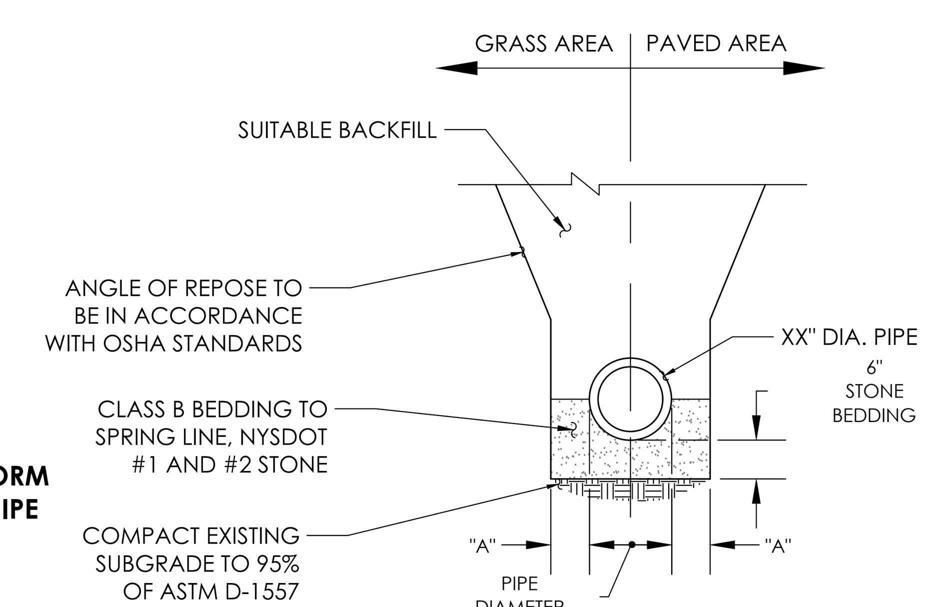
6 TYPICAL CATCH BASIN

SCALE: NTS



7 CONNECT NEW PIPE TO EXISTING STRUCTURE

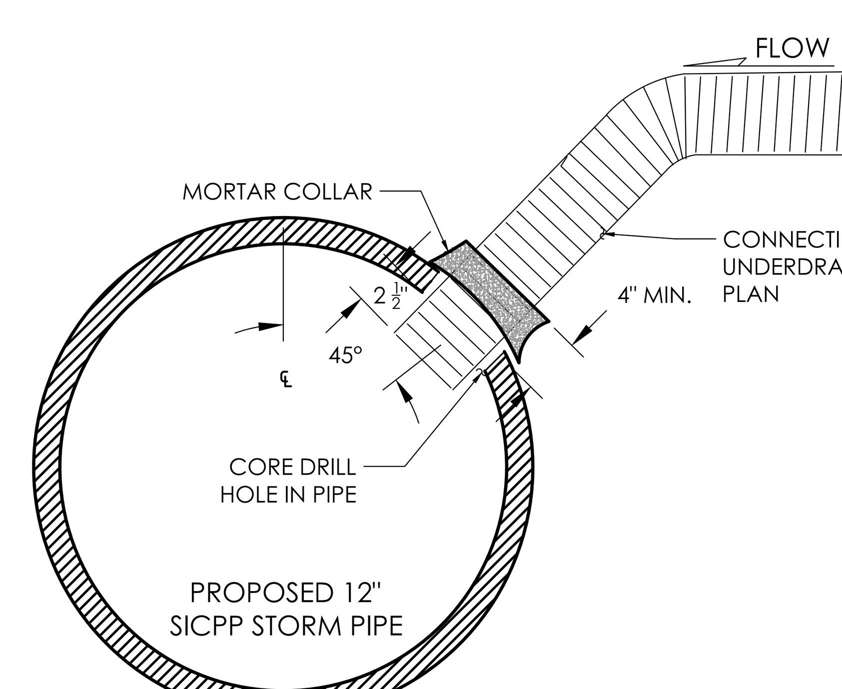
SCALE: NTS



PIPE DIAMETER	"A"
UP TO 18"	12"
21" AND UP	18"

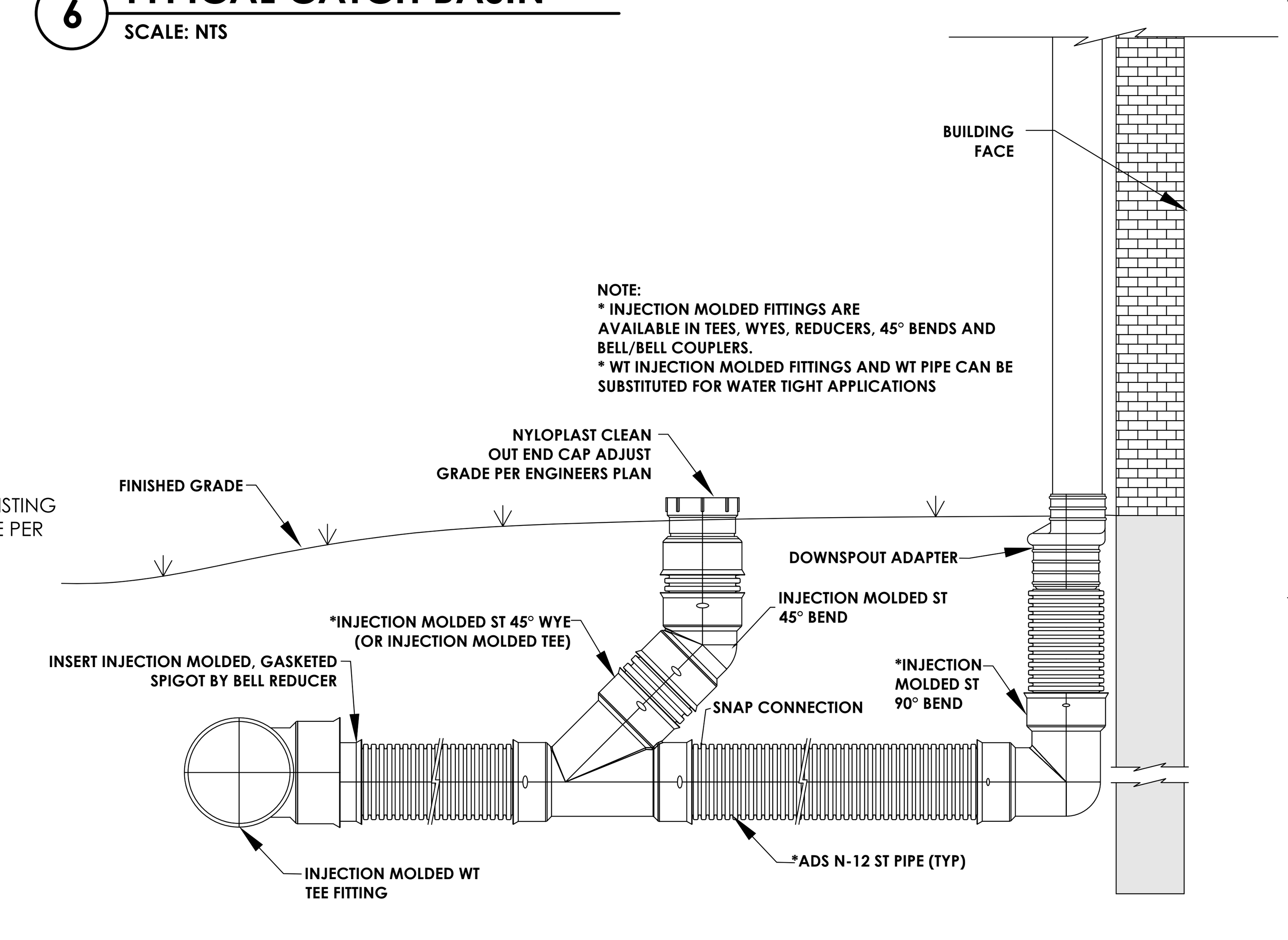
8 TYPICAL PIPE TRENCHING

SCALE: NTS



9 CONNECT EXISTING UNDERDRAIN TO PIPE

SCALE: NTS



10 ROOF DRAIN DETAIL WITH CLEANOUT

SCALE: NTS

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SKY HARBOUR HANGAR DEVELOPMENT

Stamp:

STATE OF NEW YORK – MATTHEW JAMES NISSEN – LICENSED PROFESSIONAL ENGINEER – 104260

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White Plains, NY 10604

Revisions:

MARK	DATE	DESCRIPTION

PROJECT NO:	23000149.0019
CAD DWG FILE:	23000149.0019 Details.dwg
DRAWN BY:	AG, ZJH
CHECKED BY:	MJN

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Sheet Title:

Pavement Sections & Details

C-501

April 2025

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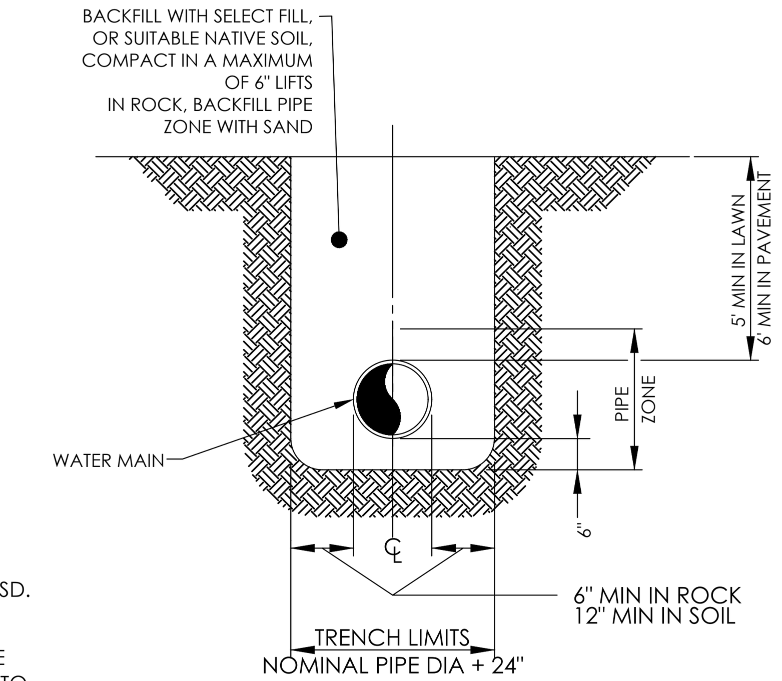
STANDARD NOTES FOR COMMERCIAL PROJECTS

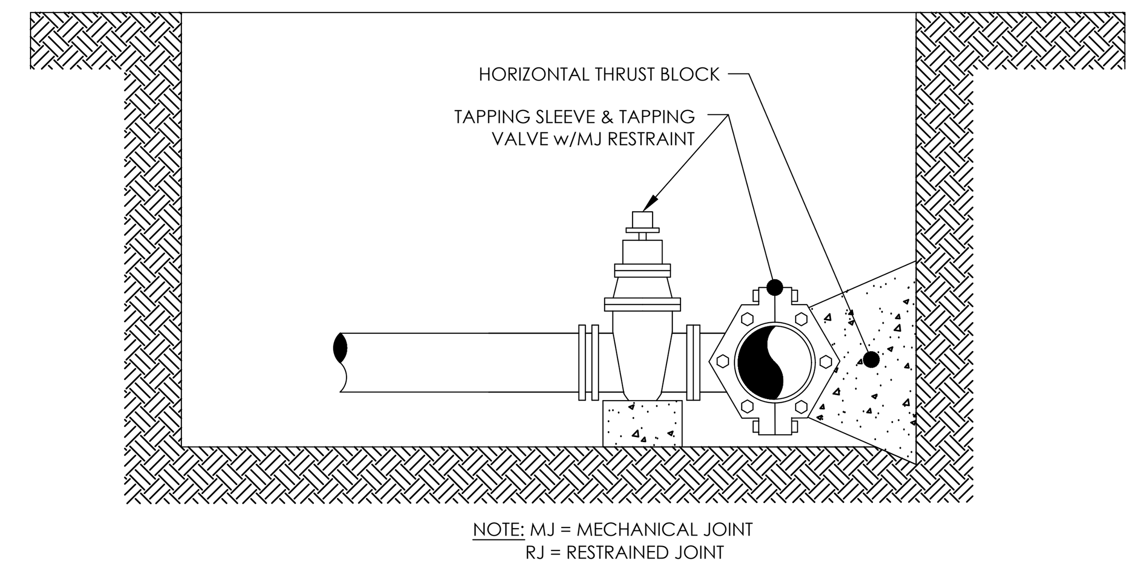
THE DESIGN, CONSTRUCTION AND INSTALLATION SHALL BE IN ACCORDANCE WITH THIS PLAN AND GENERALLY ACCEPTED STANDARDS IN EFFECT AT THE TIME OF CONSTRUCTION WHICH INCLUDE:

1. "RECOMMENDED STANDARDS FOR WATER WORKS (TEN STATES)"
2. "NEW YORK STATE DEPARTMENT OF HEALTH AND DUTCHESS COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION POLICIES, PROCEDURES AND STANDARDS."
3. "DUTCHESS COUNTY AND NEW YORK STATE SANITARY CODES."
4. "DUTCHESS COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION CERTIFICATE OF APPROVAL LETTER."
5. THIS PLAN IS APPROVED AS MEETING THE APPROPRIATE AND APPLIED TECHNICAL STANDARDS, GUIDELINES, POLICIES AND PROCEDURES FOR ARRANGEMENT OF WATER SUPPLY FACILITIES.
6. UPON COMPLETION OF THE FACILITIES, THE FINISHED WORKS SHALL BE INSPECTED, TESTED, AND CERTIFIED COMPLETE TO THE DC EHSD BY THE NEW YORK STATE REGISTERED DESIGN PROFESSIONAL SUPERVISING CONSTRUCTION. NO PART OF THE FACILITIES SHALL BE PLACED INTO SERVICE UNTIL ACCEPTED BY THE DC EHSD.
7. APPROVAL OF ANY PLAN(S) OR AMENDMENT THERETO SHALL BE VALID FOR A PERIOD OF 5 YEARS FROM THE DATE OF APPROVAL. FOLLOWING THE EXPIRATION OF SAID APPROVAL, THE PLAN(S) SHALL BE RE-SUBMITTED TO THE COMMISSIONER OF HEALTH FOR CONSIDERATION FOR RE-APPROVAL. RE-SUBMISSION OR REVISED SUBMISSION OF PLANS AND/OR ASSOCIATED DOCUMENTS SHALL BE SUBJECT TO COMPLIANCE WITH THE TECHNICAL STANDARDS, GUIDELINES, POLICIES AND PROCEDURES IN EFFECT AT THE TIME OF THE RE-SUBMISSION.
8. ALL ONSITE WASTEWATER TREATMENT SYSTEM EXISTING OR APPROVED WITHIN 300 FEET OF THE PROPOSED WELLS ARE SHOWN ON THIS PLAN ALONG WITH ANY OTHER ENVIRONMENTAL HAZARDS IN THE AREA THAT MAY AFFECT THE DESIGN AND FUNCTIONAL ABILITY OF THE WELL.
9. ALL PROPOSED WELLS AND SERVICE LINES ON THIS PLAN ARE ACCESSIBLE FOR INSTALLATION AND PLACEMENT.
10. NO CELLAR, FOOTING, FLOOR, GARAGE, COOLER OR ROOF DRAINS SHALL BE DISCHARGED WITHIN 50 FEET OF ANY WELL.
11. ALL REQUIRED EROSION & SEDIMENT CONTROL AND STORMWATER POLLUTION PREVENTION WATER QUALITY & QUANTITY CONTROL STRUCTURES, PERMANENT AND TEMPORARY, ARE SHOWN ON THE PLANS.
12. ALL SERVICE LINES ARE THE RESPONSIBILITY OF THE OWNER UP TO THE PROPERTY LINE. THE WATER COMPANY SHALL BE RESPONSIBLE FOR ALL VALVES AND PIPES WHICH ARE NOT ON THE OWNER'S PROPERTY.
13. NO BUILDINGS ARE TO BE OCCUPIED AND THE NEW WATER SYSTEM SHALL NOT BE PLACED INTO SERVICE, UNTIL A "COMPLETED WORKS APPROVAL" IS ISSUED UNDER SECTION 5-1.22(D) OF PART 5 OF THE NEW YORK STATE SANITARY CODE (10NYCRR5).
14. ALL WATER SYSTEM CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARD AND GENERAL SPECIFICATIONS OF THE AGENCIES HAVING JURISDICTION OF THE WATER SUPPLY SYSTEM AND CONSTRUCTION AREA. THE CONTRACTOR IS RESPONSIBLE TO COMPLY WITH ALL APPLICABLE NATIONAL AND LOCAL CODES. THE CONTRACTOR IS TO NOTIFY THE DESIGNER IMMEDIATELY IF CONTRACT DOCUMENTS CONFLICT WITH ANY SUCH CODES.
15. PROPOSED WATER MAIN IS TO BE INSTALLED AT MINIMUM DEPTH OF 5.0 FEET UNLESS OTHERWISE DIRECTED BY THE DESIGNER. WATER MAIN SHALL BE INSTALLED WITH MINIMUM 18 INCHES OF VERTICAL SEPARATION FROM ANY EXISTING OR PROPOSED UTILITY. WATER MAINS SHALL CROSS SEWER MAINS AT HIGHER ELEVATION THAN THE SEWER MAIN UNLESS OTHERWISE DIRECTED BY THE ENGINEER. CROSSINGS SHALL BE ARRANGED SO THAT WATER MAIN JOINTS ARE AS FAR AS POSSIBLE FROM THE SEWER MAIN JOINTS. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE NATIONAL AND LOCAL CODES.
16. CONNECTION TO EXISTING WATER MAIN SHALL BE MADE ONLY AFTER HYDROSTATIC AND BACTERIOLOGICAL TESTS HAVE BEEN SUCCESSFULLY COMPLETED AND REVIEWED BY THE ENGINEER AND THE DUTCHESS COUNTY EHSD. TESTING SHALL BE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL SURFACE STRUCTURES, SUCH AS HYDRANTS, VALVE PITS AND CURB BOXES SHALL BE SET TO GRADE AS INDICATED ON THE PLANS UNLESS OTHERWISE DIRECTED BY ENGINEER. SEE TECHNICAL SPECIFICATION X-XXX FOR ADDITIONAL INFORMATION.
18. ALL FITTINGS SHALL CONFORM TO TECHNICAL SPECIFICATION X-XXX UNLESS OTHERWISE DIRECTED BY ENGINEER.
19. ALL PITS SHALL CONFORM TO TECHNICAL SPECIFICATION X-XXX UNLESS OTHERWISE DIRECTED BY ENGINEER
20. RESULTS OF ALL TESTING SHALL BE SUBMITTED TO THE DUTCHESS COUNTY DEPARTMENT OF COMMUNITY AND BEHAVIORAL HEALTH AS PART OR PE CERTIFICATION.
21. ALL EXISTING AND PROPOSED BUILDING SHALL BE EVALUATED FOR THE NEED FOR BACKFLOW PREVENTION PRIOR TO CONNECTION TO THE PROPOSED WATER MAIN.
22. ALL DIRT AND FOREIGN MATTER SHALL BE REMOVED BY A THOROUGH FLUSHING OF THE NEWLY LAID PIPELINE. THE LEAKAGE TEST MAY BE APPLIED TO THE WHOLE LINE OR TO THE VALVED SECTIONS. THE PIPE SHALL BE SUBJECTED TO HYDROSTATIC PRESSURES OF A MINIMUM 150 POUNDS PER SQUARE INCH, BASED ON THE ELEVATION OF THE LOWEST POINT OF THE LINE OR SECTION UNDER TEST, AND 1.25 TIMES THE WORKING PRESSURE AT THE HIGHEST POINT ALONG THE TEST SECTION FOR A PERIOD OF AT LEAST 120 MINUTES, OR LONGER AS MAY BE DIRECTED BY THE ENGINEER. ANY LEAKS SHALL BE STOPPED IN A MANNER SATISFACTORY TO THE ENGINEER AND OWNER. THE PERMISSIBLE LEAKAGE FOR THE SECTION UNDER TEST SHALL NOT EXCEED THE MAXIMUM ALLOWABLE AS SPECIFIED IN THE LATEST AWWA STANDARD SPECIFICATIONS FOR PVC WATER MAINS, DESIGNATION C-605, CURRENT EDITION.
23. DISINFECTION SHALL BE IN ACCORDANCE WITH PROCEDURE SET FORTH IN AWWA STANDARD C-601 AND C-651 CURRENT EDITION(S). PRIOR TO CHLORINATION, ALL DIRECT AND FOREIGN MATTER SHALL BE REMOVED BY A THOROUGH FLUSHING OF THE NEW LAID PIPELINE. THE INITIAL FILLING OF THE PIPELINE SHALL BE WITH A DISINFECTING SOLUTION OF NOT LESS THAN 100 PPM OF CHLORINE. THIS SOLUTION SHALL REMAIN IN THE LINE FOR 24 HOURS. THE CHLORINE RESIDUAL SHALL NOT BE LESS THAN 25 PPM AT ANY POINT IN THE PIPE AT THE END OF THE 24 HOURS RETENTION PERIOD. FLUSHING THE DISINFECTION SOLUTION OF THE NEWLY LAID LINE CAN BEGIN 24 HOURS AFTER THE LINE IS FILLED, BUT UNDER NO CIRCUMSTANCES SHALL THE DISINFECTION SOLUTION REMAIN IN THE LINE MORE THE 48 HOURS. AFTER THE LINE HAS BEEN THOROUGHLY FLUSHED, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO TAKE THE REQUIRED BACTERIA SAMPLES TO A NYSDOH ELAP CERTIFIED LABORATORY. IF THE BACTERIA SAMPLES TAKEN ARE ACCEPTABLE, THE WATER LINE MAY PUT INTO SERVICE AS THE ENGINEER AND OWNER DIRECT. IF THE BACTERIAL SAMPLES ARE NOT SATISFACTORY, THE CHLORINATION PROCEDURE WILL BE REPEATED UNTIL SATISFACTORY SAMPLES ARE OBTAINED. THE CONTRACTOR WILL PROVIDE NECESSARY SAMPLING POINTS. ALL WATER USED IN TESTING, CHLORINATING AND FLUSHING WILL BE OBTAINED WITH PERMISSION FROM THE WATER MAIN OWNER.

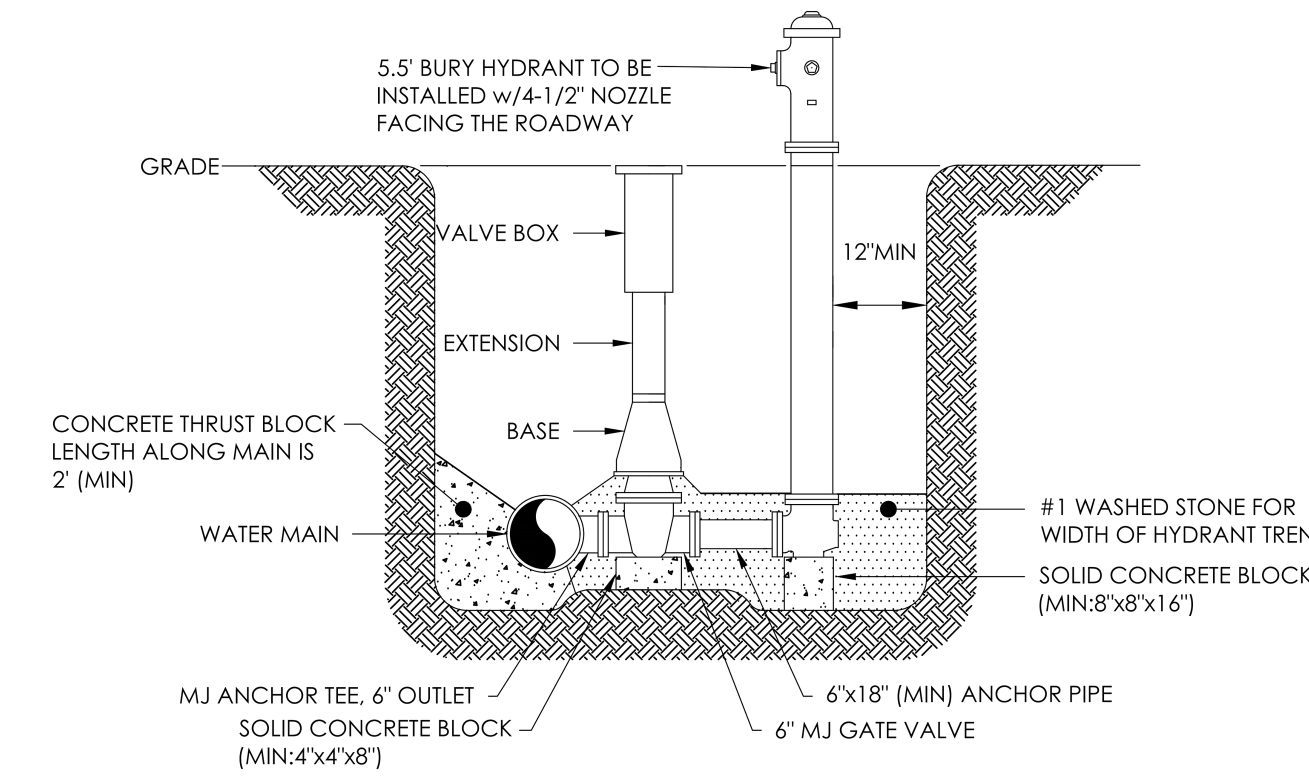
1 WATER MAIN NOTES
SCALE: NTS



2 WATERMAIN TRENCH
SCALE: NTS



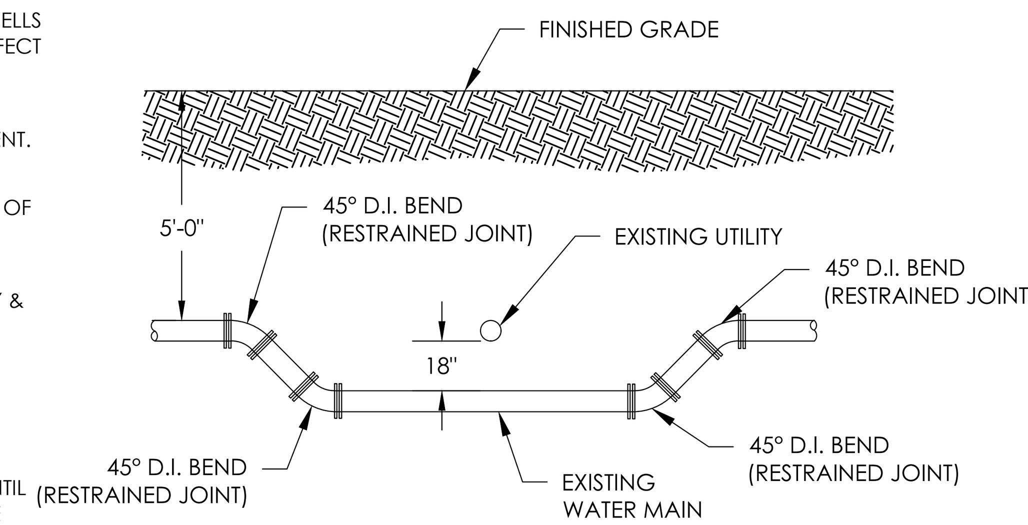
3 TAPPING SLEEVE AND VALVE DETAIL
SCALE: NTS



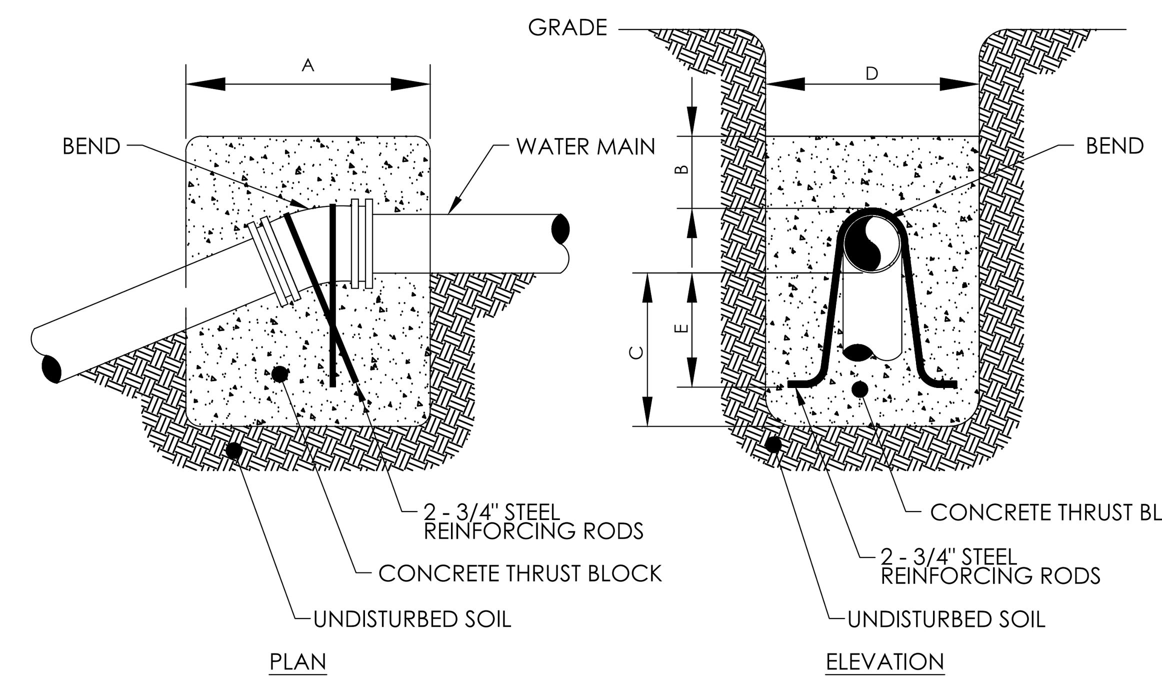
NOTES:

1. ALL DUCTILE IRON PIPE SECTIONS TO BE WRAPPED IN POLYETHYLENE, INCLUDING HYDRANT RISER
2. HYDRANT DRAINS SHALL BE PLUGGED

4 PERPENDICULAR HYDRANT ASSEMBLY
SCALE: NTS

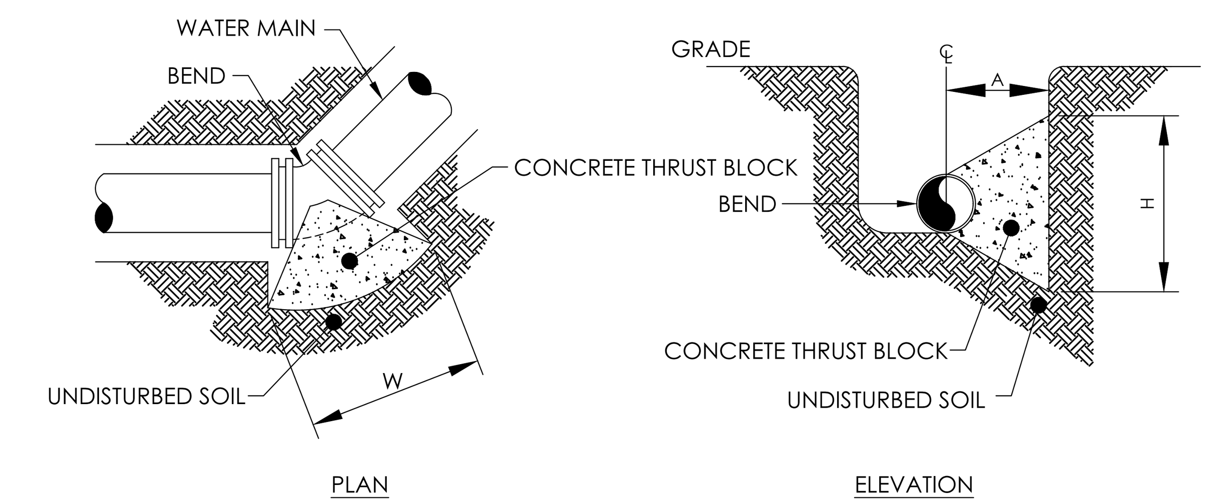


5 WATER MAIN VERTICAL CROSSING
SCALE: NTS



BEND *	MINIMUM VOLUME OF CONCRETE	MINIMUM ALLOWABLE DIMENSIONS FOR VERTICAL THRUST BLOCKS (IN FEET)				
	DIMENSIONS	A	B	C	D	E
8" x 11-1/4°	0.35 C.Y	1.0	2.5	1.0	2.0	0.5
8" x 22-1/2°	0.70 C.Y.	1.5	2.5	1.5	2.0	1.0
8" x 45°	1.40 C.Y.	1.5	2.5	1.5	2.5	1.5

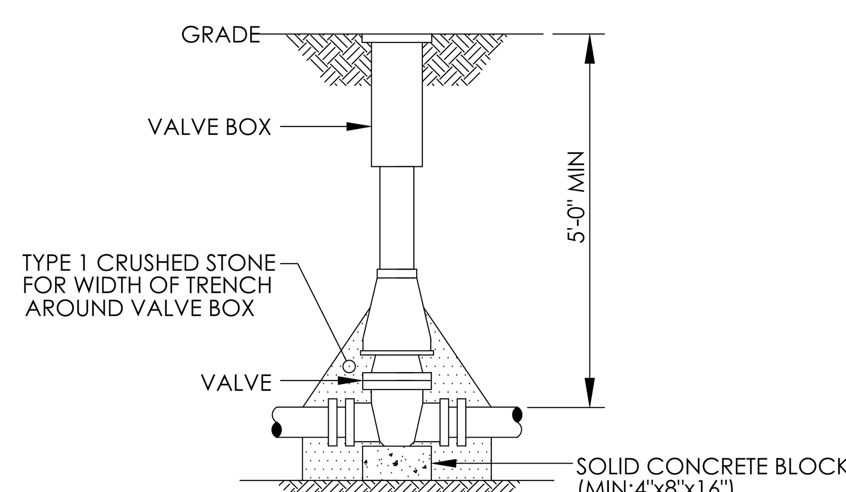
6 VERTICAL THRUST BLOCK
SCALE: NTS



MINIMUM HORIZONTAL THRUST BLOCK DIMENSIONS, IN FEET, TO BE POURED AGAINST UNDISTURBED SOIL			
FITTING	H	W	A
8" x 11-1/4° BEND	1.0	2.0	1.5
8" x 22-1/2° BEND	1.5	3.0	1.5
8" x 45° BEND	2.0	4.0	2.0
8" x 90° BEND	3.0	6.0	2.5
8" TEE OR PLUG	2.5	5.0	2.0

NOTE: WIDTH (W) OF BLOCK SHALL NOT EXCEED TWICE THE HEIGHT (H).

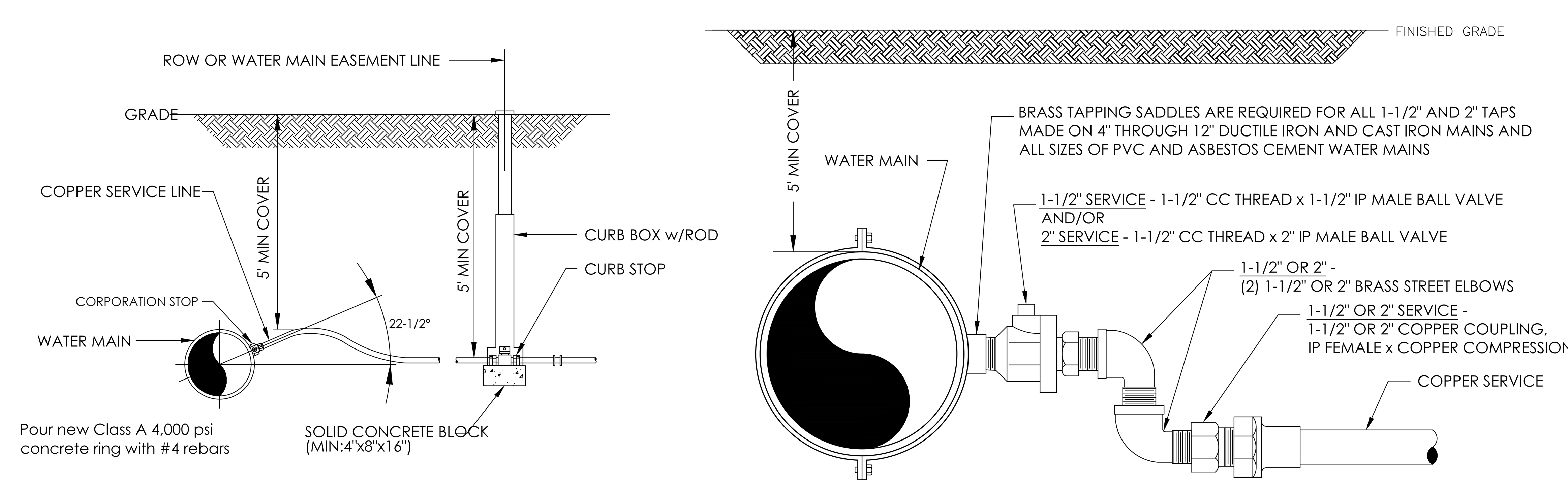
7 HORIZONTAL THRUST BLOCK FOR BENDS
SCALE: NTS



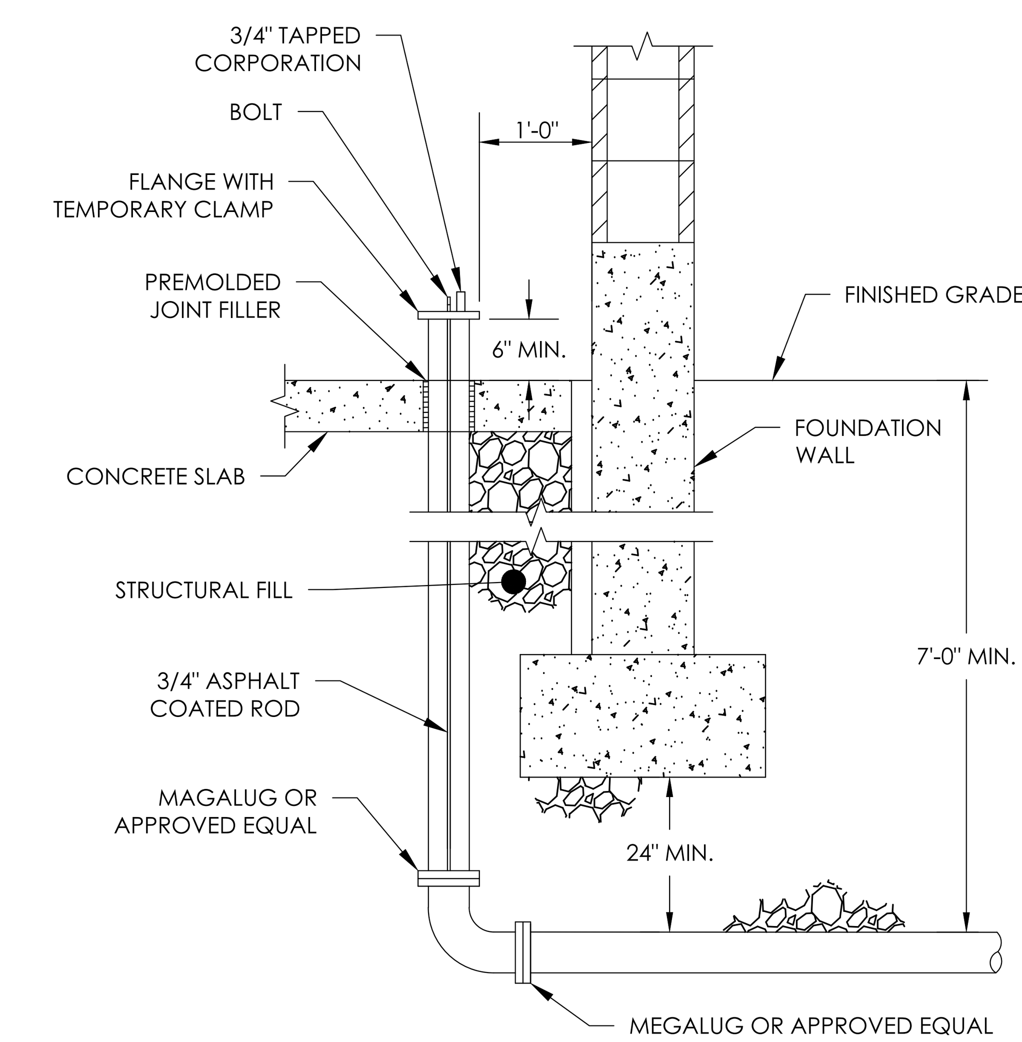
NOTE:

1. VALVE BOX SHALL BE CENTERED ON VALVE AND SET ON COMPACTED BACKFILL.
2. VALVE SHALL NOT SUPPORT VALVE BOX.
3. ALL BODY AND BONNET BOLTS SHALL BE STAINLESS STEEL.
4. ALL VALVES SHALL BE OPEN LEFT EXCEPT VALVES 12" AND SMALLER

8 WATER VALVE DETAIL
SCALE: NTS



9 1 1/2" AND 2" SERVICE INSTALLATION
SCALE: NTS



10 WATER LINE LEAD-IN DETAIL
SCALE: NTS

PASSERO engineering architecture

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Principal-in-Charge: Andrew Holesko
Project Manager: Matt Nissen, P.E.
Designed by: LDS, ZJH

Project:
SKY HARBOUR HANGAR DEVELOPMENT

Stamp:

Site:
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263 New Hackensack Rd.
Wappingers Falls, NY 12590

Client:
Sky Harbour LLC
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White Plains, NY 10604

Revisions:

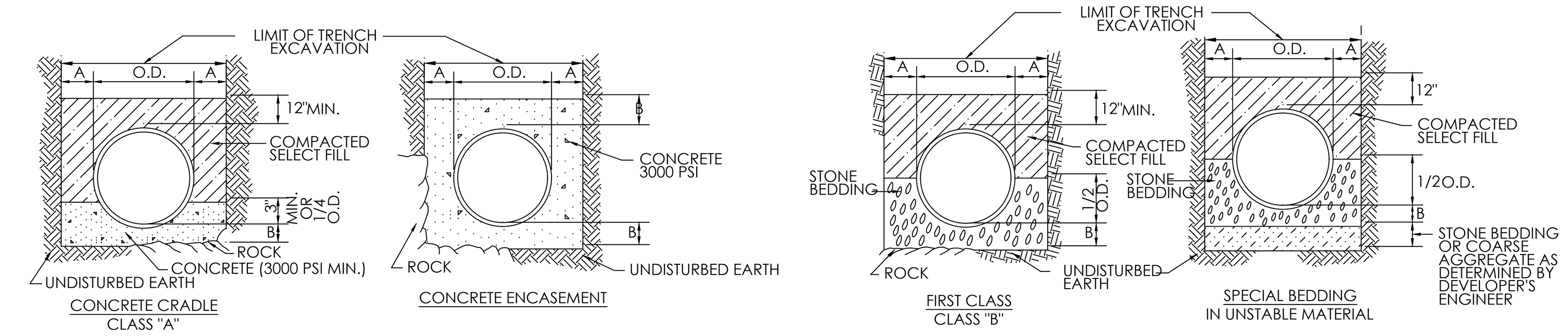
MARK	DATE	DESCRIPTION

PROJECT NO: 23000149.0019
CAD DWG FILE: 23000149.0019 Details.dwg
DRAWN BY: AG, ZJH
CHECKED BY: MJN

Sheet Title:
Utility Details - Sheet 1

C-511

April 2025

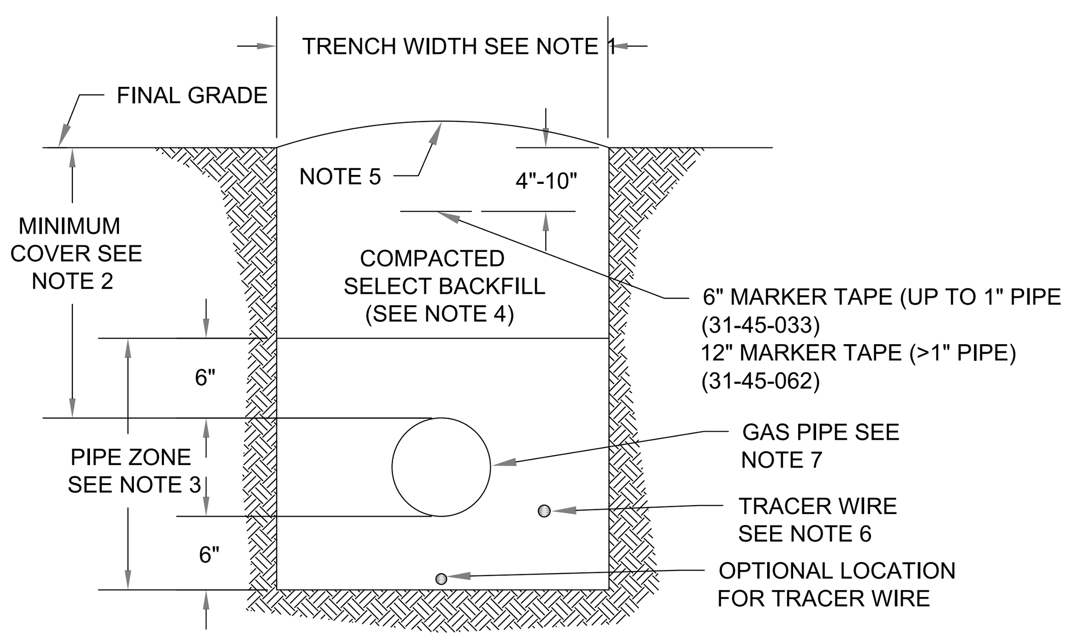


PIPE DIA.	DIM. A	DIM. B
UP TO 18"	1.0'	6"
21" TO 36"	1.5'	9"
OVER 36"	1.5'	12"

1. TRENCH BACKFILL SHALL BE AS REQUIRED BY THE HIGHWAY OWNER.
2. SELECT FILL SHALL BE SAND, GRAVEL, AND SIMILAR MATERIAL WHICH SHALL BE FREE FROM CLAY, LOAM, ORGANIC MATERIAL, DEBRIS, FROZEN MATERIAL AND SHALL CONTAIN ONLY SMALL AMOUNTS OF STONE, PEBBLES OR LUMPS OVER ONE INCH IN GREATEST DIMENSION BUT NONE OVER TWO INCHES IN GREATEST DIMENSION.
3. STONE BEDDING SHALL MEAN APPROVED IMPORTED AGGREGATE MEETING THE REQUIREMENTS OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATION, JAN 2, 1990 EDITION, AS REVISED, SUBSECTION 703-0201 "CRUSHED STONE". PRIMARY SIZE 1 OR A MIXTURE OF PRIMARY SIZES 1 AND 2.
4. COARSE AGGREGATE SHALL MEAN APPROVED IMPORTED AGGREGATE MEETING THE REQUIREMENTS OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATION, JAN 2, 1990 EDITION, AS REVISED, SUBSECTION 703-0201 "CRUSHED STONE". PRIMARY SIZE 3 AND/OR 4
5. THIS FIGURE APPLIES TO SANITARY MAINLINE AND LATERAL PIPE INSTALLATION AS WELL AS FORCEMAINS.

3 STORM SEWER/SANITARY SEWER BEDDING DETAILS

SCALE: NTS



NOTES:

1. THE MINIMUM TRENCH WIDTH SHALL BE AS FOLLOWS:

PIPE SIZE	TRENCH WIDTH
UP TO 1" CTS	4"
1 1/4" - 2"	12"
3" - 6"	PIPE O.D. +12"

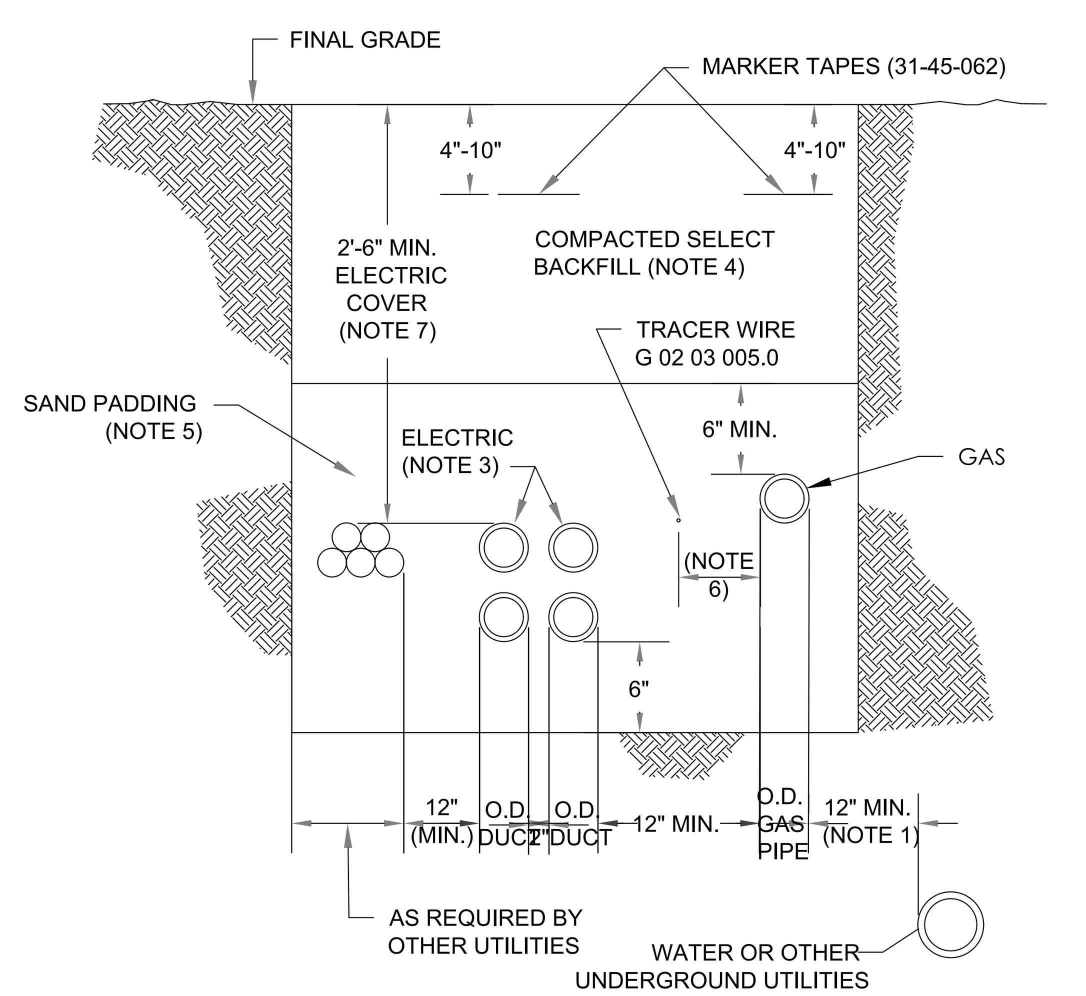
2. MINIMUM DEPTH OF COVER FROM FINAL GRADE TO TOP OF PIPE SHALL BE AS FOLLOWS

IN EARTH	IN ROCK
18"	12"

   REFER TO CENTRAL HUDSON GAS AND ELECTRIC G 01 03 001.0 FOR SPECIFIC COVER REQUIREMENTS IN CULTIVATED LAND OR NAVIGABLE WATERWAYS AND G 01 03 004.1 FOR SHALLOW COVER. GREATER DEPTH MAY BE REQUIRED BY GOVERNING AUTHORITY.
3. SAND PADDING IS REQUIRED IN THE PIPE ZONE. REFER TO CENTRAL HUDSON GAS AND ELECTRIC G 01 3 005.0 FOR THE DEFINITION OF SAND PADDING. IT SHALL BE THOROUGHLY COMPACTED IN 12" LIFTS OR AS REQUIRED BY THE GOVERNING AUTHORITY.
4. COMPACTED BACKFILL MAY BE ON-SITE MATERIAL PROVIDED IT CONTAINS NO ROCKS OR STONES OVER 6" IN DIAMETER, ROOTS, STUMPS, OR CONSTRUCTION DEBRIS. IT SHALL BE THOROUGHLY COMPACTED IN 12" LIFTS OR AS REQUIRED BY THE GOVERNING AUTHORITY
5. THE BACKFILLED TRENCH SHALL BE CROWNED SLIGHTLY TO ALLOW FOR FUTURE SETTLEMENT.
6. FOR PLASTIC PIPE, TRACER WIRE SHALL BE INSTALLED PER CENTRAL HUDSON GAS AND ELECTRIC G 02 03 005.0 AND G 02 03 006.0
7. IN AREAS WHERE PLASTIC PIPE IS LESS THAT 6" DIAMETER IS INSTALLED BELOW THE WATER TABLE, AN UNOPENED 75 LB. BAG OF CONCRETE MIX SHALL BE PLACED DIRECTLY OVER THE PIPE EVERY 40 FEET TO PREVENT THE PIPE FROM FLOATING UP AFTER INSTALLATION. THE BAGS SHALL BE BACKFILLED ALONG THE PIPE.
8. REFER TO CENTRAL HUDSON GAS AND ELECTRIC G 02 01 037.0 TO DETERMINE THE NEED FOR SHORING OR SLOPING.
9. REFER TO CENTRAL HUDSON GAS AND ELECTRIC G 01 03 004.0 FOR MINIMUM BELOW GRADE CLEARANCES.
10. IN STEEP TERRAIN, TRENCH BREAKERS AND EROSION CONTROL MAY BE REQUIRED. CONSULT WITH GAS AND MECHANICAL ENGINEERING.

4 GAS TRENCHING AND BACKFILL REQUIREMENTS

SCALE: NTS

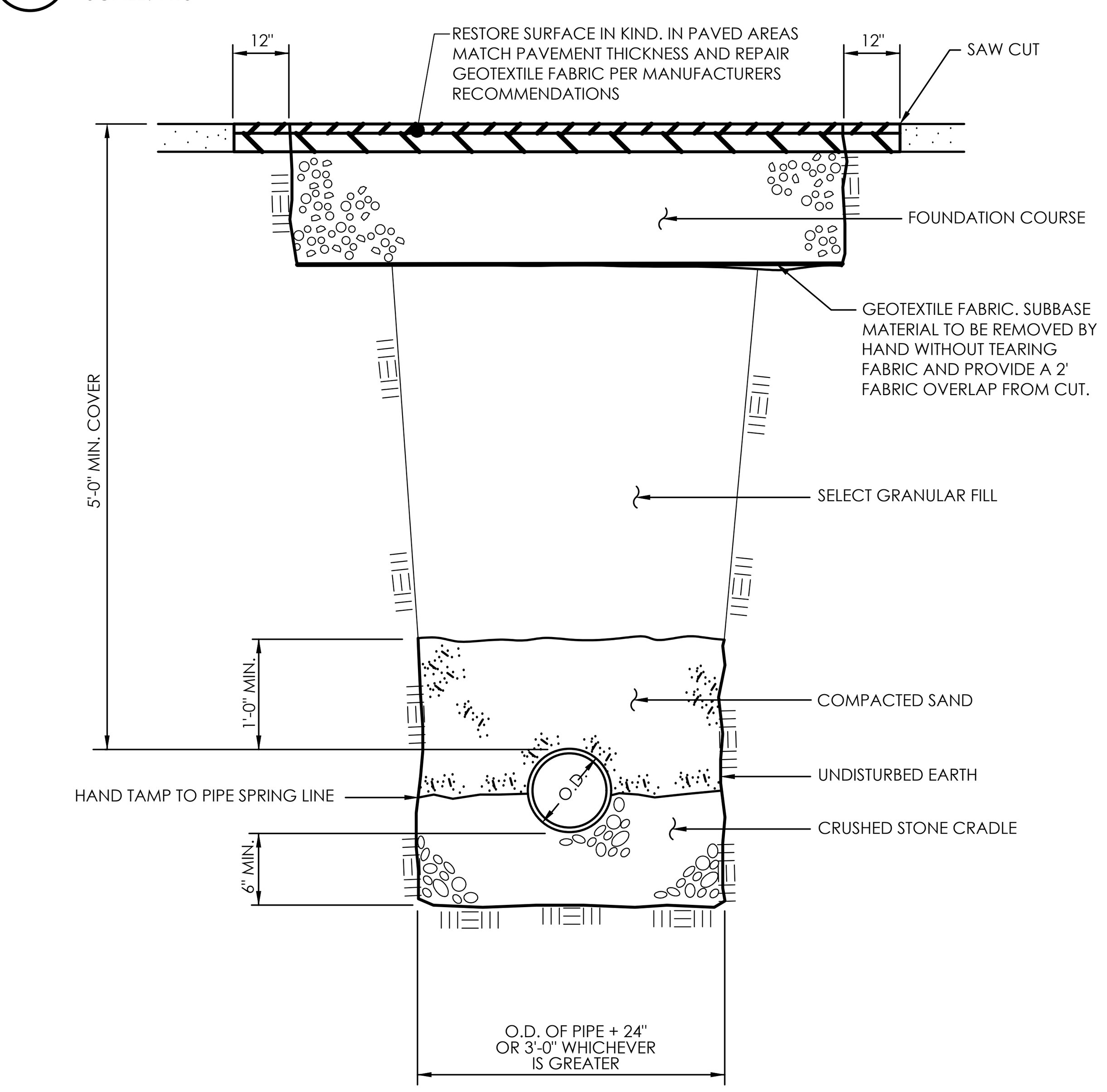


NOTES:

1. THE MINIMUM CLEARANCE FROM GAS TO OTHER UTILITIES SUCH AS WATER AND SEWER SHALL BE 12". CONSULT WITH OTHER UTILITIES OR REVIEW LOCAL ORDINANCES FOR ADDITIONAL CLEARANCE REQUIREMENTS IF 12" CLEARANCE NOT POSSIBLE REFER TO CENTRAL HUDSON GAS & ELECTRIC STANDARD G 01 03 004.0.
2. TELECOMMUNICATIONS CONDUIT & INNERDUCT SIZE/MATERIALS AS REFERRED ON UTILITY PLANS AND ELECTRICAL PLANS.
3. SPACING SHALL BE MAINTAINED FOR CONCRETE ENCASED DUCTS.
4. COMPACTED SELECT BACKFILL MAY BE ON-SITE MATERIAL PROVIDED IT CONTAINS NO ROCKS OR STONES OVER 6" IN DIAMETER, ROOTS, STUMPS OR CONSTRUCTION DEBRIS.
5. REFER TO CENTRAL HUDSON GAS AND ELECTRIC CONSTRUCTION STANDARD G 01 03 005.0 FOR DEFINITION OF SAND PADDING.
6. LOCATE TRACER WIRE A SUFFICIENT DISTANCE FROM PLASTIC PIPE TO MINIMIZE TRACER WIRE TO PIPE CONTACT

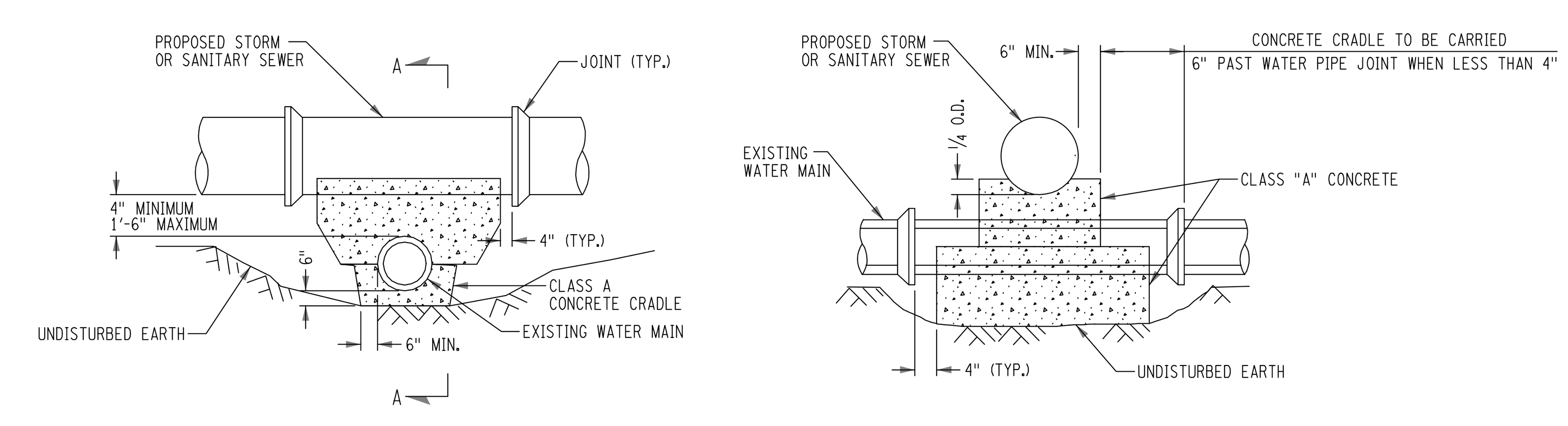
5 TYPICAL COMMON TRENCH CONFIGURATION

SCALE: NTS



6 TYPICAL SEWER TRENCH SECTION IN PAVEMENT AREAS

SCALE: NTS



UTILITY CROSSING - VERTICAL OBSTRUCTION
LACKING REQUIRED VERTICAL OFFSET
PROPOSED STORM SEWER CROSSING WATER MAIN WITH 4" - 18" OF VERTICAL SEPARATION

7 UTILITY CROSSING - VERTICAL OBSTRUCTION DETAIL

SCALE: NTS

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Project Manager: Matt Nissen, P.E.
Designed by: LDS, ZJH

Project:

SKY HARBOUR HANGAR DEVELOPMENT

Stamp:

Site:

Hudson Valley Regional Airport
263 New Hackensack Rd.
Wappingers Falls, NY 12590

Client:

Sky Harbour LLC
136 Tower Rd., Suite 205
White Plains, NY 10604

Revisions:

MARK	DATE	DESCRIPTION

PROJECT NO: 23000149.0019
CAD DWG FILE: 23000149.0019 Details.dwg
DRAWN BY: AG, ZJH
CHECKED BY: MJN

Sheet Title:

Utility Details - Sheet 2

C-512

April 2025

STANDARD NOTES FOR COMMERCIAL PROJECTS (ONSITE SEWAGE DISPOSAL & CENTRAL WATER)

THE DESIGN, CONSTRUCTION AND INSTALLATION SHALL BE IN ACCORDANCE WITH THIS PLAN AND GENERALLY ACCEPTED STANDARDS IN EFFECT AT THE TIME OF CONSTRUCTION WHICH INCLUDE:

1. "NEW YORK STATE DESIGN STANDARDS FOR INTERMEDIATE SIZED WASTEWATER TREATMENT SYSTEMS", NYSDEC
2. "APPENDIX 75-A, WASTE TREATMENT - INDIVIDUAL HOUSEHOLD SYSTEMS, NEW YORK STATE SANITARY CODE."
3. "RECOMMENDED STANDARDS FOR SEWAGE TREATMENT WORKS, (TEN STATES)."
4. "RECOMMENDED STANDARDS FOR WATER WORKS (TEN STATES)"
5. "NEW YORK STATE DEPARTMENT OF HEALTH AND DUTCHESS COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION POLICIES, PROCEDURES AND STANDARDS."
6. "DUTCHESS COUNTY AND NEW YORK STATE SANITARY CODES."
7. "DUTCHESS COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION CERTIFICATE OF APPROVAL LETTER."
8. THIS PLAN IS APPROVED AS MEETING THE APPROPRIATE AND APPLIED TECHNICAL STANDARDS, GUIDELINES, POLICIES AND PROCEDURES FOR ARRANGEMENT OF SEWAGE DISPOSAL AND TREATMENT AND WATER SUPPLY FACILITIES.
9. UPON COMPLETION OF THE FACILITIES, THE FINISHED WORKS SHALL BE INSPECTED, TESTED, AND CERTIFIED COMPLETE TO THE DC EHSD BY THE NEW YORK STATE REGISTERED DESIGN PROFESSIONAL SUPERVISING CONSTRUCTION. NO PART OF THE FACILITIES SHALL BE PLACED INTO SERVICE UNTIL ACCEPTED BY THE DC EHSD.
10. APPROVAL OF ANY PLAN(S) OR AMENDMENT THERETO SHALL BE VALID FOR A PERIOD OF 5 YEARS FROM THE DATE OF APPROVAL. FOLLOWING THE EXPIRATION OF SAID APPROVAL, THE PLAN(S) SHALL BE RE-SUBMITTED TO THE COMMISSIONER OF HEALTH FOR CONSIDERATION FOR RE-APPROVAL. RE-SUBMISSION OR REVISED SUBMISSION OF PLANS AND/OR ASSOCIATED DOCUMENTS SHALL BE SUBJECT TO COMPLIANCE WITH THE TECHNICAL STANDARDS, GUIDELINES, POLICIES AND PROCEDURES IN EFFECT AT THE TIME OF THE RE-SUBMISSION.
11. ALL ONSITE WASTEWATER TREATMENT SYSTEM EXISTING OR APPROVED WITHIN 300 FEET OF THE PROPOSED ONSITE WASTEWATER TREATMENT SYSTEM ARE SHOWN ON THIS PLAN ALONG WITH ANY OTHER ENVIRONMENTAL HAZARDS IN THE AREA THAT MAY AFFECT THE DESIGN AND FUNCTIONAL ABILITY OF THE ONSITE WASTEWATER TREATMENT SYSTEM.
12. IT SHALL BE DEMONSTRATED BY THE CONTRACTOR TO THE DC EHSD FIELD INSPECTOR AND/OR DESIGN PROFESSIONAL THAT THE TANK IS SEALED, WATERTIGHT AND ACCEPTABLE FOR USE. THIS SHALL REQUIRE, AT A MINIMUM, THE FILLING OF THE TANK WITH WATER TO OBSERVE IF IT IS IN FACT SEALED, WATERTIGHT AND ACCEPTABLE FOR USE. THE TANK MUST ALSO MEET ANY LOCAL TESTING REQUIREMENTS, INCLUDING POSSIBLE ELECTRICAL AND SAFETY STANDARDS.
13. ALL PROPOSED SERVICE LINES ON THIS PLAN ARE ACCESSIBLE FOR INSTALLATION AND PLACEMENT.
14. NO CELLAR, FOOTING, FLOOR, GARAGE, COOLER OR ROOF DRAINS SHALL BE DISCHARGED INTO THE ONSITE WASTEWATER TREATMENT SYSTEM.
15. ALL BUILDINGS SHALL BE CONSTRUCTED AT AN ELEVATION HIGH ENOUGH TO ENSURE GRAVITY FLOW TO THE ONSITE WASTEWATER TREATMENT SYSTEM.
16. THERE SHALL BE NO VEHICULAR TRAFFIC OVER THE ONSITE WASTEWATER TREATMENT SYSTEM. PRIOR TO CONSTRUCTION, THE AREA OF THE SYSTEM SHALL BE STAKED OUT AND FENCED OFF.
17. ONSITE WASTEWATER TREATMENT SYSTEMS SHALL NOT BE INSTALLED IN WET OR FROZEN SOIL.
18. THE DC EHSD SHALL BE NOTIFIED PRIOR TO THE BACKFILLING OF ANY COMPLETED ONSITE WASTEWATER TREATMENT SYSTEM SO THAT A FINAL INSPECTION MAY BE PERFORMED.
19. THE DC EHSD SHALL BE NOTIFIED SIXTY DAYS PRIOR TO ANY CHANGE IN USE; USE CHANGES MAY REQUIRE RE-APPROVAL BY THE DC EHSD.
20. ALL REQUIRED EROSION & SEDIMENT CONTROL AND STORMWATER POLLUTION PREVENTION WATER QUALITY & QUANTITY CONTROL STRUCTURE, PERMANENT AND TEMPORARY, ARE SHOWN ON THE PLANS.
21. NO BUILDINGS ARE TO BE OCCUPIED AND THE NEW WATER SYSTEM SHALL BE PLACED INTO SERVICE UNTIL "COMPLETED WORKS APPROVAL" IS ISSUED UNDER SECTION 5-1.22(D) OF PART 5 OF THE NEW YORK STATE SANITARY CODE (10NYCRR5).
22. THE UNDERSIGNED OWNERS OF THE PROPERTY HEREON STATE THAT THEY ARE FAMILIAR WITH THIS MAP, ITS CONTENTS AND ITS LEGENDS AND HEREBY CONSENT TO ALL SAID TERMS AND CONDITIONS AND STATED HEREON.

SEWAGE DISPOSAL SYSTEM DESIGN NOTES

1. SEPTIC SYSTEM DESIGN IS BASED UPON DESIGN FLOWS FROM NEW STANDARD FIXTURES, NO FOOTING DRAINS OR ROOF DRAINS, WATER SOFTENER BACKWASHES, ETC. SHALL BE ALLOWED TO ENTER THE SYSTEM.
2. DESIGN FLOW: 354.02 GPD
3. 100% EXPANSION OF THE SEPTIC FIELD IS PROVIDED.
4. SEPTIC TANK SIZE: 1,000 GALLONS
5. THE DESIGN, CONSTRUCTION AND INSTALLATION SHALL BE IN ACCORDANCE WITH THIS PLAN AND GENERALLY ACCEPTED STANDARDS IN EFFECT AT THE TIE OF CONSTRUCTION WHICH INCLUDE:
   "RECOMMENDED STANDARDS FOR WATER WORKS (TEN STATES)"
   "NEW YORK STATE DEPARTMENT OF HEALTH AND DUTCHESS COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION POLICIES, PROCEDURES AND STANDARDS."
   "DUTCHESS COUNTY AND NEW YORK STATE SANITARY CODES."
   "DUTCHESS COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION CERTIFICATE OF APPROVAL LETTER."
6. NO COMPONENT OF PART OF THE SEWAGE DISPOSAL SYSTEM IS TO BE BACKFILLED UNTIL INSPECTED BY THE ENGINEER PERFORMING THE CERTIFICATION.
7. FINAL GRADING SHALL BE PERFORMED SO THAT NO SURFACE WATER WILL RUN ON OR COLLECT ON THE INSTALLED SEPTIC SYSTEM.
8. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED.
9. HEAVY EQUIPMENT SHALL BE KEPT OFF OF THE ABSORPTION FIELD AREA EXCEPT FOR ACTUAL CONSTRUCTION OF THE FIELD, THERE SHALL BE NO UNNECESSARY MOVEMENT OF CONSTRUCTION EQUIPMENT IN THE AREA OF THE PROPOSED FIELD, BEFORE, DURING AND AFTER CONSTRUCTION.
10. TRENCHES SHALL NOT BE CONSTRUCTED IN WET SOIL.
11. SIDES AND BOTTOM OF TRENCHES SHALL BE RAKED IMMEDIATELY PRIOR TO PLACING GRAVEL.
12. THE END OF ALL DISTRIBUTION LATERALS SHALL BE CAPPED.
13. THE LOCATION OF THE SEPTIC FIELD IS TO BE FIELD LOCATED BY A LICENSED NYS SURVEYOR PRIOR TO CONSTRUCTION. THE SEPTIC FIELD MUST BE CONSTRUCTED IN THE AREA SHOWN ON PLAN. THE ENGINEER MUST BE CONTACTED 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, TO SCHEDULE A REVIEW OF THE SEPTIC INSTALLATION.
14. A NEW YORK STATE LICENSED PROFESSIONAL ENGINEER SHALL INSPECT THE SANITARY FACILITIES (SEWAGE DISPOSAL FACILITIES) AT THE TIME OF CONSTRUCTION. PRIOR TO OCCUPANCY, THE ENGINEER SHALL CERTIFY TO DUTCHESS COUNTY DEPARTMENT OF BEHAVIORAL AND COMMUNITY HEALTH THAT THE FACILITIES ARE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS.
15. THE OWNER AND/OR CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF FIVE (5) WORKING DAYS IN ADVANCE OF THE START OF WORK.
16. SANITARY FACILITIES ARE NOT TO BE RELOCATED OR REDESIGNED WITHOUT REVIEW AND APPROVAL OF THE ENGINEER AND THE AUTHORITY HAVING JURISDICTION.
17. THERE WILL BE NO REGRADING OR COMPACTING IN THE AREA OF THE PROPOSED FIELD.
18. NO PAVING SHALL BE PLACED OVER ANY PORTION OF THE FIELD.

SOIL RESTORATION NOTES:

1. TILL COMPOST INTO SUBSOIL TO A DEPTH OF AT LEAST 12" USING CAT-MOUNTED RIPPER, TRACTOR MOUNTED DISC, OR TILLER, MIXING, AND CIRCULATING AIR AND COMPOST INTO SUBSOILS.
2. ROCK-PICK UNTIL UPLIFTED STONE/ROCK MATERIALS OF 4" AND LARGER ARE CLEANED OFF SITE.
3. APPLY TOPSOIL TO A DEPTH OF 6 INCHES ON ALL AREAS BEING RETURNED TO GRASS.
4. VEGETATE AS REQUIRED BY APPROVED PLAN.

SANITARY CALCULATIONS

FLOW FROM BUILDINGS:
Qavg = 354.02 GPD (*includes 2.0 F.S. per county regs)

Q < 10,000 GPD THEREFORE NO SPEDES PERMIT REQUIRED

SEPTIC TANK SIZE:
Q<5,000 GPD THEREFORE TANK SIZE = 1.5Q = 495 GALLONS REQUIRED
1,000 GALLON SEPTIC TANK PROVIDED

MAXIMUM PERCOLATION RATE = 51 MINUTES
APPLICATION RATE = 0.450 GPD/SF (RATE DETERMINED FROM THE DUTCHESS COUNTY DESIGN AND CONSTRUCTION STANDARDS PLAN SUBMISSION GUIDE TABLE 4B) FOR PERCOLATION RATES WITHIN 46-60 MINUTES.

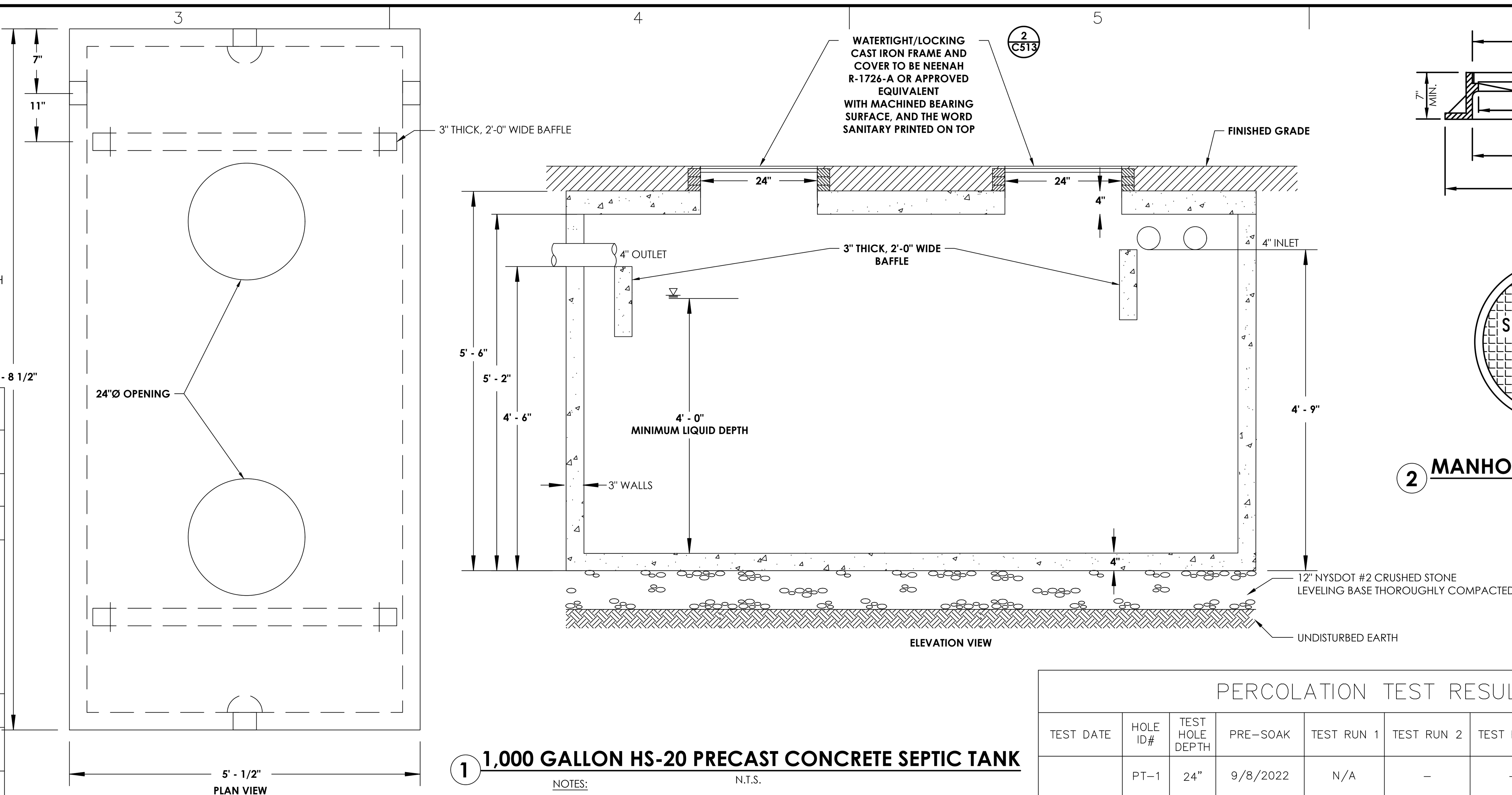
ABSORPTION TRENCH:
Q/APPLICATION RATE = 354.02GPD/0.45 GPD/SF = 786.7 SF OF TRENCH REQUIRED

786.7 SF/2' WIDE TRENCHES * 75% FOR CHAMBERS = 295' OF TRENCH REQUIRED

DESIGN TO USE 5 ROWS @ 60' LONG = 300' OF TRENCH

DEEP TEST RESULTS

TEST DATE	HOLE ID#	TEST HOLE DEPTH	ROCK DEPTH	WATER DEPTH	MOTTLING DEPTH	SOIL DESCRIPTION
11/2/2022	DT-1	6'-10"	N/A	N/A	N/A	GRASS, 3"-6" TOPSOIL
						GRAVELLY, CLAY LOAM
						AT ~3' - TRAP ROCK WAS OBSERVED ALONG WITH A PIECE OF ORANGEBURG PIPE SURROUNDED BY DRAINAGE STONE.
	DT-2	7'-0"	N/A	N/A	N/A	GRASS, 3"-6" TOPSOIL
						CONSISTENT GRAVELLY-LOAM
	DT-3	4'-6"	N/A	N/A	N/A	GRASS, 3"-6" TOPSOIL
						CONSISTENT GRAVELLY-LOAM
						AT ~2'-8", PERFORATED PVC PIPE IS OBSERVED. OWNER CONFIRMED PIPE IS NOT IN USE.
	DT-4	4'-4"	N/A	N/A	N/A	GRASS, 3"-6" TOPSOIL
						CONSISTENT GRAVELLY-LOAM

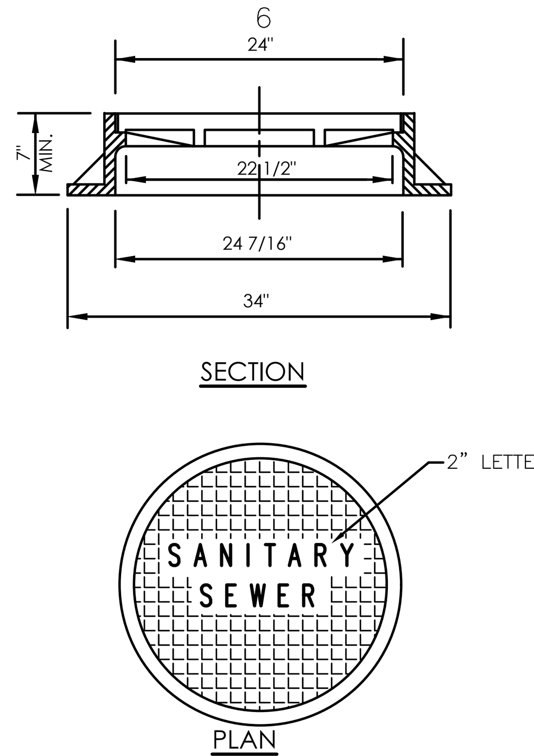


1 1,000 GALLON HS-20 PRECAST CONCRETE SEPTIC TANK

N.T.S.

NOTES:

1. BASIS OF DESIGN IS THE FORT MILLER CO., INC 1000 GALLON SEAMLESS SEPTIC TANK. APPROVED EQUALS ARE ACCEPTABLE.
2. CONCRETE STRENGTH SHALL BE 4,500 PSI @ 28 DAYS.
3. TANK SHALL BE RATED FOR H2-20-44 LOADING AND CONSTRUCTED WITH ASTM A-615 GRADE 60 REINFORCEMENT.
4. CONSTRUCTION JOINTS SHALL HAVE A MINIMUM 1" BUTYL SEALANT.
5. EXTERIOR BITUMINOUS COATING SHALL BE APPLIED.

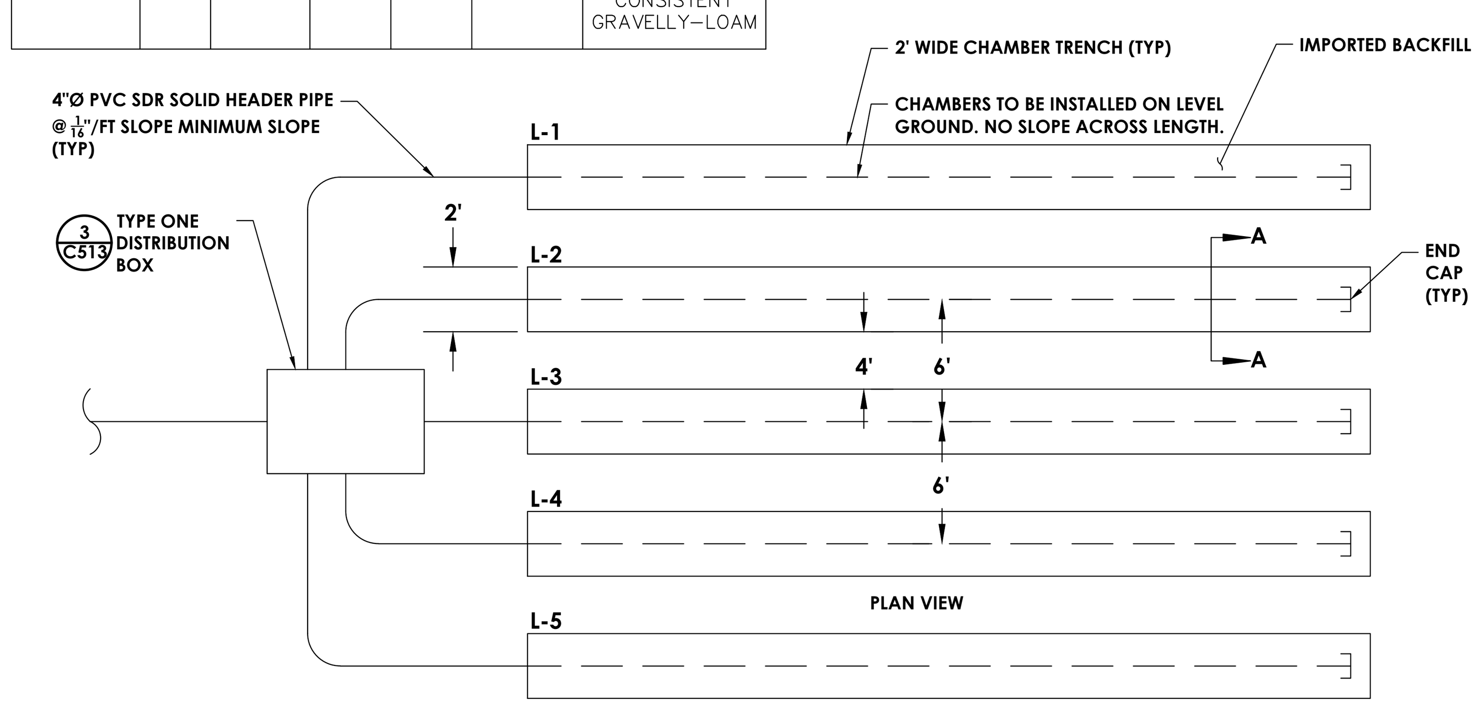


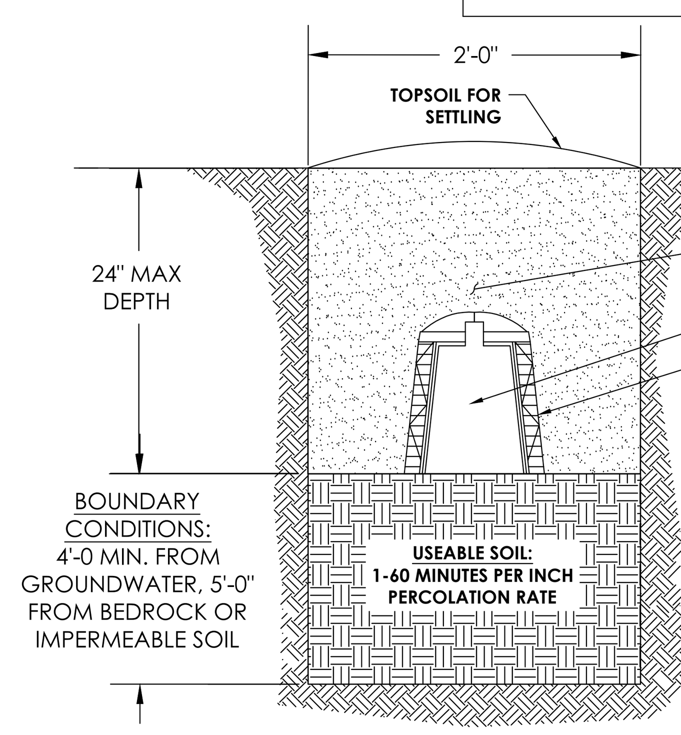
2 MANHOLE FRAME & COVER

N.T.S.

PERCOLATION TEST RESULTS

TEST DATE	HOLE ID#	TEST HOLE DEPTH	PRE-SOAK	TEST RUN 1	TEST RUN 2	TEST RUN 3	TEST RUN 4	TEST RUN 5
9/9/2022	PT-1	24"	9/8/2022	N/A	–	–	–	–
	PT-2	26"	9/8/2022	53 MIN	N/A	–	–	–
	PT-3	28"	9/8/2022	20 MIN	26 MIN	37 MIN	33 MIN	45 MIN
	PT-4	26"	9/8/2022	31 MIN	54 MIN	58 MIN	61 MIN	–
10/20/2022	PT-5	24"	10/19/2022	18 MIN	18 MIN	23 MIN	26 MIN	–
	PT-6	24"	10/19/2022	18 MIN	20 MIN	23 MIN	24 MIN	–
	PT-7	24"	10/19/2022	45 MIN	46 MIN	48 MIN	51 MIN	–



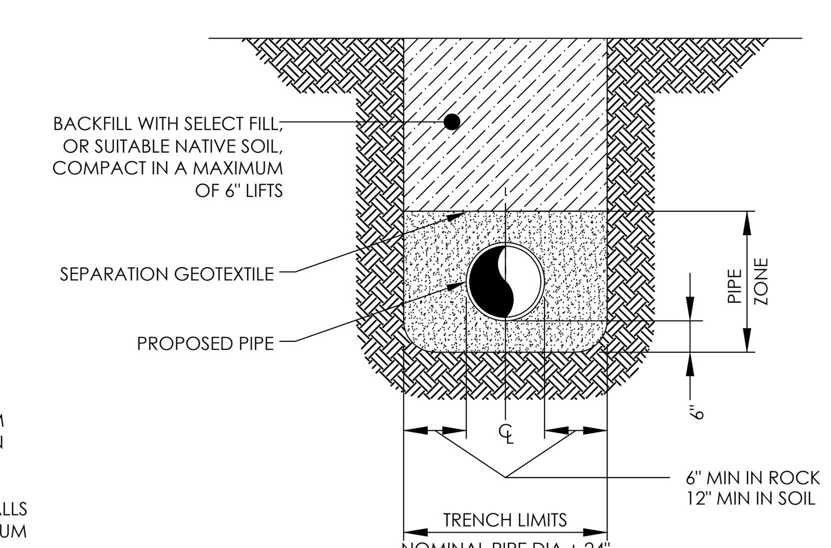


NOTES:

1. GRAVELLESS ABSORPTION SYSTEM PRODUCTS SHALL BE INSTALLED IN CONFORMANCE WITH MANUFACTURERS INSTRUCTIONS.
2. THE GRAVELLESS TRENCH SIDEWALLS SHALL BE SEPARATED BY A MINIMUM OF 4 FEET.
3. ALL GRAVELLESS TRENCHES SHALL BE EQUAL LENGTH AND LAID FLAT.

4 GRAVELLESS CHAMBER TRENCH LAYOUT PLAN

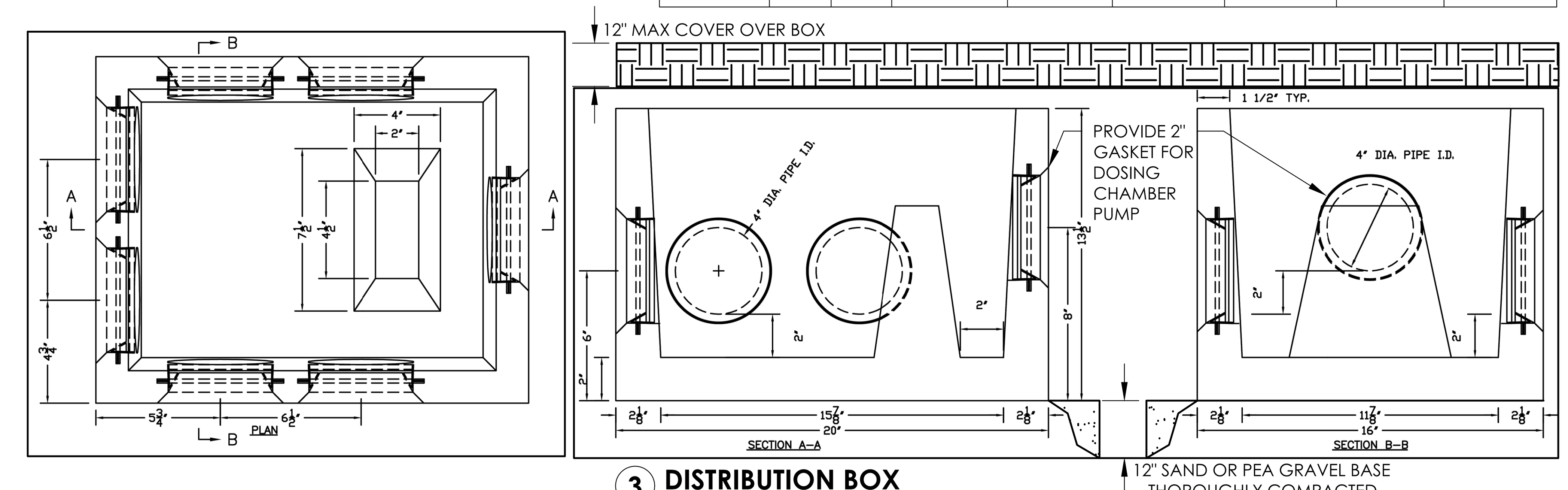
N.T.S.



1. DETAIL FOR NON-PERFORATED CONNECTION PIPES FROM DISTRIBUTION BOX TO LEACH CHAMBERS ONLY.
2. PIPE ZONE SHALL EXTEND A MINIMUM OF 6-INCHES ABOVE AND BELOW THE PIPE. PIPE SHALL BE CENTERED HORIZONTALLY AND VERTICALLY IN THE PIPE ZONE. PIPE ZONE FILL SHALL BE A SAND MATERIAL (90-100% PASSING 0.25-INCH SIEVE, <5% PASSING No. 200 SIEVE), MANUALLY COMPACTED IN 6-INCH LIFTS.
3. SELECT FILL SHALL BE SAND, GRAVEL, AND SIMILAR MATERIAL WHICH SHALL BE FREE FROM CLAY, LOAM, ORGANIC MATERIAL, DEBRIS, FROZEN MATERIAL AND SHALL CONTAIN ONLY SMALL AMOUNTS OF STONE, PEBBLES OR LUMPS OVER ONE INCH IN GREATEST DIMENSION BUT NONE OVER TWO INCHES IN GREATEST DIMENSION.

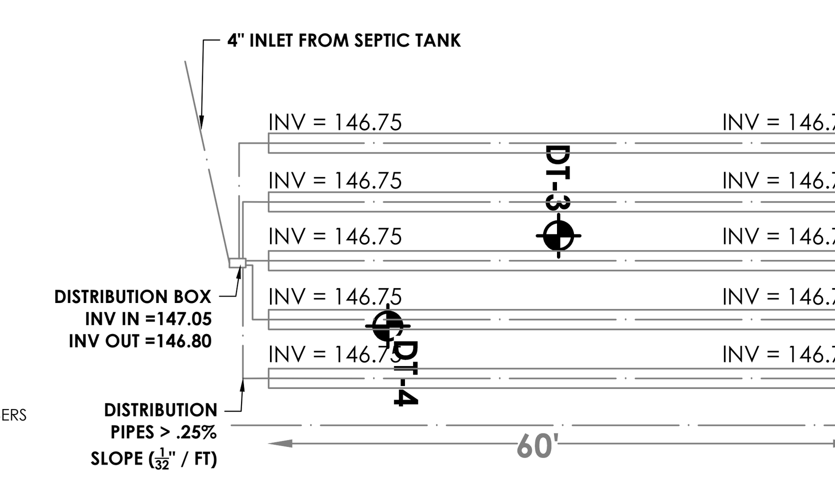
5 PIPE TRENCH AND BEDDING DETAIL

N.T.S.



3 DISTRIBUTION BOX

N.T.S.

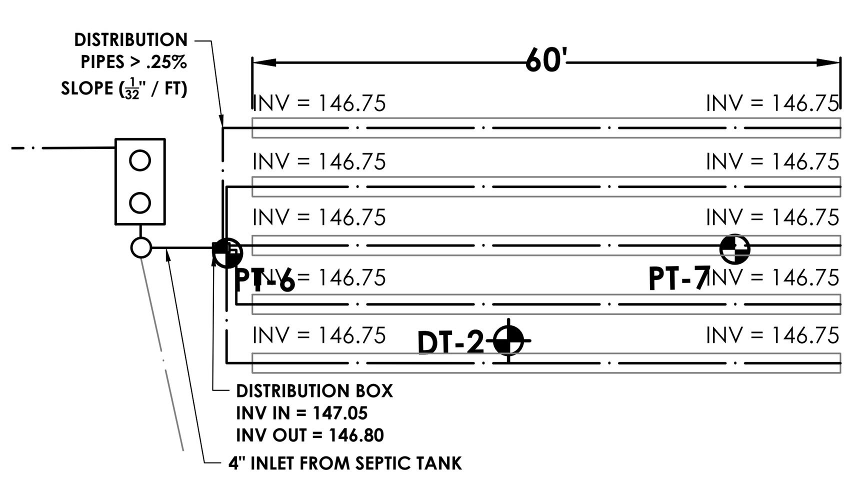


6 EXPANSION SSDS AREA

N.T.S.

NOTES:

1. TRENCH WIDTH SHALL BE 2 FEET WIDE, WITH ALL TRENCHES SPACED 4 FEET APART.
2. LATERALS SHALL BE 6 FEET CENTER TO CENTER.



7 PRIMARY SSDS AREA

N.T.S.

NOTES:

1. TRENCH WIDTH SHALL BE 2 FEET WIDE, WITH ALL TRENCHES SPACED 4 FEET APART.
2. LATERALS SHALL BE 6 FEET CENTER TO CENTER.

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Principal-in-Charge Andrew Holesko
Project Manager Matt Nissen, P.E.
Designed by LDS, ZJH

Project: SKY HARBOUR HANGAR DEVELOPMENT

Stamp:

Site: Hudson Valley Regional Airport
263 New Hackensack Rd.
Wappingers Falls, NY 12590

Client: **Sky Harbour LLC**
136 Tower Rd., Suite 205
White Plains, NY 10604

Revisions:

MARK	DATE	DESCRIPTION

PROJECT NO: 23000149.0019
CAD DWG FILE: 23000149.0019 Details.dwg
DRAWN BY: AG, ZJH
CHECKED BY: MJN

Sheet Title: Utility Details - Sheet 3

C-513

April 2025

PASSERO ASSOCIATES
engineering architecture

PROJECT: HVRA North Hangars SHEET: 1 OF 2
PROJECT NO: 23000149.0019 COMPUTED BY: ABG
SUBJECT: Septic Dosing Calcs CHECKED BY: ABG
DATE: 4/24/25

Givens:
* 2" dosing pipe to distribution box.
* Effluent volume between 75-85% of volume of field.
* Treat gravelless units as 4" perforated dist. pipes.

5x60' trenches
distribution pipes
dist box
OO dosing chamber & septic tank.

1) Determine Volume of distribution pipes:
*per Table 5 NYSROWTS, 4" pipes hold 0.653 gal/LF
0.653 gal/LF x 300 LF = 196 gallons

1.1) Include volume of dosing pipe b/c it will drain back into chamber:
*per Table 5 NYSROWTS, 2" pipes hold 0.163 gal/LF
0.163 gal/LF x 6.5 LF = 1 gallon

Total = 196 + 1 = $\boxed{\text{147 gallons}}$

2) Dosing Volume:
*Per §8.6 NYSROWTS, 75-85% per dose.

75% = 147 x .75 = 148 gallons
85% = 147 x .85 = 167 gallons
} Dose in this range.

3.) Dose Tank size requirements:
-Per §8.6 NYSROWTS, 1 day storage above alarm level
-1 day storage = 354 gallons (includes 2x F.S. per county regs)
354 gal + 148 gal = 502 gallon

3.1) Need to add shut-off depth to prevent dry run of pump.
-assume 48" cylindrical chamber.
-assume 6" depth
Volume = $\pi r^2 h = \pi (2')^2 (.5') = 6.28$ cf $(7.48\ \text{gal/cf})$ = 47 gallon shut off capacity

3.2) Need to add volume from start level to high water level.
-assume same criteria as 3.1
Volume = 47 gallon high water capacity

PASSERO ASSOCIATES
engineering architecture

PROJECT: HVRA North Hangars SHEET: 2 OF 2
PROJECT NO: 23000149.0019 COMPUTED BY: ABG
SUBJECT: Septic Dosing Calcs CHECKED BY: ABG
DATE: 4/24/25

3.3.) Total Chamber size
354 storage + 148 dose + 47 shut off + 47 high water = $\boxed{\text{596 gallons}}$

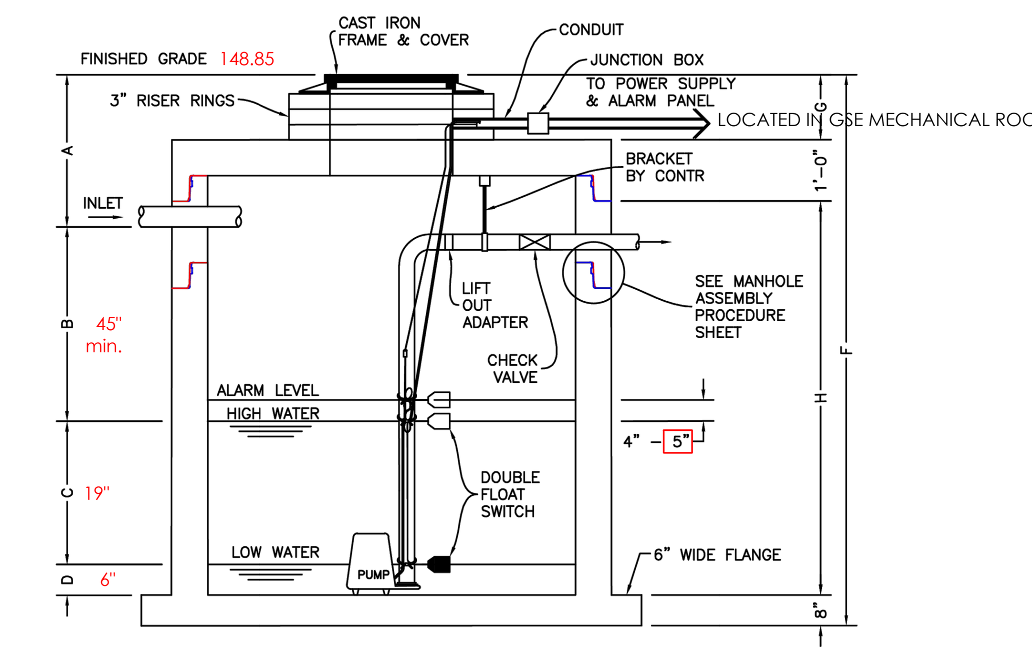
NOTES:

1. For Dutchess County, Pump chambers shall be sized to provide a minimum of one day's design storage flow above the alarm level using duplex pump design.
2. Chamber shall include audible or visual alarms. Alarms should be in an accessible and conspicuous location. **Alarms & controls are to be installed inside the GSE mechanical room.**
3. The use of manually operated siphons or pumps is not acceptable.
4. See design calculations on this sheet for sizing and float elevations. Contractor may submit an approved equal showing all necessary calculations to the Engineer for approval prior to installation or ordering.
5. Design is based off the 'LittleGIANT 9SC-CIA-RF 4/10HP pump'. Contractor may provide approved equal effluent pump so long as that pump is certified for use as a septic effluent pump and meets the required pump curve criteria. Contractor must submit pump information to Engineer for approval.

RESIDENTIAL PUMP TANK

KPRECAST

A	FINISHED GRADE TO PIPE INVERT	INCHES
B	MINIMUM RESERVE STORAGE CAPACITY OF ONE DAY'S FLOW 354 gallons	GALLONS
C	FIELD DOSE CAPACITY (IF NOT NOTED FIND LINEAL FEET OF PIPE IN LEACH FIELD AND CALCULATE FIELD CAPACITY x 75% TO ACHIEVE ANSWER. THEN DIVIDE GALLONAGE BY GAL/L.F. BASED ON DIAMETER OF STRUCTURE TO GET LIQUID DEPTH)	INCHES
D	PUMP SUBMERGENCE (6" TO 12" TYP.)	INCHES
F	TOTAL (ADD A THROUGH D + 6")	INCHES
G	SUBTRACT FRAME & COVER & ADJUSTMENT (3" INCREMENTS)	INCHES
H	INSIDE HEIGHT OF MANHOLE	INCHES



INCLUDES:
1.) DELIVERY AND SETTING INTO EXCAVATION (MAX. 1 HOUR ALLOWED).
2.) GASKETS ONLY FOR 4'-0" DIA. (NO LUBE OR BUTYL REQ'D)
3.) GASKETS, LUBE AND 1" BUTYL SEALANT (ONE STRIP/JOINT) – 5' & 6' DIA. ONLY.
4.) MANHOLE ASSEMBLY PROCEDURE SHEET.
5.) 2-PIPE OPENINGS OR WATERTIGHT SEALS WHERE POSSIBLE.

DESCRIPTION	CODE	GAL./L.F.
4' DIA. X 5' DEPTH (H) ADD'L DEPTH PER L.F. H=7.0', WILL NEED BARREL EXTENSION.	PP-PT-04	94
5' DIA. X 5' DEPTH (H) ADD'L DEPTH PER L.F.	PP-PT-05	147
6' DIA. X 5' DEPTH (H) ADD'L DEPTH PER L.F.	PP-PT-06	212
3" RISER RINGS	MHRR	SEE 3" RISER RINGS
24" DIA. CAST IRON FRAME & COVER		SEE HEAVY DUTY TANK EXTENSION ACCESSORIES
ASSEMBLY PROCEDURE SHEET – 4' DIA.	IS-INST-MH-OSG	
ASSEMBLY PROCEDURE SHEET – 5', 6' DIA.	IS-INST-MH	

SEWAGE PUMPS

Little GIANT

9SC SERIES - 4/10 HP

APPLICATIONS

Sewage and effluent wastewater transfer, dewatering

FEATURES

- Permanent Split Capacitor (PSC)
- Energy-saving low amp draw
- Designed for continuous duty
- 2" FNPT (51 mm) discharge
- Handles solids up to 2" (51 mm) diameter
- Multiple switch options for automatic operation
- 140 °F (60 °C) liquid temperature rating
- cCSAus listed

SERIES SPECIFICATIONS

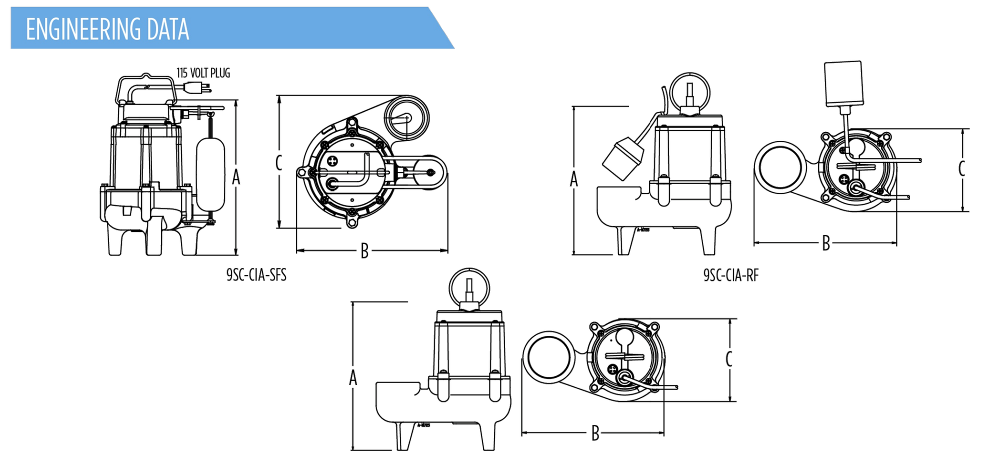
Model	HP	Volts	Hz	Amps	Watts	Max. Water Temp.	GPM / Liters per Minute @ Height 5 ft (1.5 m)	10 ft (3 m)	15 ft (4.6 m)	Shut-Off ft (m)	PSI (Bar)
9SC	4/10	115	60	8	870	140 °F (60 °C)	100 / 379	80 / 303	60 / 227	20 (6.1)	8.7 (0.60)

Item No.	Model	HP	Volts	Discharge	Switch Type / Operation	On Level	Off Level	Cord	Weight
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	~~10" - 13" 25 cm - 33 cm~~	~~5" - 8" 13 cm - 20 cm~~	~~20' 6.1 m~~	~~38.5 lbs 17.5 kg~~
509412	9SC-CIA-RF	4/10	115	2"	Piggyback Mechanical Float	16" - 19" 41 cm - 48 cm	9" - 11" 23 cm - 28 cm	20' 6.1 m	38.4 lbs 17.4 kg
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	~~6.1 m~~	~~16.3 kg~~

SEWAGE PUMPS

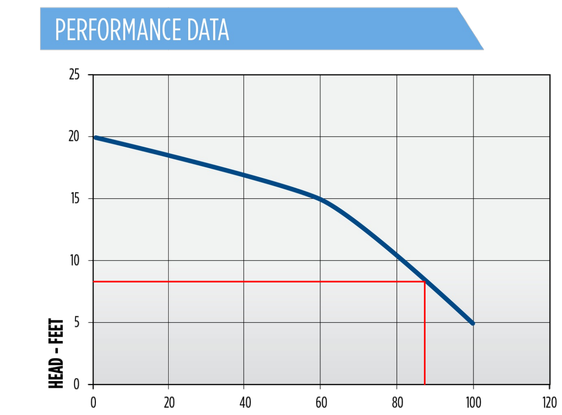
9SC SERIES - 4/10 HP

ENGINEERING DATA



Model	A	B	C
9SN-CIA-RF	13.6" (346 mm)	10.4" (264 mm)	8.6" (219 mm)

PERFORMANCE DATA



CONSTRUCTION

Cover	Epoxy-coated cast iron/ *Thermoplastic
Motor Housing	Epoxy-coated cast iron
Impeller Material	Nylon
Impeller Type	Vortex
Volute	Epoxy-coated cast iron
Mechanical Shaft Seal	Nitrile with carbon and ceramic faces
Fasteners	Stainless steel
Shaft	Steel
Bearings	Upper sintered sleeve and lower ball bearings
Power Cord	SJTW **SJTOW

* On SFS models
** On 9SC-CIA-RF and 9SC-CIM models

*Assuming 48" Ø tank. 6.34' depth to pump required (596 gallons).
*Max depth of water is equal to outlet of septic tank (el: 145.40'). Therefore, pump is at LEAST el:139.06'.
*pump head to distribution box = 147.05 - 139.06 = 7.99' of head + friction loses + weep hole loss.
Pump has ample capacity to support this design & increased depth to fit chosen pump tank.
*This pump may operate safely without a check value, but design options to include one.

Franklin Electric

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Project:

SKY HARBOUR HANGAR DEVELOPMENT

Stamp:

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Revisions:

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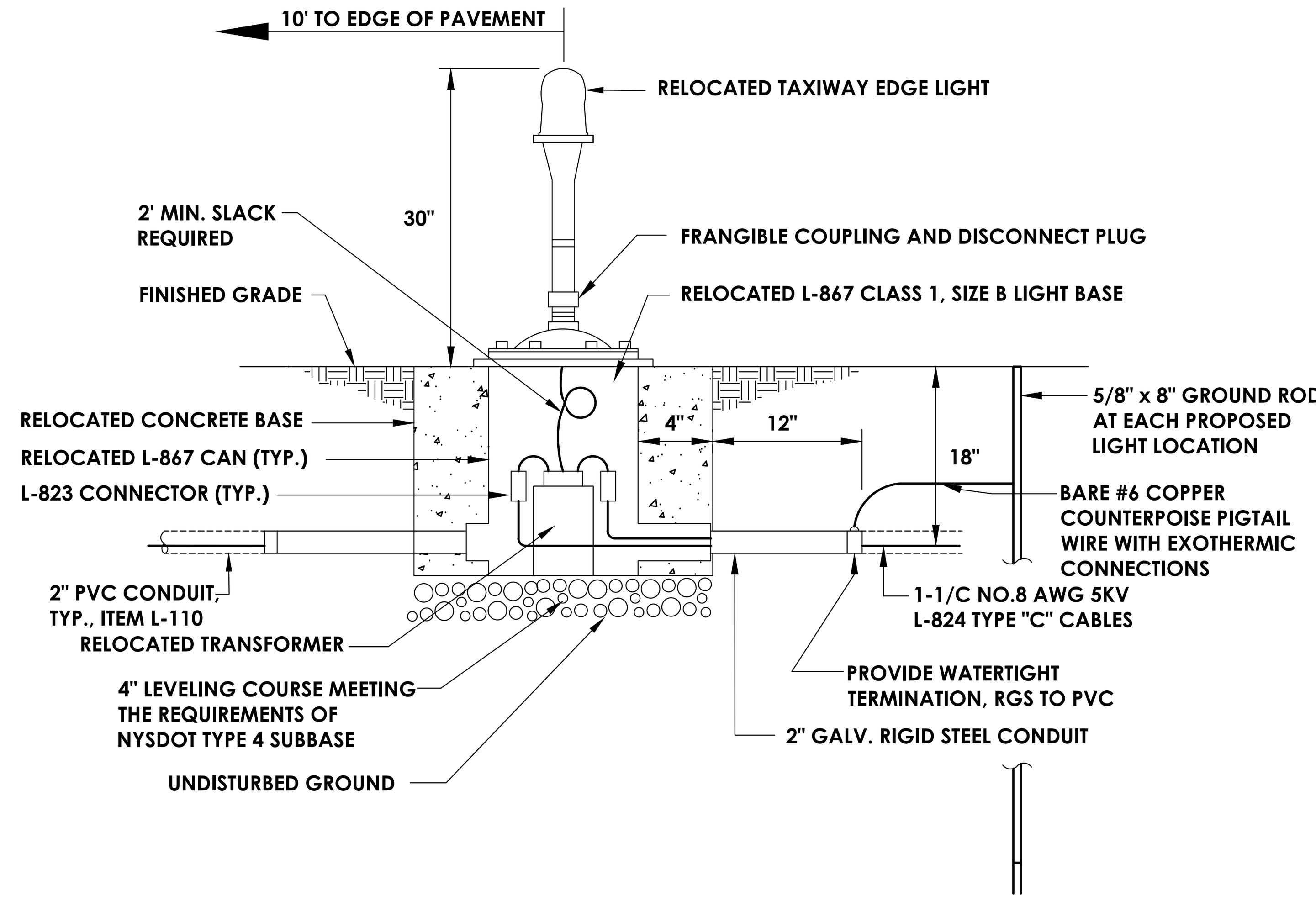
Utility Details - Sheet 4

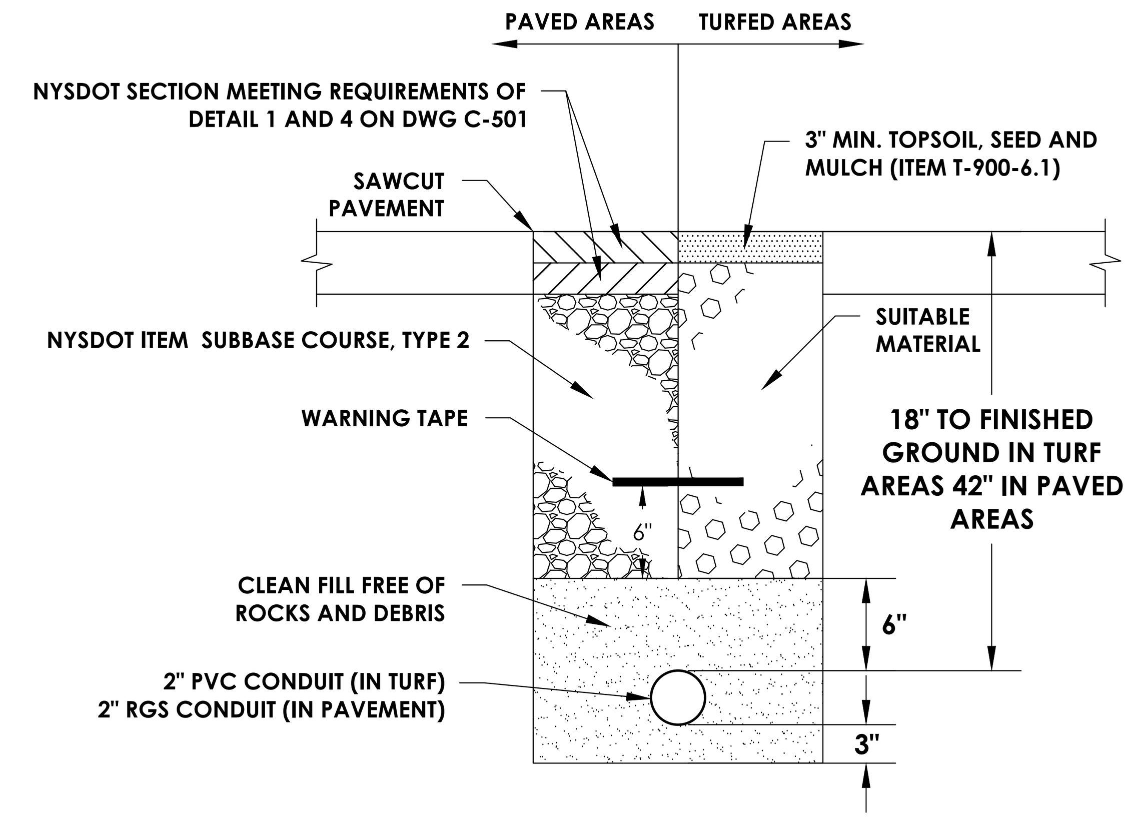
C-514

April 2025



1 BASE MOUNTED TAXIWAY EDGE LIGHT DETAIL

SCALE: NTS

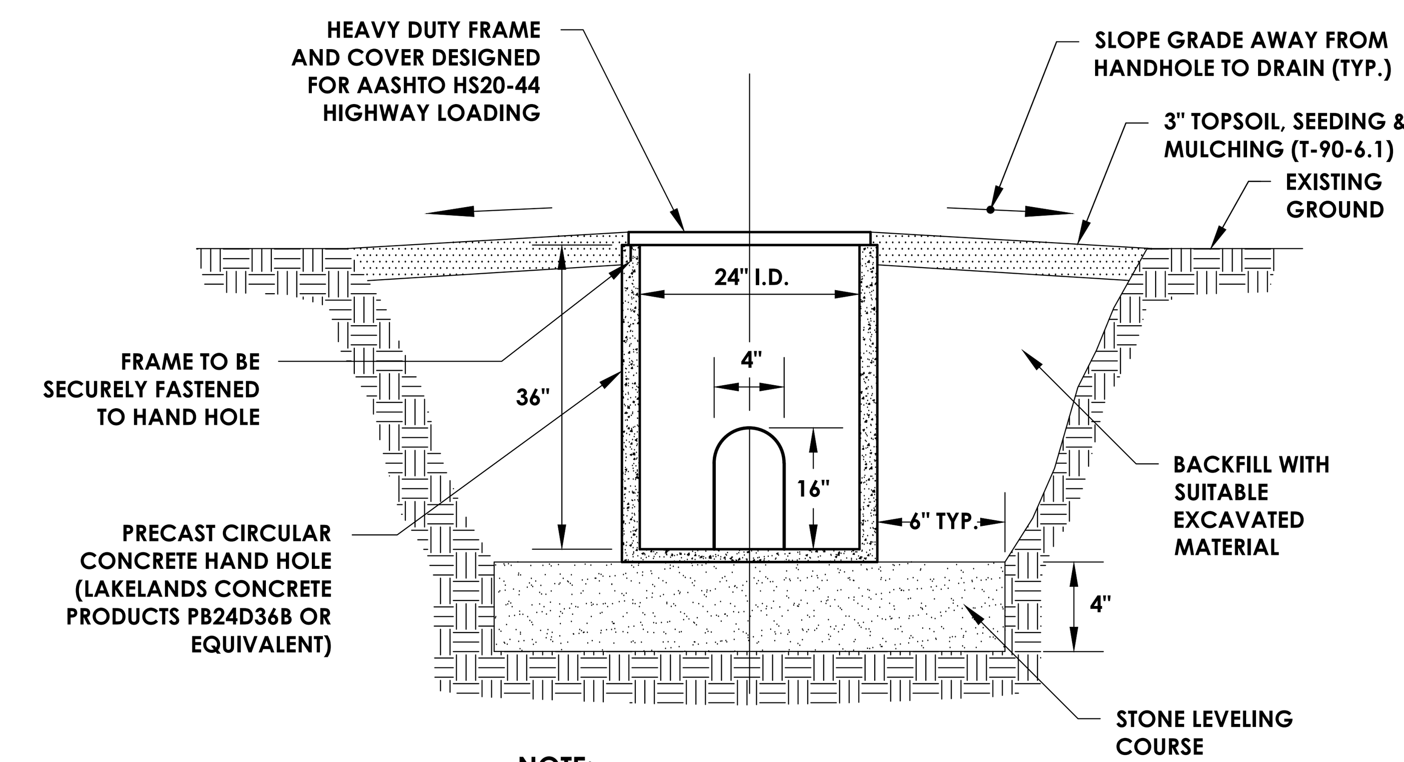


NOTES:

1. SEE COUNTERPOISE INSTALLATION DETAIL FOR SEPARATE COUNTERPOISE WIRE TRENCH.

2 TYPICAL TRENCH AND CONDUIT DETAIL

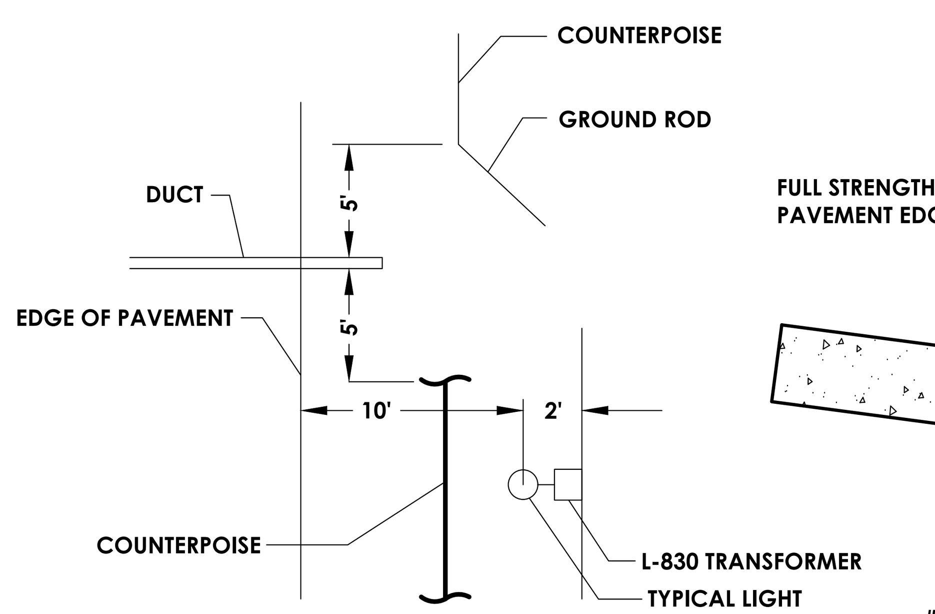
SCALE: NTS



NOTE:
EACH CABLE WITHIN THE HANDHOLE SHALL BE LABELED WITH A NON-METALLIC TAG APPROVED BY THE ENGINEER.

3 24" Ø ELECTRICAL MANHOLE

SCALE: NTS

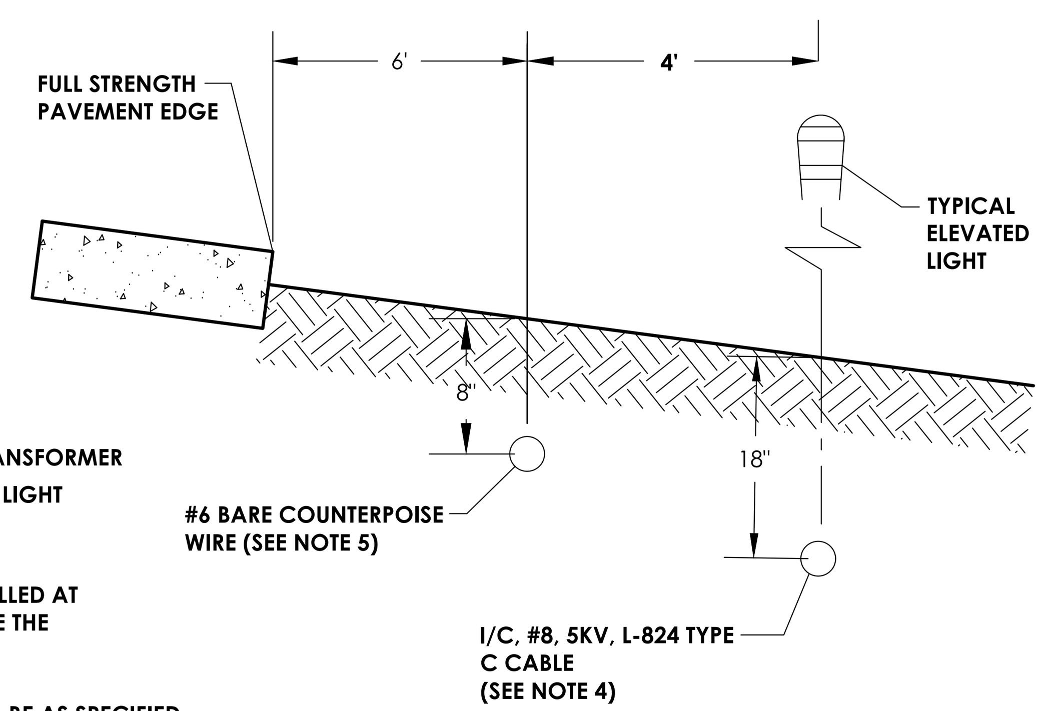


PLAN VIEW

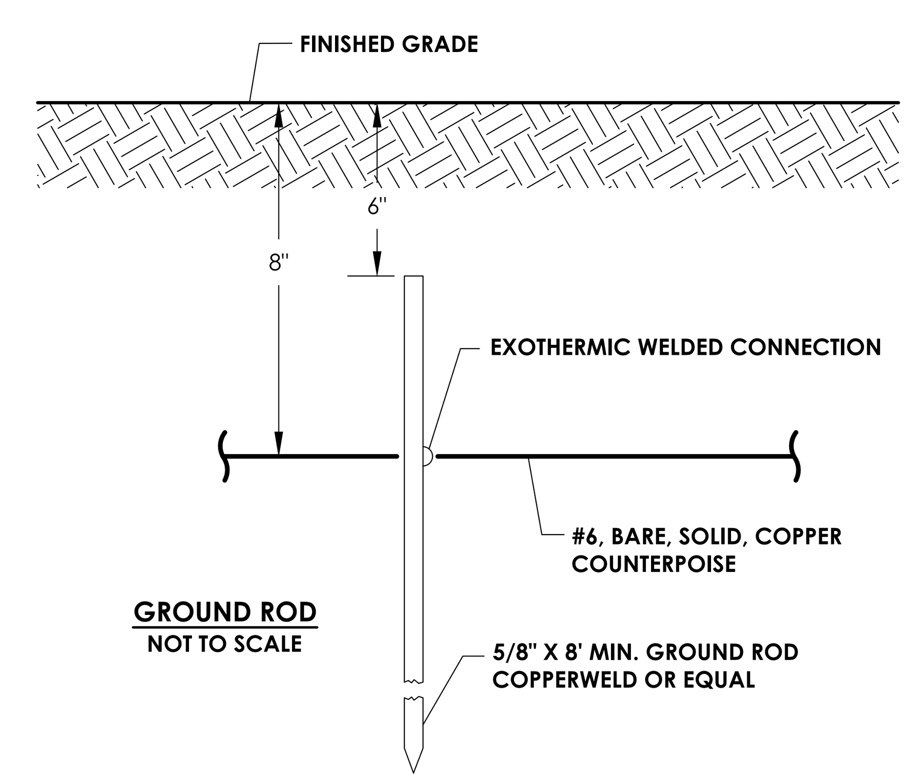
#6 BARE COUNTERPOISE WITH 5/8" X 8' GROUND ROD INSTALLED AT MAX. 500' SPACING. ALSO USE GROUND ROD TO TERMINATE THE COUNTERPOISE AT BOTH END OF DUCT

NOTES:

1. TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ABOVE.
2. THE RESISTANCE TO GROUND OF THE COUNTERPOISE GROUNDING SYSTEM SHALL NOT EXCEED 25 OHMS.
3. COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED.
4. SEE TRENCH AND CONDUIT DETAIL FOR FURTHER INFORMATION.
5. THE COST FOR ITEM COUNTERPOISE SHALL INCLUDE TRENCHING AND BACKFILL.



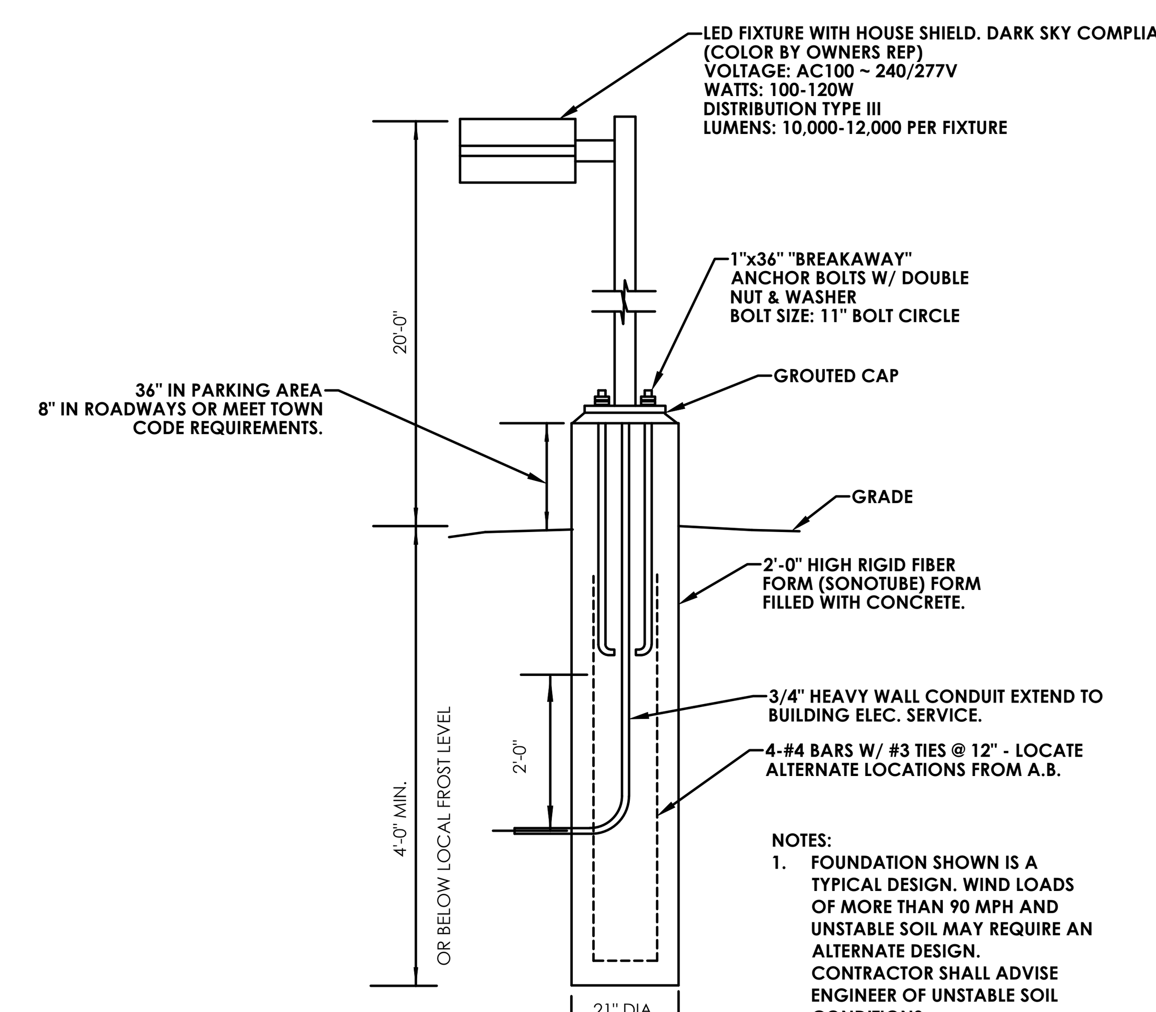
PROFILE VIEW
LIGHT AND INSTALLATION DETAIL



GROUND ROD
NOT TO SCALE

4 COUNTERPOISE INSTALLATION

SCALE: NTS



NOTES:

1. FOUNDATION SHOWN IS A TYPICAL DESIGN. WIND LOADS OF MORE THAN 90 MPH AND UNSTABLE SOIL MAY REQUIRE AN ALTERNATE DESIGN. CONTRACTOR SHALL ADVISE ENGINEER OF UNSTABLE SOIL CONDITIONS.
2. FOUNDATIONS SHALL EXTEND BELOW FROST DEPTH PER LOCAL CODES.

5 LIGHT POLE AND BASE DETAIL

SCALE: NTS

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Revisions:

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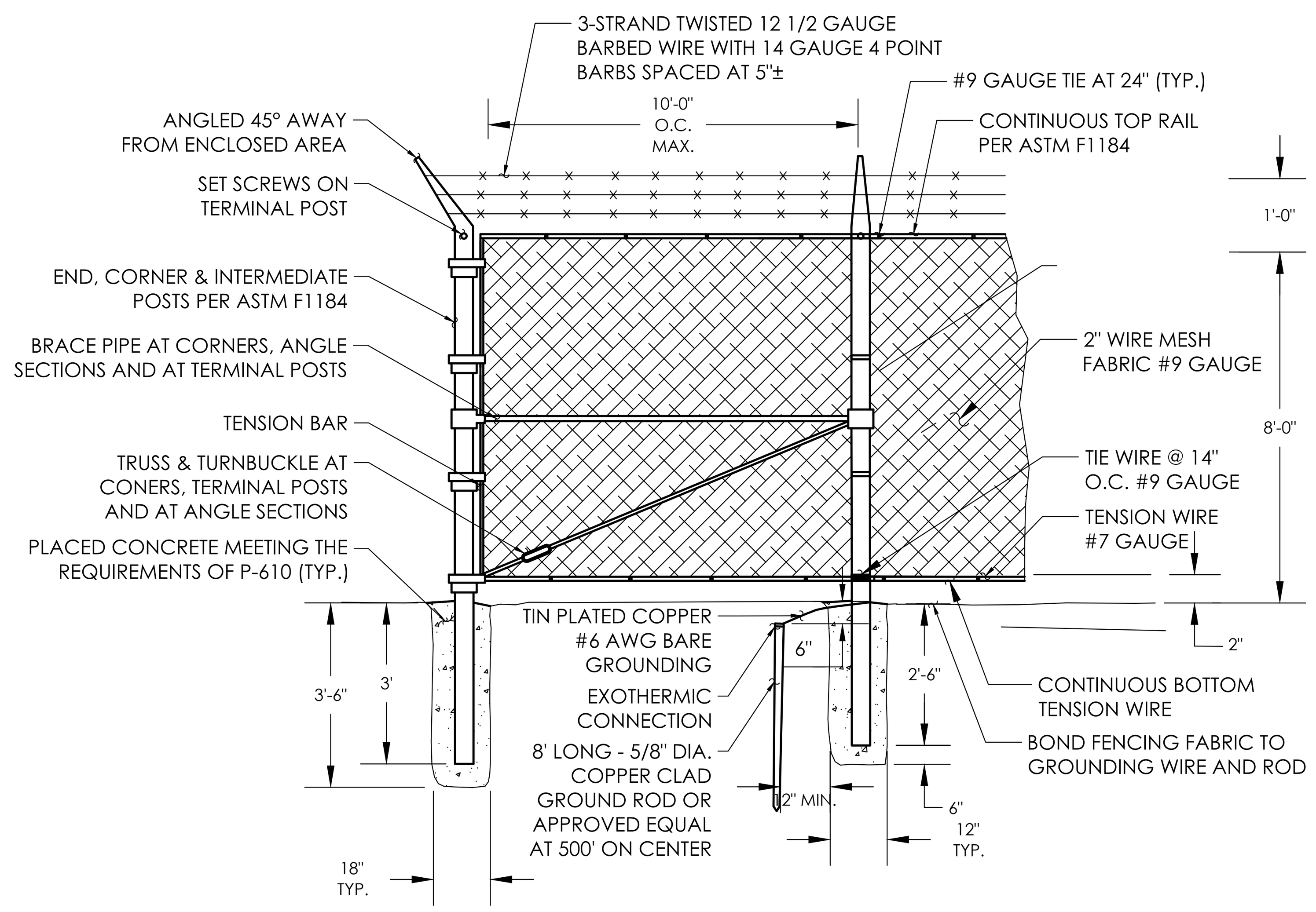
CHECKED BY: MJN

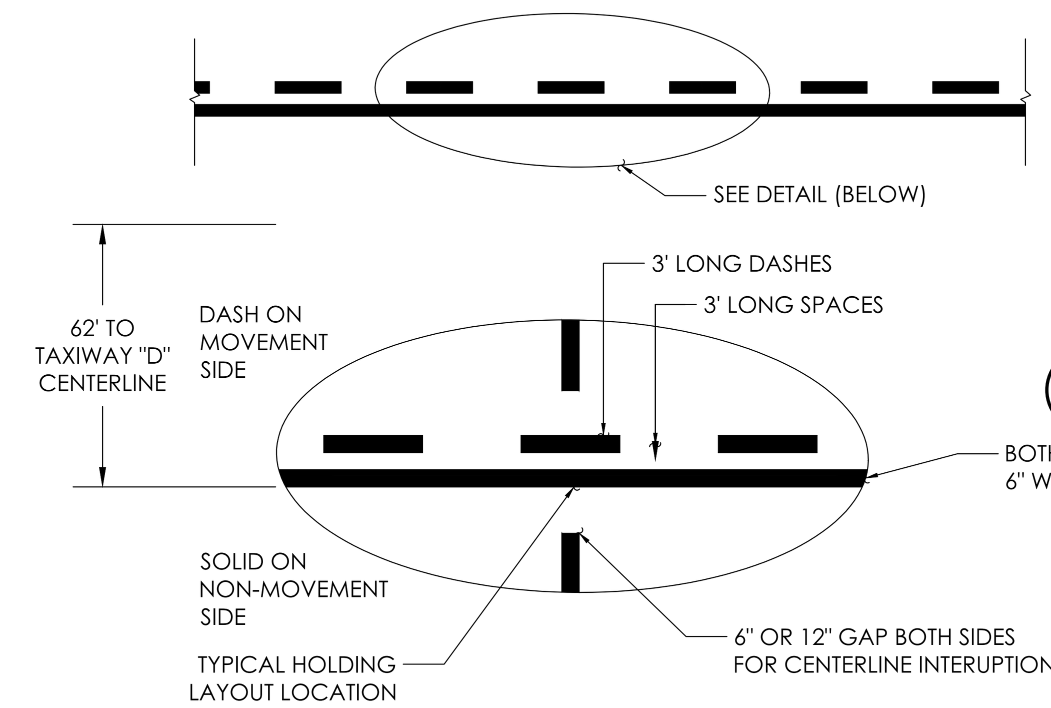
Sheet Title:
Electrical Details

C-515

April 2025

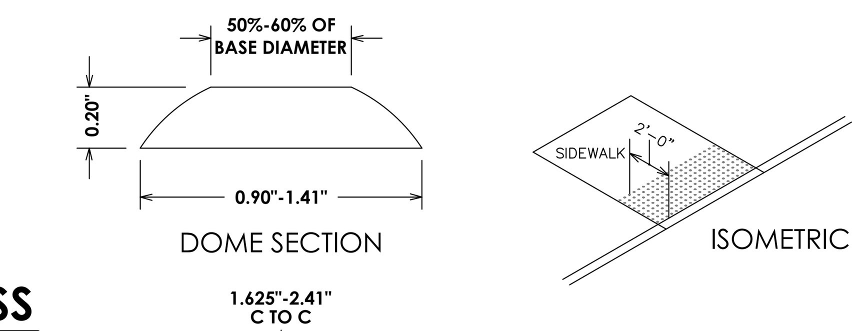


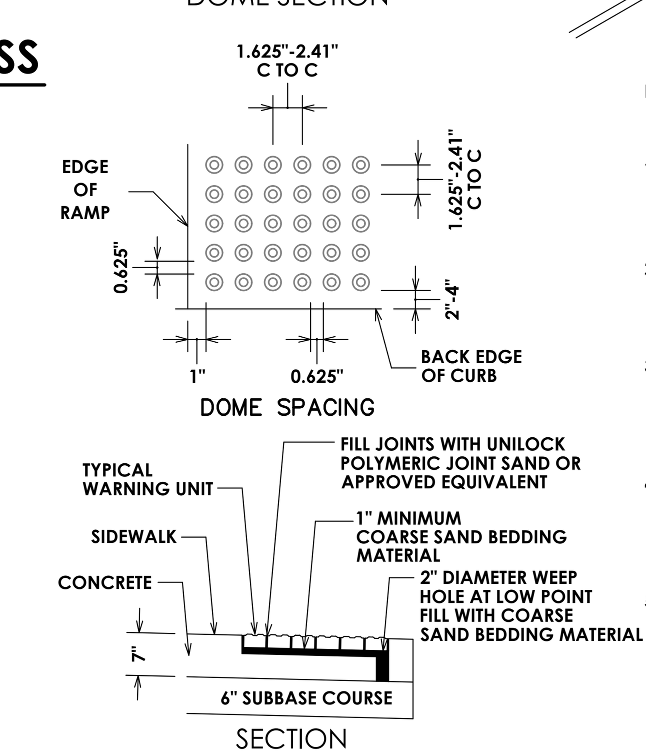
1 8' HIGH CHAIN LINK FENCE
SCALE: NTS



2 NON-MOVEMENT AREA MARKING
SCALE: NTS

3 MODIFIED INTERNATIONAL SYMBOL OF ACCESS
SCALE: NTS

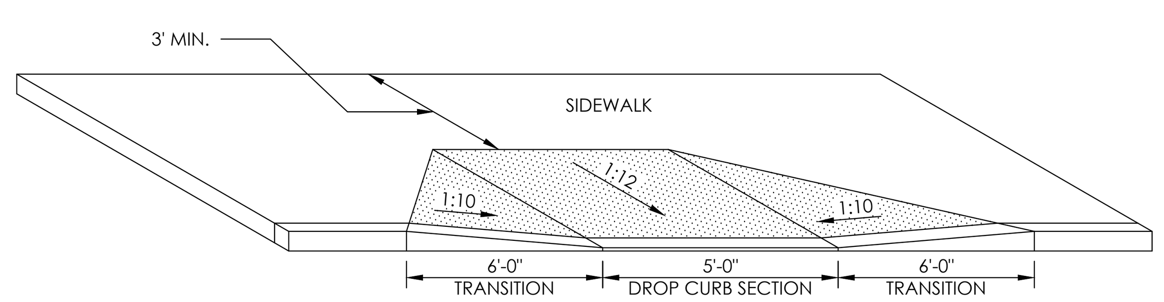




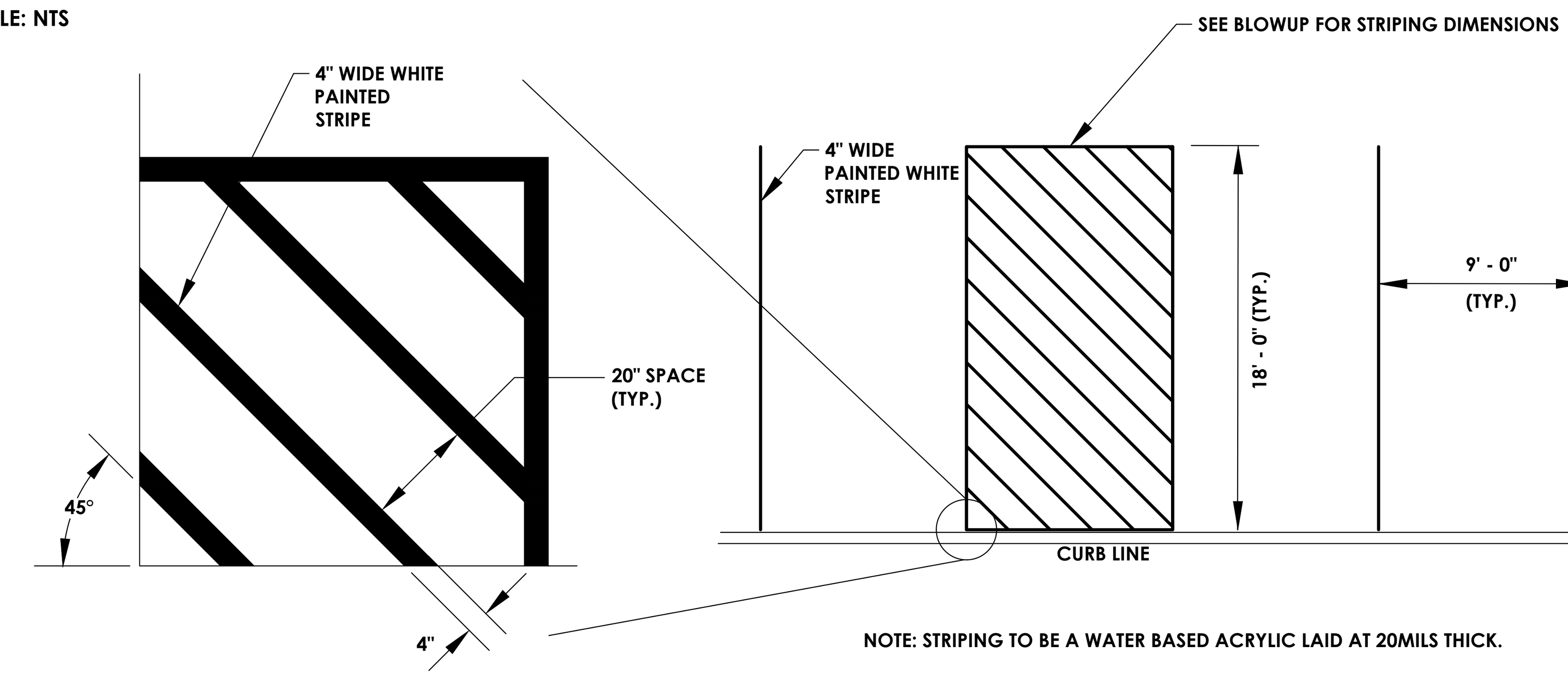
NOTES:

1. QUANTITY OF TRUNCATED DOMES SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY, TO DEPICT REQUIRED SQUARE GRID PATTERN.
2. TRUNCATED DOMES ARE TO BE ALIGNED IN SQUARE GRID PATTERN IN PREDOMINANT DIRECTION OF TRAVEL.
3. DETECTABLE WARNING SYSTEM FIELD IS TO BE 2 FEET DEEP, AND IS TO EXTEND ACROSS FULL WIDTH OF SIDEWALK ACCESS RAMP, BUT NOT UP SIDE FLARES.
4. DETECTABLE WARNING SYSTEM FIELD IS TO BE LOCATED SUCH THAT OUTER EDGE OF WARNING FIELD NEAREST TO STREET IS 2 TO 4 INCHES OFF BACK EDGE OF CURB.
5. ENTIRE DETECTABLE WARNING SYSTEM FIELD INCLUDING TRUNCATED DOMES, IS TO BE DARK GRAY IN COLOR, PER MUNSELL BOOK NOTATION 10BG 3/1, FEDERAL STANDARD 595B NUMBER 36081, OR APPROVED EQUIVALENT.

4 DETECTABLE WARNING SYSTEM
SCALE: NTS

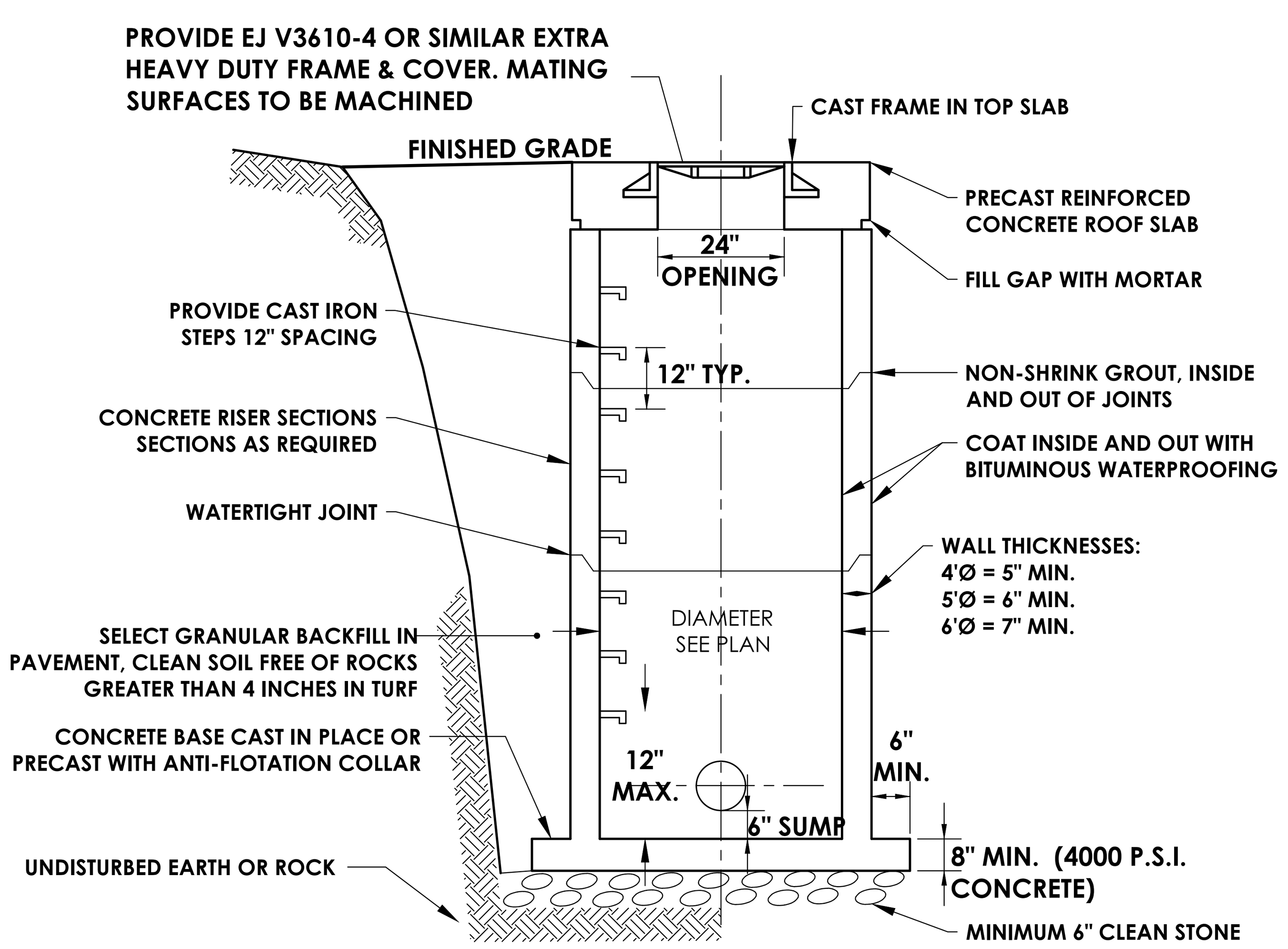


5 TYPICAL HANDICAP RAMP
SCALE: NTS



NOTE: STRIPING TO BE A WATER BASED ACRYLIC LAID AT 20MILS THICK.

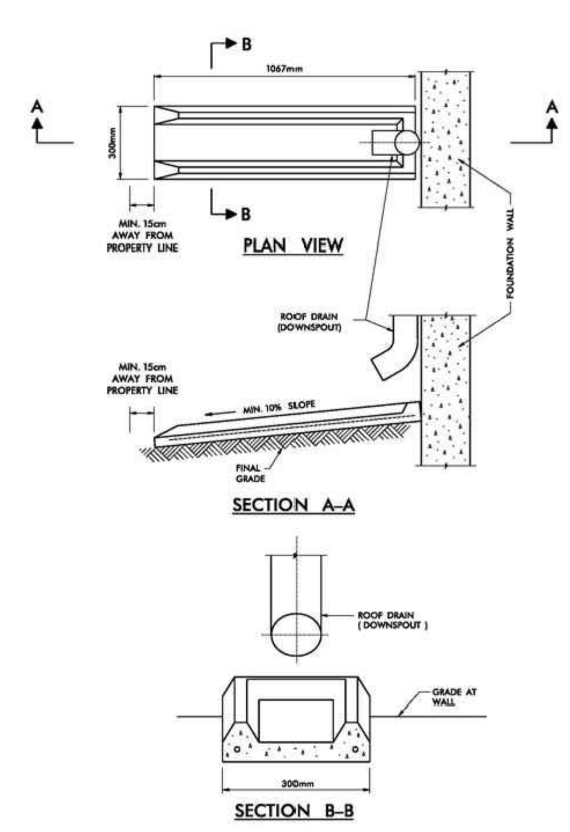
7 TYPICAL PARKING AREA STRIPING DETAIL
SCALE: NTS



NOTES:

1. PRECAST CATCH BASINS AND MANHOLES SHALL BE DESIGNED FOR HS-20-44 VEHICLE LOADING.
2. MANHOLE DIAMETERS SPECIFIED ON UTILITY PLANS.
3. STANDARD CAST IRON MANHOLE STEPS SHALL BE PLACED AT THE PLANT.
4. CONTRACTOR IS RESPONSIBLE FOR WATER TIGHTNESS OF MANHOLE.
5. USE MANHOLE ADJUSTMENT RINGS AS NEEDED. MAXIMUM, 3 COURSES.

6 PRECAST STORM MANHOLE
SCALE: NTS



1067mm x 300mm
CONCRETE SPLASH PAD DETAIL

GENERAL SPECIFICATIONS

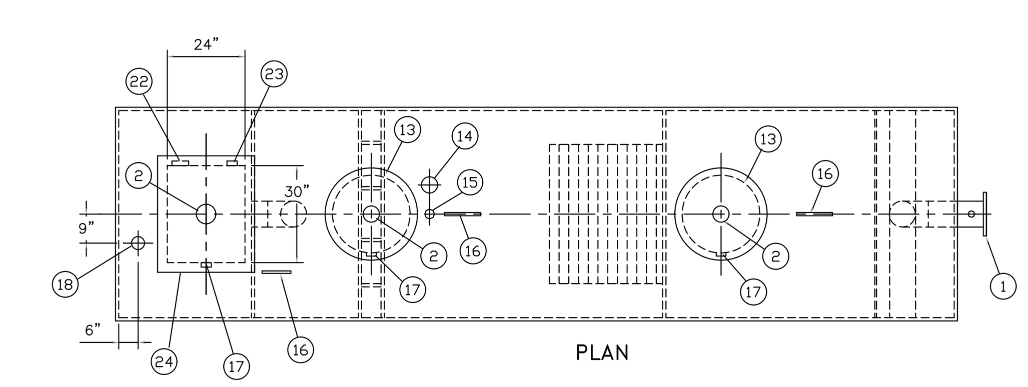
NO. REQ'D: (1)
CAPACITY: 3000 GALLONS
TYPE: HTC–J, HIGHGUARD, DW TYPE I 360
MATERIAL: MILD CARBON STEEL
FLOW RATE: 300 GPM
GAUGE: BASED ON 60" MAX BURIAL

	INNER	OUTER
SHELL–	7 GA.	10 GA.
HEADS–	7 GA.	10 GA.

SURFACE PREP:
SSPC NO.6 BLAST ALL EXTERIOR SURFACES
SSPC NO.10 BLAST ALL INTERIOR OF WATER CHAMBER ONLY

COATING:	MATERIAL	THICKNESS
EXTERIOR–	HIGHGUARD	(75 MILS)
INTERIOR–	POLYURETHANE INTERIOR OF WATER CHAMBER	(15 MILS)

CONSTRUCTION :
LAP FIT & WELD ALL EXTERIOR SEAMS
OPERATING PRESSURE : ATMOSPHERIC



PROVIDED EQUIPMENT

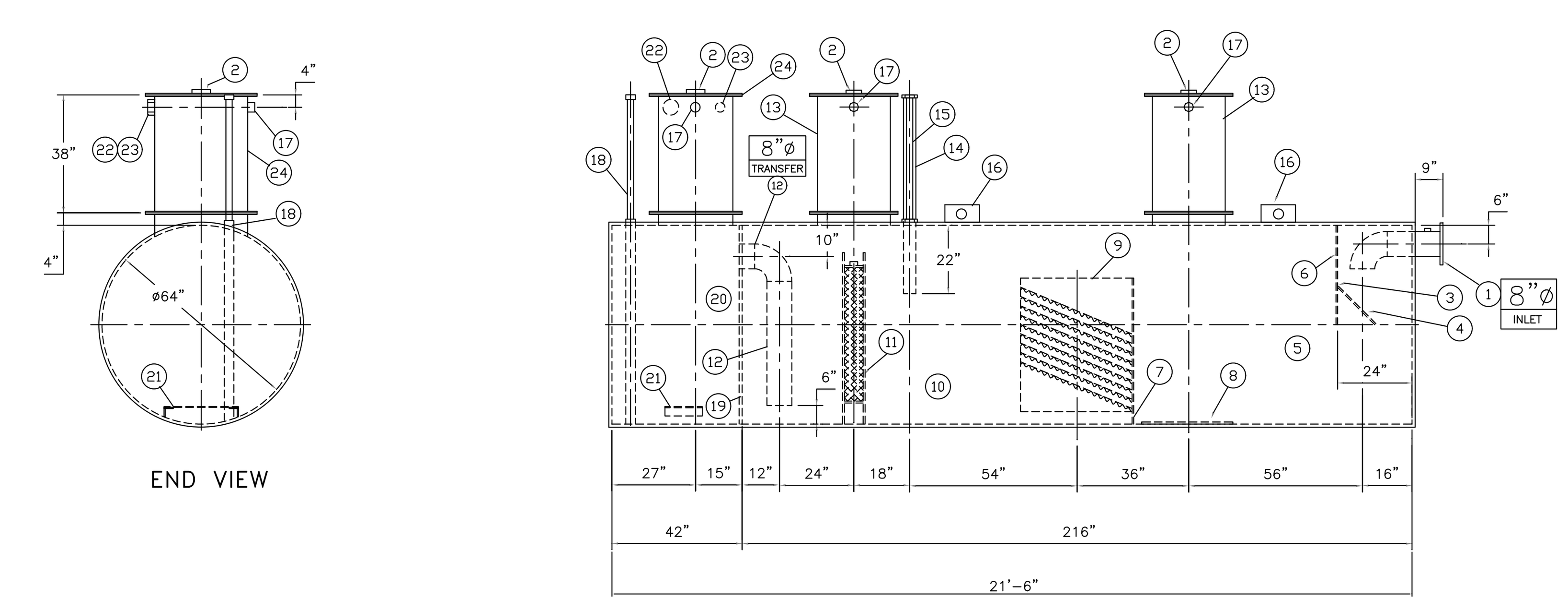
1. 150# R.F.S.O. FLANGE W/ 2" FNPT FOR VENT
2. 4"ø FNPT FOR GAUGE WITH PLUG
3. VELOCITY HEAD DIFFUSION BAFFLE
4. WEAR PLATE
5. SEDIMENT CHAMBER
6. UNDERFLOW BAFFLE (REMOVABLE)
7. SLUDGE BAFFLE
8. STRIKER PLATES
9. PARALLEL CORRUGATED PLATE COALESCER. CORELLA PVC PLATES (3" PLATE SPACING)
10. OIL/WATER SEPARATOR CHAMBER
11. 6" THICK PETROSCREEN COALESCER MATERIAL INSTALLED W/ PULL ROD SHIPPED LOOSE
12. STEEL TRANSFER PIPE W/ DOWNCOMER
13. 24"ø MANWAY WITH NEO–CORK GASKETS. BOLT–ON EXTENSION SHIPPED LOOSE
14. 4"ø FNPT FOR OIL PUMP–OUT WITH INTERNAL PVC PIPE INSTALLED & RISER PIPE SHIPPED LOOSE
15. 2"ø FNPT FOR LEVEL SENSOR WITH RISER PIPE SHIPPED LOOSE
16. LIFTING LUG
17. 2"ø FNPT FOR VENT
18. 2"ø FNPT FOR LEAK SENSOR WITH RISER PIPE SHIPPED LOOSE
19. 7 GA. BULKHEAD
20. EFFLUENT WATER CHAMBER
21. PUMP MOUNT
22. 4" FNPT FOR EFFLUENT PUMP CONDUIT AND WIRING
23. 2" FNPT FOR EFFLUENT LEVEL SENSOR CONDUIT AND WIRING
24. RECTANGULAR MANWAY WITH CLOSED CELL SPONGE GASKET. BOLT–ON EXTENSION SHIPPED LOOSE

ANCILLARY PROVIDED EQUIPMENT

(4) 24" NEO–CORK MANWAY GASKETS
(4) SETS OF NUTS/BOLTS/WASHERS FOR 24" MANWAY
(1) 24"x30" CLOSED CELL FOAM MANWAY GASKET
(1) 24"x30" RUBBER RIBBON MANWAY GASKET
(2) SETS OF NUTS/BOLTS/WASHERS FOR 24"x30" MANWAY

NOTES

1. POLYURETHANE HIGHGUARD TANK IS NOT APPROVED FOR THE STORAGE OF HEATED PRODUCTS
2. ALL VENT PIPING BY INSTALLER
3. 15000 VOLT SPARK TEST PROVIDED AT FACTORY
4. CUSTOMER TO PROVIDE EFFLUENT PUMPING INFORMATION FOR PROPER PUMP SIZING & PUMPOUT DESIGN



HIGHLAND TANK SHALL BE RESPONSIBLE ONLY FOR ITEMS INDICATED ON THIS FABRICATION DRAWING UNLESS OTHERWISE NOTED. CUSTOMER IS RESPONSIBLE FOR VERIFYING CORRECTNESS OF SIZE / LOCATION OF FITTINGS , ACCESSORIES & COATINGS SHOWN ON THIS DRAWING

OIL/WATER SEPARATORS ARE NOT PART OF DCDOH APPROVAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE + OR – 1"

REVISIONS

Highland Tank

U.S. Patent #4,722,800 Canadian Patent # 1,296,263

3000 GALLON OIL WATER SEPARATOR
HTC–J, HIGHGUARD, DW TYPE I 360

CUSTOMER:
PROJECT:
QUOTE NO:
CHK'D BY:

SCALE:	DATE:	DWG. BY:	DWG. NO.:
3/8"=1'-0"			03000HGDWHTCJ

8 3000 GAL OIL/WATER SEPARATOR

PASSERO
engineering architecture

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Designed by LDS, ZJH

Project:
SKY HARBOUR HANGAR DEVELOPMENT

Stamp:

Site:
Hudson Valley Regional Airport
263 New Hackensack Rd.
Wappingers Falls, NY 12590

Client:
Sky Harbour LLC
136 Tower Rd., Suite 205
White Plains, NY 10604

Revisions:

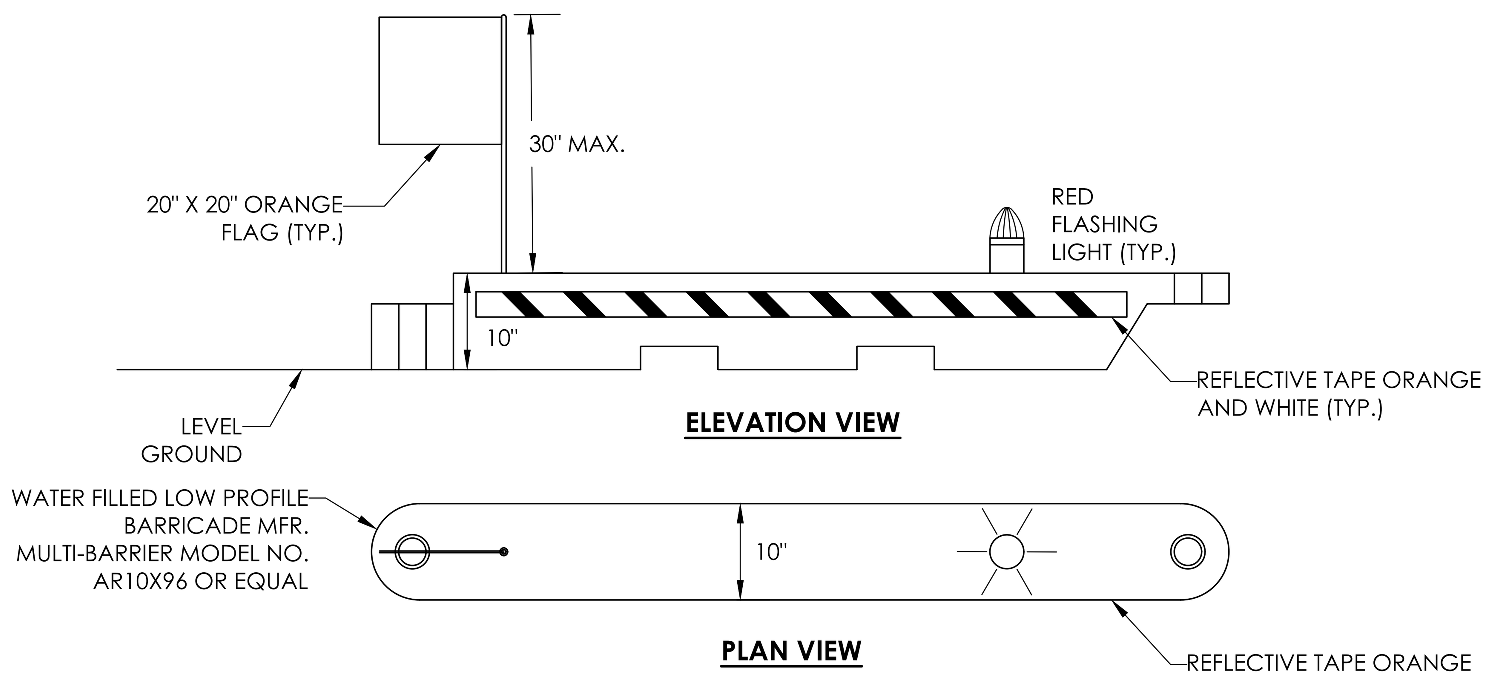
MARK	DATE	DESCRIPTION

PROJECT NO: 23000149.0019
CAD DWG FILE: 23000149.0019 Details.dwg
DRAWN BY: AG, ZJH
CHECKED BY: MJN

Sheet Title:
Miscellaneous Details

C-521

April 2025

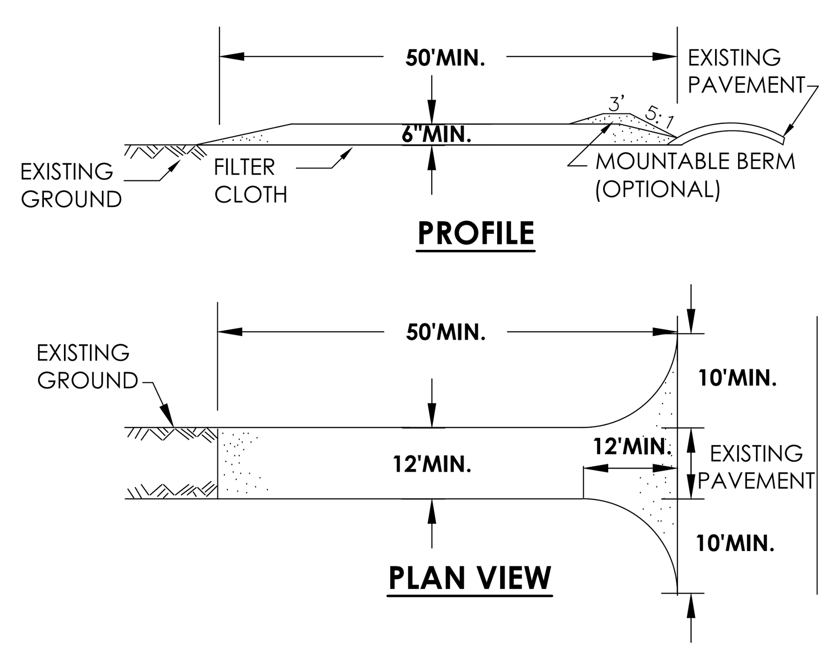


BARRICADE NOTES:

1. EACH UNIT SHALL INCLUDE RED STANDARD OMNI DIRECTIONAL LIGHT, 20" ORANGE FLAG AND 3M HIGH REFLECTIVE ORANGE TAPE.
2. INSTALL A MINIMUM OF 1 RED SOLAR LIGHT EQUALLY SPACED PER EACH 8' LONG BARRICADE. LIGHT SHALL MAINTAIN SUCH INTENSITY SO AS TO BE READILY IDENTIFIED FROM DISTANCE OF 200' OR GREATER DURING DARKNESS PERIODS.
3. A MINIMUM OF 1 FLAG NO MORE THAN 18" SQUARE MOUNTED TO THE BARRICADE AND NO MORE THAN 30" HIGH SHALL BE AFFIXED FOR EACH SPAN OF BARRICADES. FLAGS SHALL BE AVIATION ORANGE (FED-STD-595, NO. 12197).
4. THE USE OF "HOMEMADE" BARRICADES IS UNACCEPTABLE.
5. SPARE LIGHT/FLAGS MUST BE KEPT ON SITE.
6. THE BARRICADES SHALL BE WEIGHTED AGAINST JETBLAST AND CAPABLE OF WITHSTANDING UP TO 110 M.P.H. WIND FORCE.
7. BARRICADES SHOULD BE SPACED TO HAVE NO MORE THAN 4' OPEN BETWEEN EACH BARRICADE.

1 LOW PROFILE CONSTRUCTION BARRICADE

SCALE: NTS

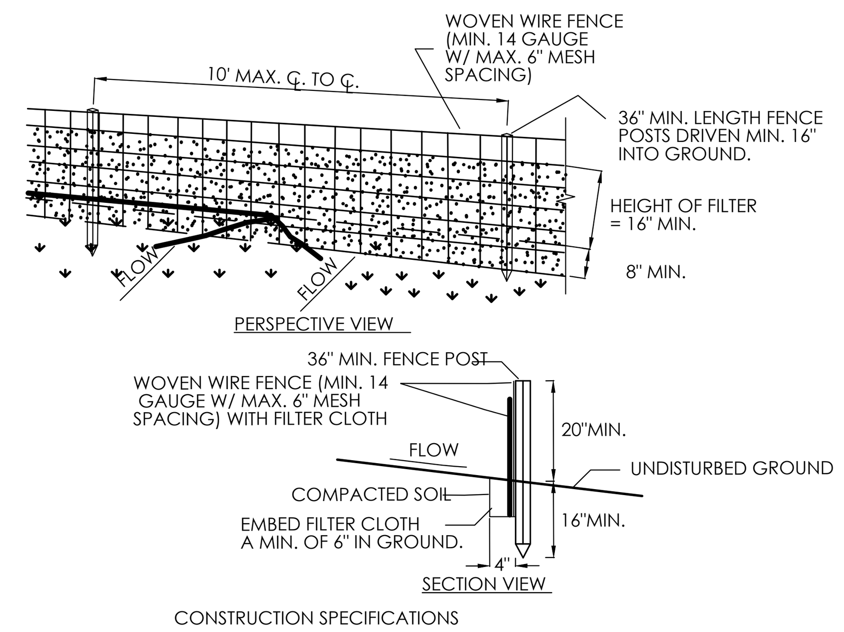


CONSTRUCTION SPECIFICATIONS:

1. STONE SIZE - USE 2" CRUSHER RUN 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. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS 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.

2 STABILIZED CONSTRUCTION ENTRANCE

SCALE: NTS

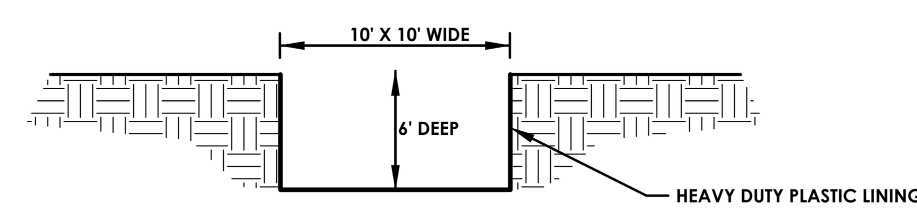


CONSTRUCTION SPECIFICATIONS

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, 14 GAUGE, 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 BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

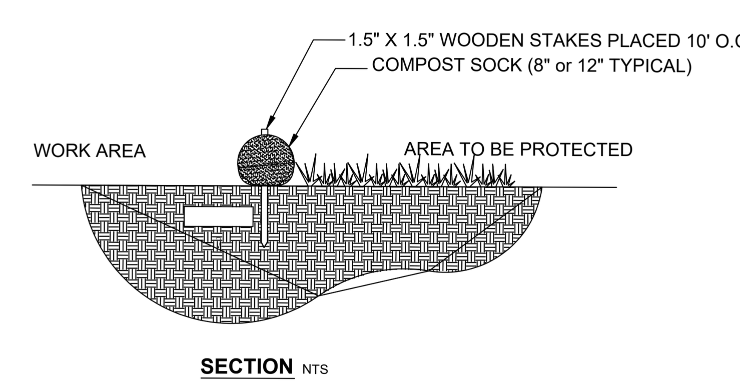
3 SILT FENCE FOR TEMPORARY EROSION CONTROL

SCALE: NTS

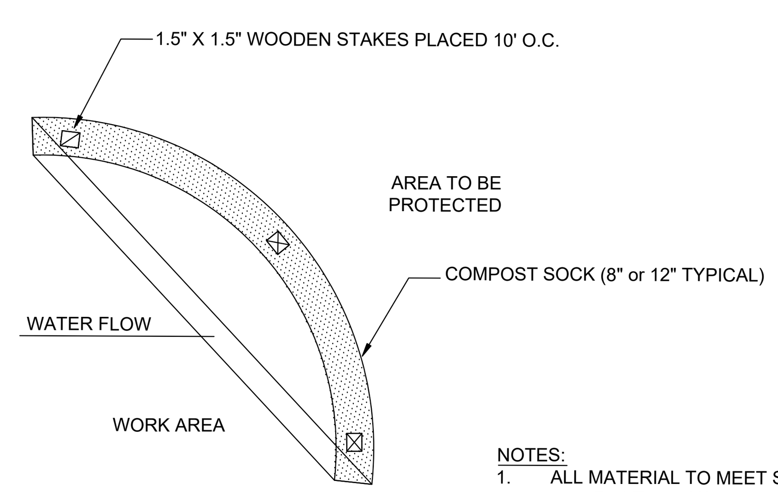


4 CONCRETE WASHOUT AREA

SCALE: NTS



SECTION NTS



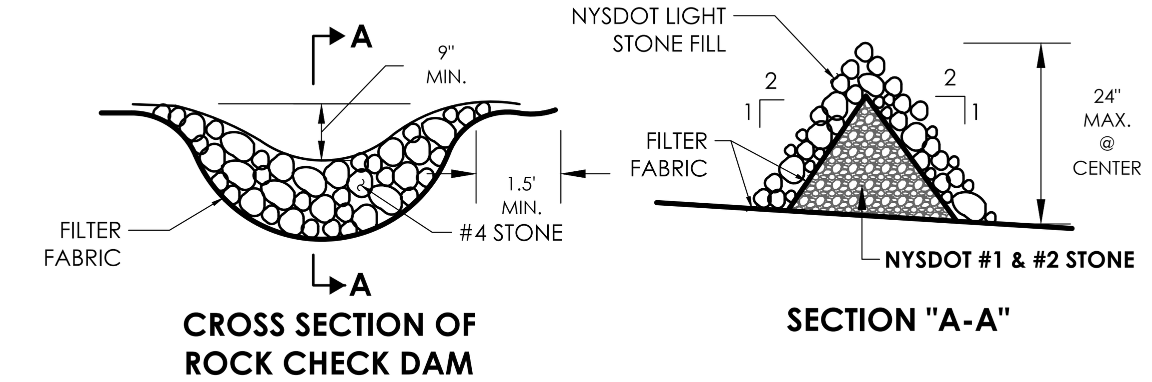
PLAN NTS

NOTES:

1. ALL MATERIAL TO MEET SPECIFICATIONS.
2. COMPOST SOCKS FILL TO MEET APPLICATION REQUIREMENTS.
3. FILTER MEDIA TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

5 COMPOST SOCKS FOR SEDIMENT CONTROL

SCALE: NTS

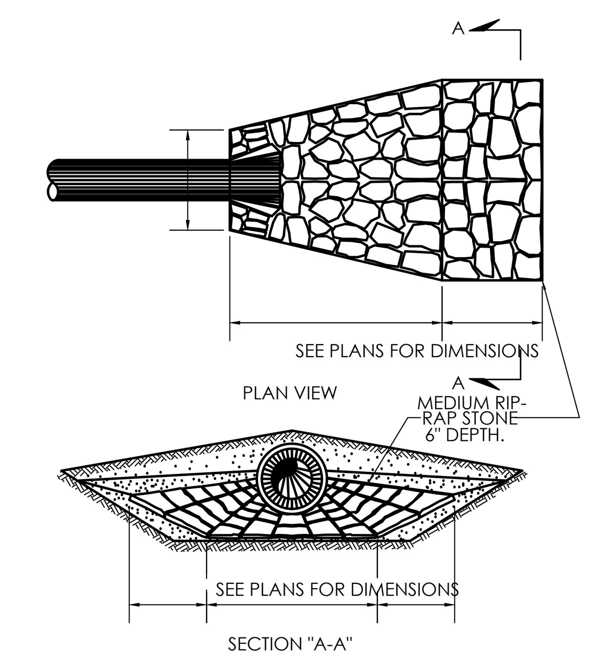


NOTES:

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION AT THE LOCATIONS SHOWN IN THE PLAN.
2. EXTEND THE STONE A MIN. OF 1.5 FEET BEYOND THE CHANNEL BANKS TO PREVENT CUTTING AROUND THE DAM.
3. REMOVE DAM OR WASTE STONE IN BOTTOM OF CHANNEL WHEN SITE IS STABILIZED.

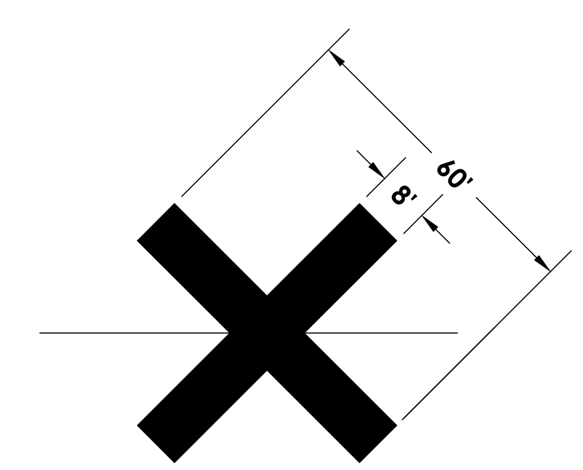
6 TEMPORARY CHECK DAM

SCALE: NTS



7 STONE RIP RAP DETAIL

SCALE: NTS

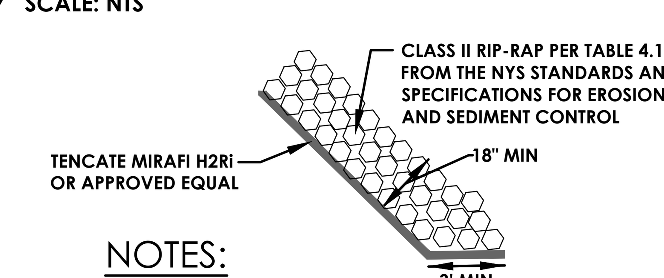


NOTES:

1. SECURELY ANCHOR CLOSED RUNWAY MARKER TO TURF RUNWAY WITH SAND BAGS.
2. RUNWAY CLOSED MARKER SHALL BE AS MANUFACTURED BY NEUBART AERO CORP. OR APPROVED EQUAL.

8 TEMPORARY UNLIT RUNWAY CLOSURE MARKER

SCALE: NTS



NOTES:

1. SLOPE SHALL BE GRADED TO 2:1 OR FLATTER PRIOR TO PLACING RIP RAP.
2. PLACE THE FABRIC DIRECTLY ON THE PREPARED FOUNDATION. OVERLAP THE EDGES BY AT LEAST 2 FEET. BURY THE UPPER AND LOWER ENDS OF THE FABRIC A MINIMUM OF 12 INCHES BELOW GROUND. TAKE PRECAUTIONS NOT TO DAMAGE THE FABRIC BY DROPPING THE RIPRAP. IF DAMAGE OCCURS, REMOVE THE RIPRAP AND REPAIR THE SHEET BY ADDING ANOTHER LAYER OF FILTER FABRIC WITH A MINIMUM OVERLAP OF 12 INCHES AROUND THE DAMAGED AREA.
3. PLACEMENT OF THE RIPRAP SHOULD FOLLOW IMMEDIATELY AFTER PLACEMENT OF THE FILTER FABRIC. PLACE RIPRAP SO THAT IT FORMS DENSE, WELL-GRADED MASS OF STONE WITH A MINIMUM OF VOIDS. THE DESIRED DISTRIBUTION OF STONES THROUGHOUT THE MASS MAY BE OBTAINED BY SELECTIVE LOADING AT THE QUARRY AND CONTROLLED DUMPING DURING FINAL PLACEMENT. PLACE RIPRAP TO ITS FULL THICKNESS IN ONE OPERATION. DO NOT PLACE RIPRAP BY DUMPING THROUGH CHUTES OR OTHER METHODS THAT CAUSE SEGREGATION OF STONE SIZES. BE CAREFUL NOT TO DISLODGE THE UNDERLYING BASE OR FILTER WHEN PLACING THE STONES.
4. ENDS OF THE RIP RAP SHALL BE KEYED INTO A STABLE BANK. WHEN TYING INTO OTHER STRUCTURES, LARGER RIPRAP CAN BE LAID IN STEPS OR STACKED AS NEEDED TO FIT. STONES LARGER THAN THOSE DESIGNATED FOR FLOW (12") SHALL BE USED FOR THIS PURPOSE.

9 RIP RAP SLOPE STABILIZATION

SCALE: NTS

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Project Manager: Matt Nissen, P.E.
Designed by: LDS, ZJH

Project:

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Client:

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136 Tower Rd., Suite 205
White Plains, NY 10604

Revisions:

MARK	DATE	DESCRIPTION

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DRAWN BY: AG, ZJH
CHECKED BY: MJN

Sheet Title:

MPT & Erosion Control Details

C-531

April 2025

DEMOLITION NOTES:

1. CONTRACTOR IS RESPONSIBLE TO CALL DIG SAFE 811 PRIOR TO BEGINNING DEMOLITION.
2. PRIOR TO ANY DEMOLITION TAKING PLACE, CONTRACTOR TO VERIFY LOCATION AND DEPTH OF ALL UTILITIES WITHIN THE WORK AREA OR THOSE EXPECTED TO BE AFFECTED BY NEW WORK, AND SUBSURFACE FEATURES.
3. CONTRACTOR TO COORDINATE ALL UTILITY SHUT DOWNS, RELOCATIONS, SERVICE INSTALLATIONS WITH THE LOCAL UTILITY COMPANIES AND AIRPORT.
4. CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL DEMOLISHED MATERIAL IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
5. ALL EXISTING FEATURES TO BE REMOVED ARE NOT SHOWN ON SUBSEQUENT PLANS FOR CLARITY.
6. CONTRACTOR SHALL PROTECT ALL EXISTING FEATURES TO REMAIN. DAMAGE TO EXISTING FEATURES TO REMAIN SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
7. ALL SURFACES THAT ARE DISTURBED DUE TO UTILITY CONSTRUCTION, OUTSIDE OF THE MAJOR WORK AREAS, ARE TO BE RESTORED TO PRE-CONSTRUCTION CONDITION, IN ACCORDANCE WITH THE ASPHALT AND CONCRETE SECTION DETAILS INCLUDED IN THESE PLANS. LAWN AREAS ARE TO BE RE-ESTABLISHED WITH 4 INCHES OF TOPSOIL (MINIMUM) AND HYDROSEED.
8. ANY MATERIALS CONTAINING ASBESTOS SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS. NOTE THIS MAY INCLUDE UNDERGROUND UTILITIES.
9. ALL UTILITIES NOT SLATED FOR DEMOLITION ARE TO REMAIN FUNCTIONAL UPON COMPLETION OF DEMOLITION. THIS INCLUDES BYPASS PUMPING, IF NECESSARY.
10. EXISTING UTILITIES THAT ARE PROPOSED TO BE REMOVED, UNLESS OTHERWISE INDICATED, SHALL BE EXCAVATED, UTILITY MATERIAL REMOVED, AND DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE SPECIFICATIONS. ALL TRENCHES SHALL BE BACKFILLED WITH GRANULAR FILL, COMPACTED IN 12" LIFTS TO 95% MODIFIED PROCTOR TEST. ALL DISTURBED AREAS SHALL BE RESTORED IN KIND IN ACCORDANCE WITH THE DETAILS IN THESE PLANS AND AT A MINIMUM TO THEIR ORIGINAL STATE.
11. AREAS OF ASPHALT AND CONCRETE REMOVAL SHALL BE SAWCUT WITH A NEAT STRAIGHT LINE AT ALL REMOVAL LIMITS.
12. CONTRACTOR RESPONSIBLE FOR OBTAINING ALL DEMOLITION PERMITS AND INCLUDE ALL FEES ASSOCIATED WITH THOSE PERMITS, IN HIS BID.
13. IF ANY ENVIRONMENTAL CONDITIONS OR ISSUES, NOT PREVIOUSLY IDENTIFIED, ARE ENCOUNTERED DURING DEMOLITION, THE OWNER AND THE CONTRACTORS(S) SHALL IMMEDIATELY NOTIFY THE AIRPORT, COUNTY HEALTH DEPARTMENT AND NYSDEC BEFORE CONTINUING THE DEMOLITION PROCESS.

UTILITY CONTRACTOR COORDINATION NOTES:

1. PRIOR TO THE START OF UTILITY INSTALLATION THE CONTRACTOR AND SUBCONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL UTILITY CONNECTIONS WITH MECHANICAL/ARCHITECTURAL DRAWINGS FOR INCLUDING BUT NOT LIMITED TO VERTICAL AND HORIZONTAL LOCATION, PENETRATIONS, AND SIZES. THE CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROCEED WITH UTILITY INSTALLATION BY THE OWNERS ONSITE REPRESENTATIVE UPON COMPLETION OF COORDINATION WITH CONTRACTORS, AND PLANS.
2. THE DEVELOPER AND HIS/HER CONTRACTOR IS RESPONSIBLE FOR COORDINATING GAS, ELECTRICAL, CABLE, TELEPHONE AND ANY OTHER UTILITIES NOT SPECIFICALLY SHOWN WITHIN THIS PLAN SET WITH APPROPRIATE AGENCY. PASSERO ASSOCIATES ASSUMES NO RESPONSIBILITY FOR THE DESIGN OR PERFORMANCE OF UTILITIES NOT SPECIFICALLY SHOWN WITHIN THIS PLAN SET.
3. PRIOR TO THE START OF UTILITY INSTALLATION THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES VERTICALLY AND HORIZONTALLY AND COORDINATE WITH EXISTING UTILITIES SHOWN ON THE PLANS AND REPORT ANY DISCREPANCIES TO THE DESIGN ENGINEER. THE CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROCEED WITH UTILITY INSTALLATION BY THE OWNERS ONSITE REPRESENTATIVE UPON COMPLETION EXISTING UTILITY VERIFICATION.
4. THE CONTRACTOR IS REQUIRED TO COORDINATE WITH SITE CONTRACTOR/PLUMBER & SEWER CONTRACTOR TO PREDETERMINE THE NECESSARY WYE & CLEANOUT LOCATION ON THE STORM SEWER SYSTEM. THE STORM SEWER SYSTEM IS RECOMMENDED AND MAY BE MODIFIED TO PROVIDE ADEQUATE ROOF DRAINAGE CONNECTIONS.
5. THRUST BLOCKS ON THE WATERMAIN ARE REQUIRED AT BENDS, TEES OR PLUGS. SEE DETAIL SHEETS FOR THRUST BLOCK DETAILS.

STORM NOTES

1. PROPOSED STORM SEWER LATERAL MATERIAL:
   PVC SDR-35 6" MIN. SIZE & SHALL BE LAID AT A MINIMUM GRADE OF 1/4" PER FT.
2. DOWNSPOUTS SHALL BE CONNECTED TO STORM SEWER WHERE APPLICABLE, WHERE NOTED ON THE PLANS DOWNSPOUTS SHALL DISCHARGE TO SPLASH BLOCKS.
3. UPON COMPLETION OF SYSTEM INSTALLATION, THE MAIN SEWER SYSTEM AND LEADS TO STRUCTURES SHALL BE FLUSHED AND LAMPED OR MANDREL TESTED TO THE SATISFACTION OF THE MUNICIPALITY.

SANITARY NOTES

1. SANITARY SEWERS AND APPURTENANCES SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE LATEST REGULATIONS OF THE STATE, COUNTY AND LOCAL MUNICIPALITY
2. MATERIALS
   - MAINS - PIPING SHALL BE POLYVINYL CHLORIDE (PVC) WITH ENDS SUITABLE FOR ELASTOMERIC GASKET JOINTS, AND A MINIMUM WALL THICKNESS OF SDR-35. PIPING AND FITTINGS SHALL MEET:
     ASTM D-3034 (4" THRU 15")
     ASTM F-679 (18" THRU 48")
   - LATERALS - 6" MIN. INSTALLED AT $\frac{1}{4}$" PER FOOT MIN. PIPING SHALL BE POLYVINYL CHLORIDE (PVC) WITH ENDS SUITABLE FOR ELASTOMERIC GASKET JOINTS, AND A MINIMUM WALL THICKNESS OF SDR-35. PIPING AND FITTINGS SHALL MEET ASTM D-2241.
   - JOINTING MATERIALS - SHALL BE BELL-AND-SPIGOT WITH INTEGRAL PUSH ON TYPE ELASTOMERIC GASKET JOINTS, GASKET MATERIAL TO BE NEOPRENE MEETING ASTM D-3212.
   - MANHOLES - SHALL BE PRECAST CONCRETE WITH NEOPRENE GASKETS MEETING ASTM C-478 & ASTM C-443.
3. INFILTRATION AND EXFILTRATION FOR SANITARY SEWERS SHALL BE LIMITED TO 100 GALLONS PER MILE PER INCH DIAMETER OF PIPE PER 24 HOURS.
4. IF AN AIR TEST IS USED, THE TEST AS A MINIMUM SHALL CONFORM TO THE PROCEDURE DESCRIBED IN ASTM C-828-80, ENTITLED STANDARD PRACTICE FOR LOW PRESSURE AIR TEST OF VITRIFIED CLAY PIPELINES; SANITARY MANHOLES SHALL BE TESTED FOR EXFILTRATION.
5. DEFLECTION TEST - TEN STATE STANDARDS.
   5.A. DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE PIPE. THE TEST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.
   5.B. IF THE DEFLECTION TEST IS TO BE RUN USING A RIGID BALL OR MANDRELL, IT SHALL HAVE A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES.
   5.C. NO PIPE SHALL EXCEED A DEFLECTION OF 5%.
6. FLOOR DRAINS, SHALL BE CONNECTED TO THE OIL/WATER SEPARATOR.
7. SEPARATION - MINIMUM VERTICAL SEPARATION BETWEEN WATER MAINS AND SEWER LINES SHALL BE 18 INCHES MEASURED FROM THE OUTSIDE OF THE PIPES AT THE POINT OF CROSSING. ONE FULL STANDARD LAYING LENGTH OF WATER MAIN SHALL BE CENTERED UNDER OR OVER THE SEWER SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE. IN ADDITION. WHEN THE WATER MAIN PASSES UNDER A SEWER ADEQUATE STRUCTURAL SUPPORT (COMPACTED SELECTED FILL) SHALL BE PROVIDED FOR THE SEWER TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING OF THE SEWER ON THE WATER MAIN. MINIMUM HORIZONTAL SEPARATION BETWEEN PARALLEL WATER MAINS AND SEWER PIPES (INCLUDING MANHOLES AND VAULTS) SHALL BE 10 FEET MEASURED FROM THE OUTSIDE OF THE PIPES. MANHOLES OR VAULTS.

GENERAL NOTES

1. THE SANITARY WASTE DISPOSAL SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS OF THE NEW YORK STATE AND DUTCHESS COUNTY HEALTH DEPARTMENTS.
2. WATER SERVICE WILL BE INSTALLED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE DUTCHESS COUNTY WATER AUTHORITY.
3. THE BUILDING CONSTRUCTION TO BE IN COMPLIANCE WITH THE NEW YORK STATE BUILDING CODE.
4. ANY COST RELATED TO THE RELOCATION OF ANY UTILITIES NECESSITATED BY THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE OWNER OR THOSE REQUESTING THE RELOCATION OF THE UTILITY.
5. ALL LEASE LINE CORNERS TO BE MARKED WITH IRON PINS.

STANDARD WATER MAIN EXTENSION NOTES:

1. THE WATER MAIN PIPELINE SHALL BE DISINFECTED EQUAL TO AWWA STANDARD FOR DISINFECTING WATER MAINS DESIGNATION C651 (LATEST REVISION). FOLLOWING DISINFECTION, THE WATER MAIN PIPELINE SHALL BE FLUSHED UNTIL THE CHLORINE CONCENTRATION IN THE WATER LEAVING THE MAIN IS NO HIGHER THAN THAT GENERALLY PREVAILING IN THE SYSTEM.
   ALL WATER MAIN PIPE FITTINGS NOT RECEIVING 24-HOUR CHLORINE DISINFECTION CONTACT TIME MUST BE SWAB-DISINFECTED 30 MINUTES PRIOR TO INSTALLATION.
   THE SAMPLING POINT(S) MUST BE DECONTAMINATED BY FLAMING.
   FIRE HYDRANTS ARE NOT ACCEPTABLE SAMPLING POINTS.
   THE DUTCHESS COUNTY DEPARTMENT OF HEALTH MUST RECEIVE AT LEAST 48-HOUR ADVANCE NOTIFICATION REQUESTING SAMPLING SERVICES. SAMPLING WILL NOT BE PERFORMED PRIOR TO RECEIPT FROM A NEW YORK STATE LICENSED OR REGISTERED DESIGN PROFESSIONAL (ENGINEER, ARCHITECT OR LAND SURVEYOR WITH A SPECIAL EXEMPTION UNDER SECTION 7208(N) OF THE EDUCATION LAW) CERTIFYING THAT THE WATER SUPPLY IMPROVEMENTS, TESTING AND DISINFECTION PROCEDURES WERE COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS, REPORTS, SPECIFICATIONS AND ANY APPROVED AMENDMENTS. THE DEPARTMENT WILL COLLECT SAMPLES FOR FREE CHLORINE RESIDUAL, TOTAL COLIFORM, ESCHERICHIA COLI (E. COLI) AND TURBIDITY.
   THE WATER MAIN PIPE AND APPURTENANCES SHALL NOT BE PLACED INTO SERVICE UNTIL SO AUTHORIZED BY THE DUTCHESS COUNTY DEPARTMENT OF HEALTH.
2. MINIMUM VERTICAL SEPARATION BETWEEN WATER MAIN PIPELINES AND SEWER PIPELINES SHALL BE 18 INCHES MEASURED FROM THE OUTSIDE OF THE PIPES AT THE POINT OF CROSSING. ONE FULL STANDARD LAYING LENGTH OF WATER MAIN PIPE SHALL BE CENTERED UNDER OR OVER THE SEWER SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE. IN ADDITION, WHEN THE WATER MAIN PIPELINE PASSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT (COMPACTED SELECTED FILL) SHALL BE PROVIDED FOR THE SEWER TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING OF THE SEWER ON THE WATER MAIN. MINIMUM HORIZONTAL SEPARATION BETWEEN PARALLEL WATER MAIN PIPES AND SEWER PIPES (INCLUDING MANHOLES AND VAULTS) SHALL BE 10 FEET MEASURED FROM THE OUTSIDE OF THE PIPES, MANHOLES OR VAULTS.
3. WHEN INSTALLING FIRE HYDRANTS, SHOULD GROUND WATER BE ENCOUNTERED WITHIN SEVEN (7) FEET OF THE FINISHED GRADE, FIRE HYDRANT WEEP HOLES (DRAINS) SHALL BE PLUGGED.
4. THE WATER MAIN PIPELINE AND APPURTENANCES SHALL BE PRESSURE/LEAKAGE TESTED IN ACCORDANCE WITH THE MINIMUM REQUIREMENTS OF THE AWWA STANDARD C600, C602, C604, OR C605 (MOST RECENT VERSION AS APPLICABLE) OR IN ACCORDANCE WITH MORE STRINGENT REQUIREMENTS IMPOSED BY THE SUPPLIER OF WATER.

CONSTRUCTION SEQUENCE FOR GRADING AND EROSION CONTROL:

1. FOUR (4) HOUR NYSDEC EROSION CONTROL TRAINING COURSE COMPLETION AND CERTIFICATION REQUIRED BY CONTRACTOR OR CONTRACTORS ON SITE REPRESENTATIVE PRIOR TO CONSTRUCTION START.
2. DUTCHESS COUNTY WINTER SHUTDOWN PERIOD IS TYPICALLY NOVEMBER 15 THROUGH MARCH 15. CONTRACTOR RESPONSIBLE FOR SUBMISSION OF A WINTER SHUTDOWN REQUEST FORM TO DUTCHESS COUNTY. REFER TO APPENDIX M OF THE STORMWATER POLLUTION PREVENTION PLAN FOR A COPY OF THE FORM AND COVERAGE REQUIREMENTS TO ACHIEVE WINTER SHUTDOWN.
3. INSTALL STABILIZED CONSTRUCTION ENTRANCE.
4. CONSTRUCT STORMWATER MANAGEMENT AREA AND EROSION CONTROL MEASURES AS SHOWN ON THE PLANS.
5. CONSTRUCT DRAINAGE SWALES AS SHOWN.
6. STRIP TOPSOIL AND STOCKPILE FOR LATER USE.
7. GRADE IMPROVEMENTS AREAS WITHIN THE PROJECT SITE. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN 7 DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN 7 DAYS OF THE LAST DISTURBANCE.
8. REPLACE TOPSOIL AND FINE GRADE.
9. HYDRO-SEED ALL DISTURBED AREAS WITHIN 10 DAYS AFTER FINAL GRADING, CONTRACTOR IS RESPONSIBLE TO RESEED IF GRADING IS UNSATISFACTORY.
10. UPON APPROVAL OF THE COUNTY, REMOVE ALL TEMPORARY SILTATION CONTROLS.
11. SLOPES SHALL NOT EXCEED 1' VERTICAL TO 3' HORIZONTAL MAX. MAINTAIN 1:4 WHERE POSSIBLE.
12. MINIMUM OF 4" OF TOPSOIL IS TO BE PLACED ON ALL GRASS AREAS.
13. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BASED UPON ACTUAL FIELD CONDITIONS AOBE. CONTRACTOR SHALL PROVIDE FOR THIS COST IN HIS CONTRACT.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SILTATION AND EROSION CONTROL MEASURES FROM INSTALLATION THROUGH MAINTENANCE AND REMOVAL AFTER REVEGETATION HAS BEEN ESTABLISHED.
15. ALL END SECTIONS WILL BE PROVIDED WITH RIP-RAP APRONS.
16. ALL EROSION AND SEDIMENT CONTROL METHODS WILL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.

AT THE VERY MINIMUM, EROSION CONTROL SHALL BE AS SHOWN ON THIS PLAN. EROSION CONTROL MAY CONSIST OF SEDIMENT TRAPS AND/OR ENVIRONMENTAL FENCES. THE CONTRACTOR AND THE DEVELOPER SHALL BE RESPONSIBLE FOR THE INTEGRITY, MAINTENANCE AND REMOVAL OF EROSION CONTROL MEASURES UNTIL NO LONGER DEEMED NECESSARY BY THE COUNTY OR IT'S REPRESENTATIVE. THE CONTRACTOR SHALL MAINTAIN THE STORM SEWER SYSTEM UNTIL THE PROJECT IS DEVELOPED AND APPROVED BY THE TOWN AND OWNER.

ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD WORKING ORDER. THE PERMITTEE SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE STONE FILL. CORRECTIVE ACTIONS, AS IDENTIFIED BY THE DEVELOPER'S QUALIFIED SWPPP MONITOR OR A COUNTY REPRESENTATIVE, SHALL BE INITIATED WITHIN 24 HOURS OF BEING REPORTED. THE COUNTY MAY REVIEW THE PROJECT SITE AT ANY TIME. REVIEW OF EROSION CONTROL MEASURES BY THE COUNTY DOES NOT RELIEVE THE DEVELOPER OF HIS OBLIGATIONS UNDER THE NYSDEC SPDES GENERAL PERMIT FOR STORM WATER DISCHARGE FROM CONSTRUCTION ACTIVITY. (GP-0-20-001).

WINTER SHUTDOWN PERIOD IS GENERALLY NOVEMBER 15TH TO MARCH 15TH. DATES MAY FLUCTUATE DEPENDING ON THE WEATHER CONDITIONS. SEE APPENDIX M-2 OF SWPPP REPORT FOR A WINTER REQUEST SHUTDOWN FORM

RETAINING WALL NOTES:

1. IMMEDIATELY UPON AWARD OF CONTRACT, CONTRACTOR TO COORDINATE AND DETERMINE RETAINING WALL SUPPLIER TO PROVIDE A COMPLETE RETAINING WALL DESIGN.
2. CONTRACTOR TO COORDINATE WITH RETAINING WALL SUPPLIER TO RECEIVE ALL DESIGN DOCUMENTS FOR RETAINING WALL DESIGN WHICH INCLUDES DETAILS REGARDING THE GEOTECHNICAL, PLANS, AND ALL OTHER DOCUMENTS NEEDED FOR THE COMPLETE CONSTRUCTION OF THE RETAINING WALL.
3. RETAINING WALL SUPPLIER IS REQUIRED TO HAVE A NEW YORK STATE PROFESSIONAL ENGINEERING (P.E.) STAMP.

PASSERO
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Principal-in-Charge: Andrew Holesko
Project Manager: Matt Nissen, P.E.
Designed by: LDS, ZJH

Project:

SKY HARBOUR HANGAR DEVELOPMENT

Stamp:

Site:

Hudson Valley Regional Airport
263 New Hackensack Rd.
Wappingers Falls, NY 12590

Client:

Sky Harbour LLC
136 Tower Rd., Suite 205
White Plains, NY 10604

Revisions:

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CHECKED BY: MJN

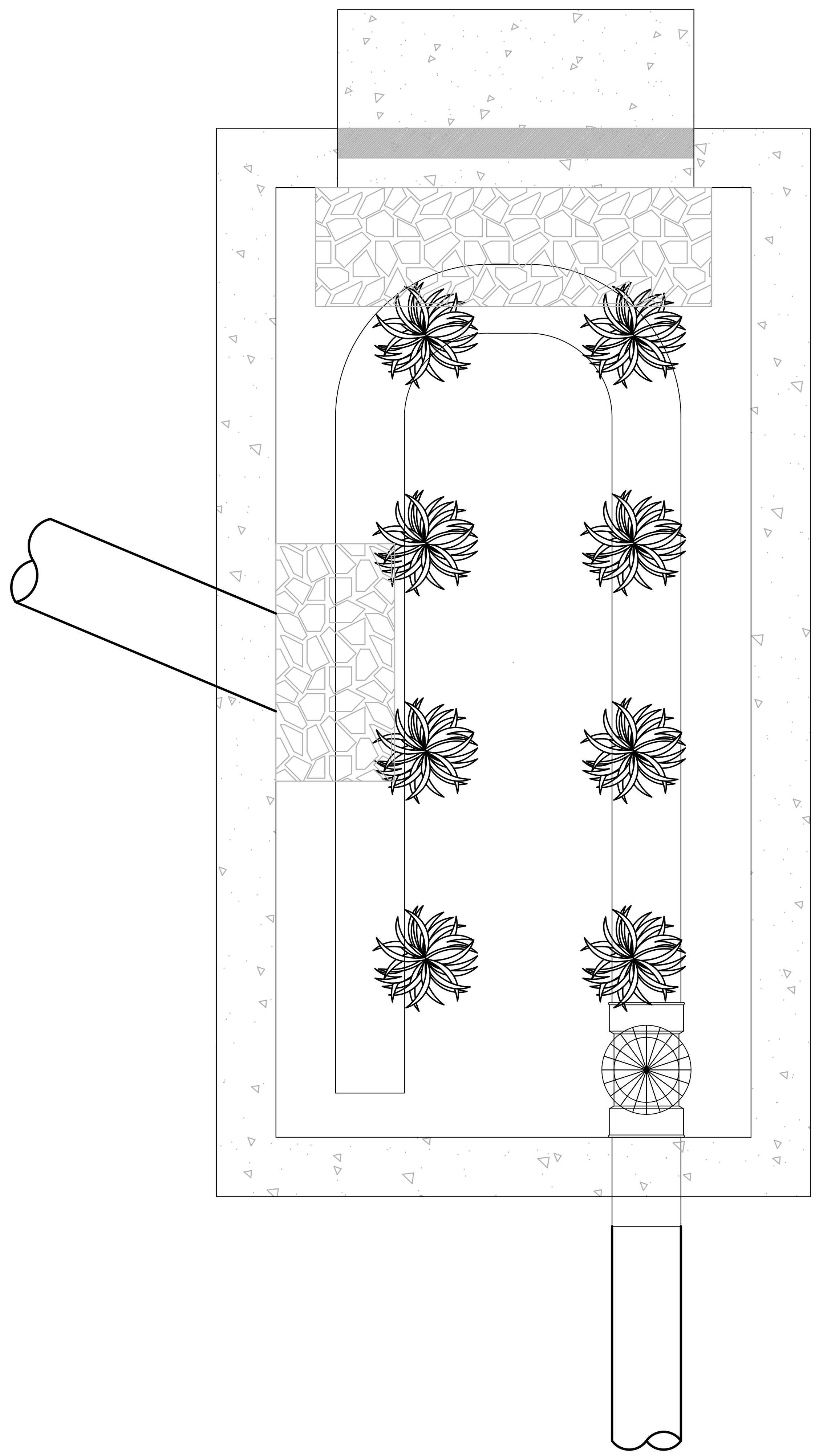
Sheet Title:

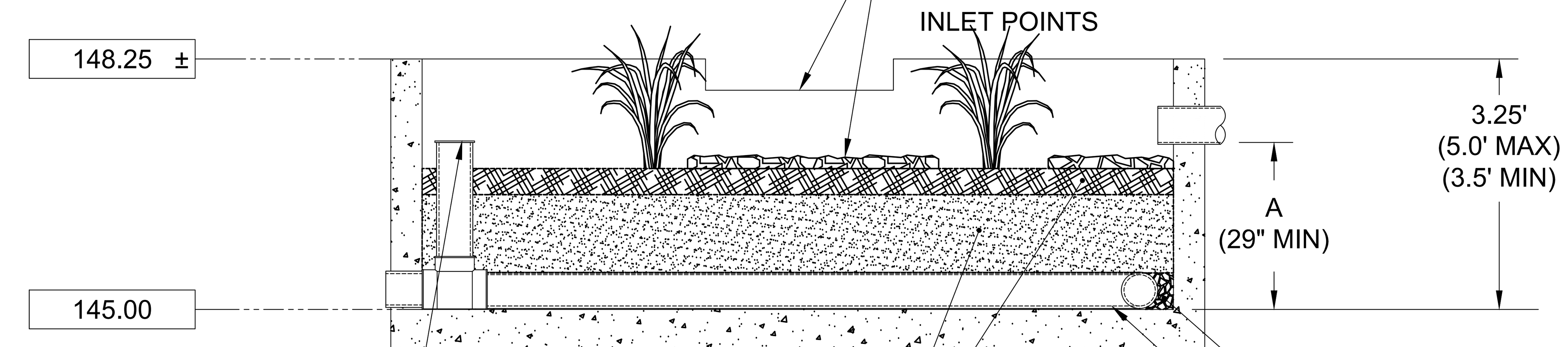
Notes & Details

C-541

April 2025

NOTE: UNDERDRAIN SHOWN IS SCHEMATIC ONLY. FOR DETAILS ON UNDERDRAIN SIZING AND LAYOUT SEE ECOSTREAM INSTALLATION GUIDE FOR DETAILS, KIT NUMBER AND PLACEMENT OPTIONS





GENERAL PROFILE & ELEVATIONS

NTS / ASSUMES 6" WALL THICKNESS & 8" TOP SLAB

		SIZE	MATERIAL	INVERT	A
INLET	1	8	SCIPP	147.67	32.0"
	2				
	3				
	4				
OUTLET		6	PVC	145.00	

ECOSTREAM BIOFILTER ES32B (4' X 8')	MTD-1
WATER QUALITY FLOW RATE (CFS)	0.294
DRAINAGE AREA (ACRES)	0.903*

THE ECOSTREAM BIOFILTER™ IS A BIOFILTRATION STORMWATER TREATMENT TECHONOLOGY RELIES ON PHYSICAL, CHEMICAL AND BIOLOGICAL MECHANISMS TO REMOVE TOTAL SUSPENDED SOLIDS, TOTAL PHOSPHORUS, TOTAL NITROGEN, HEAVY METALS, OIL and GREASE, TRASH AND BACTERIA.

*Drainage area is based on 16.93 lb./ft2/ (270.8 lb./16 ft2/) of effective filtration treatment area and the equation in the NJDEP filtration protocol appendix, where drainage area is calculated based on 600 lbs. of mass contributed per acre of drainage area annually.
**NJDEP regulations limit the contributory drainage area for GI MTD'S to 2.5 acres.

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ADS ECOSTREAM DETAILS

C-551

April 2025

PROPOSED ECOSTREAM : ES160B — MTD-2

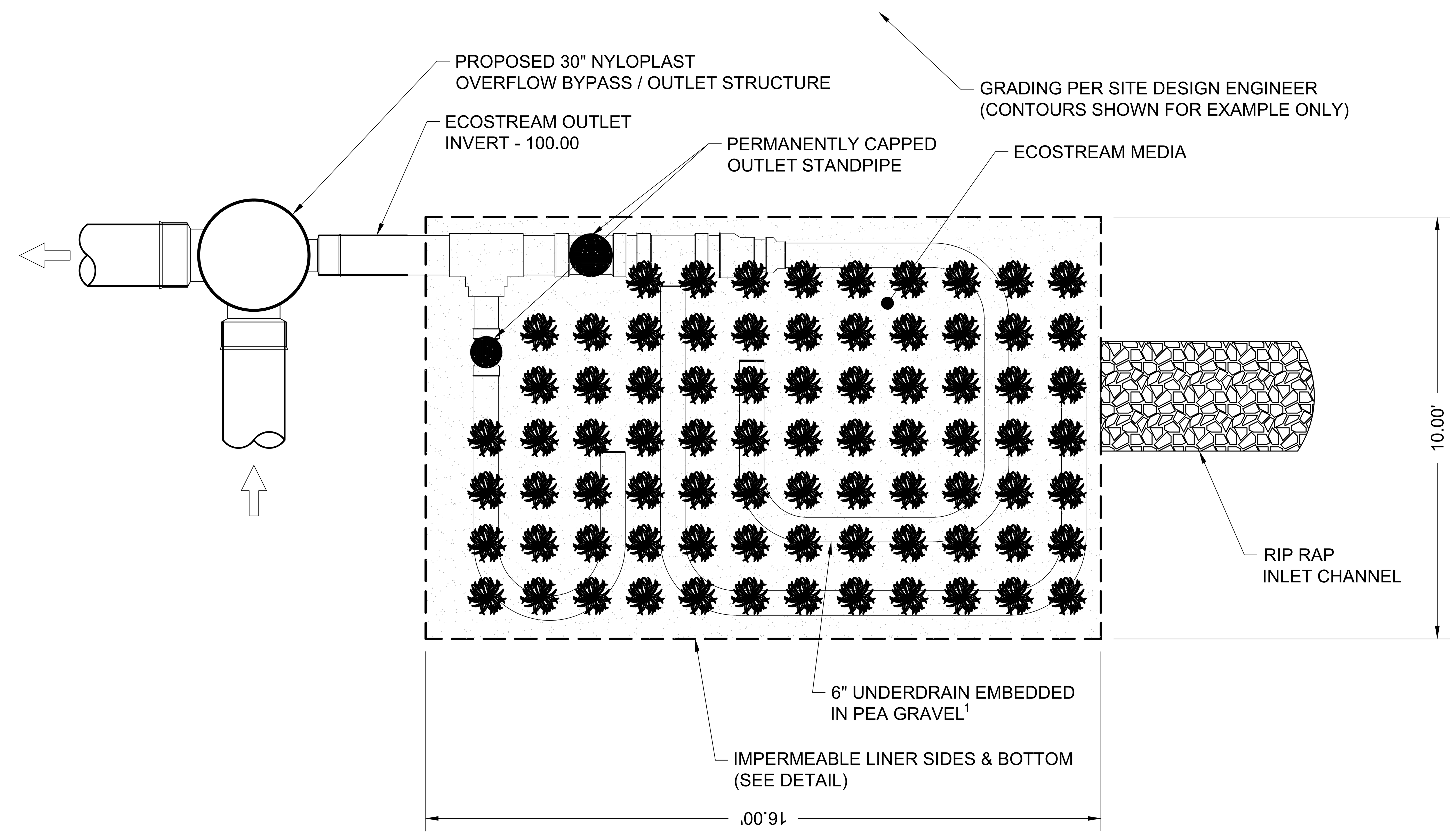
160	EFFECTIVE AREA (SQ FT)
1.470	TREATMENT RATE (CFS)
4.515**	DRAINAGE AREA (ACRES)
7.65	BYPASS FLOW RATE (CFS)

NOTES:

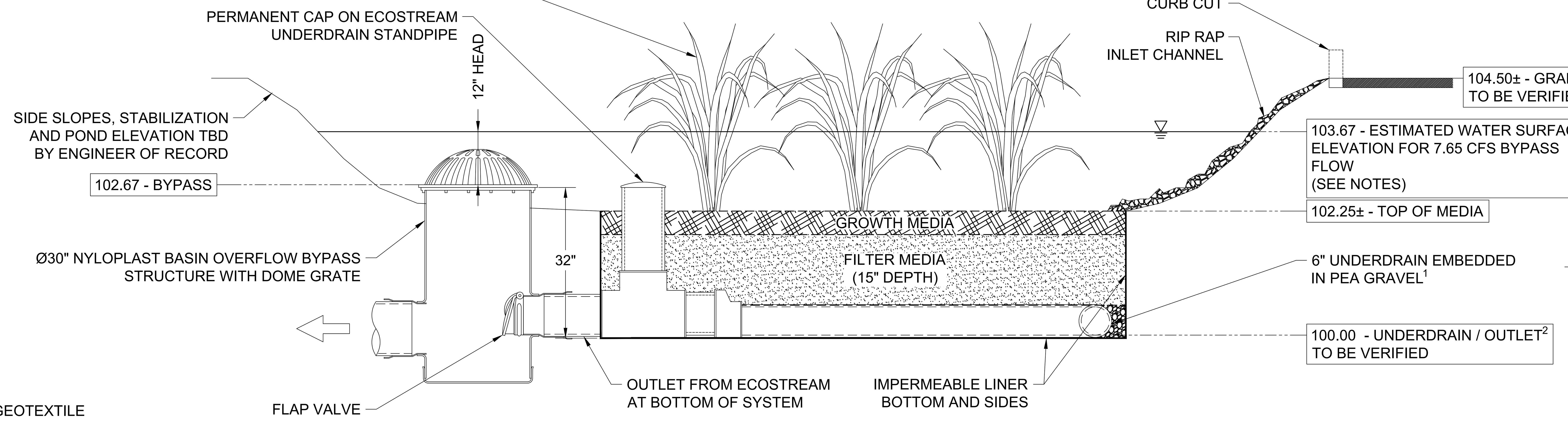
- THE ECOSTREAM BIOFILTER™ IS A BIOFILTRATION STORMWATER TREATMENT TECHNOLOGY THAT RELIES ON PHYSICAL, CHEMICAL AND BIOLOGICAL MECHANISMS TO REMOVE TOTAL SUSPENDED SOLIDS.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND FINALIZE GRADING TO MEET SITE CONDITIONS.
- THE SITE DESIGN ENGINEER MUST REVIEW THE INLET CHANNEL AND FINALIZE THE DESIGN TO MEET SITE CONDITIONS.
- WATER SURFACE ELEVATION ESTIMATED BASED ON THE INLET CAPACITY OF THE NYLOPLAST GRATE AND THE PROVIDED BYPASS FLOW RATE PER THE SITE DESIGN ENGINEER. SITE DESIGN ENGINEER MUST REVIEW THE WATER SURFACE ELEVATION AND FINALIZE THE DESIGN TO MEET THE PROJECT DESIGN PARAMETERS.
- ADS DOES NOT DESIGN OR PROVIDE MEMBRANE LINER SYSTEMS. TO MINIMIZE THE LEAKAGE POTENTIAL OF LINER SYSTEMS, THE MEMBRANE LINER SYSTEM SHOULD BE DESIGNED BY A KNOWLEDGEABLE GEOTEXTILE PROFESSIONAL AND INSTALLED BY A QUALIFIED CONTRACTOR.
- ADS DOES NOT RECOMMEND PLACING THE LINED ECOSTREAM SYSTEM IN THE WATER TABLE. FOR ASSISTANCE PLEASE CONTACT ADS ENGINEERING SERVICES.

* DRAINAGE AREA IS BASED ON 16.93 lb./16 ft^2 (270.8 lb./16 ft^2) OF EFFECTIVE FILTRATION TREATMENT AREA AND THE EQUATION IN THE NJ DEP FILTRATION PROTOCOL APPENDIX, WHERE DRAINAGE AREA IS CALCULATED BASED ON 600 lbs. OF MASS CONTRIBUTED PER ACRE OF DRAINAGE AREA ANNUALLY.

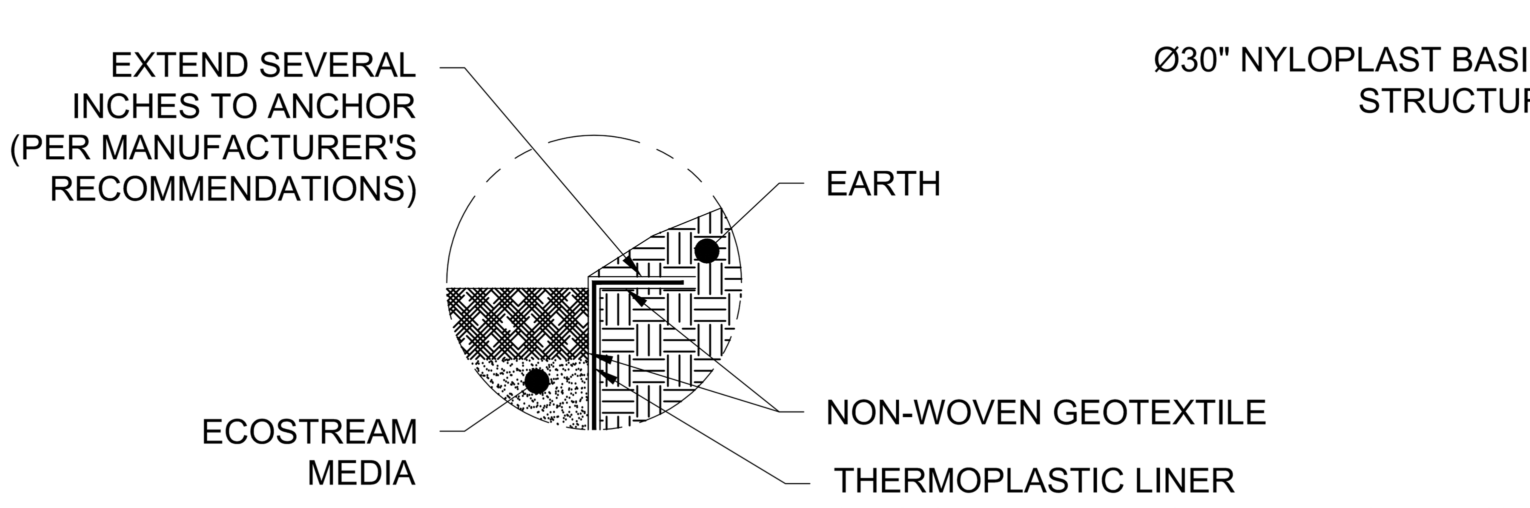
** NJ DEP REGULATIONS LIMIT THE CONTRIBUTORY DRAINAGE AREA FOR GI MTD'S TO 2.5 ACRES.



PLAN VIEW
1/4" = 1'



PROFILE VIEW
NTS



THERMOPLASTIC LINER DETAIL
NTS

1. SEE INSTALLATION GUIDE FOR NUMBER AND CONFIGURATION OF UNDERDRAIN KITS REQUIRED
2. OUTLET ELEVATION SHOWN ASSUMES 0.83 FT OF FREEBOARD ABOVE WATER SURFACE ELEVATION FOR REQUIRED HEAD ACTING UPON THE BYPASS TO PRODUCE THE PEAK BYPASS RATE. ENGINEER OF RECORD TO CONFIRM.

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Project: SKY HARBOUR HANGAR DEVELOPMENT

Stamp: STATE OF NEW YORK — MATTHEW JAMES NISSEN — 104260 — LICENSED PROFESSIONAL ENGINEER

Site: Hudson Valley Regional Airport, 263 New Hackensack Rd., Wappingers Falls, NY 12590

Client: **Sky Harbour LLC**, **136 Tower Rd., Suite 205**, White Plains, NY 10604

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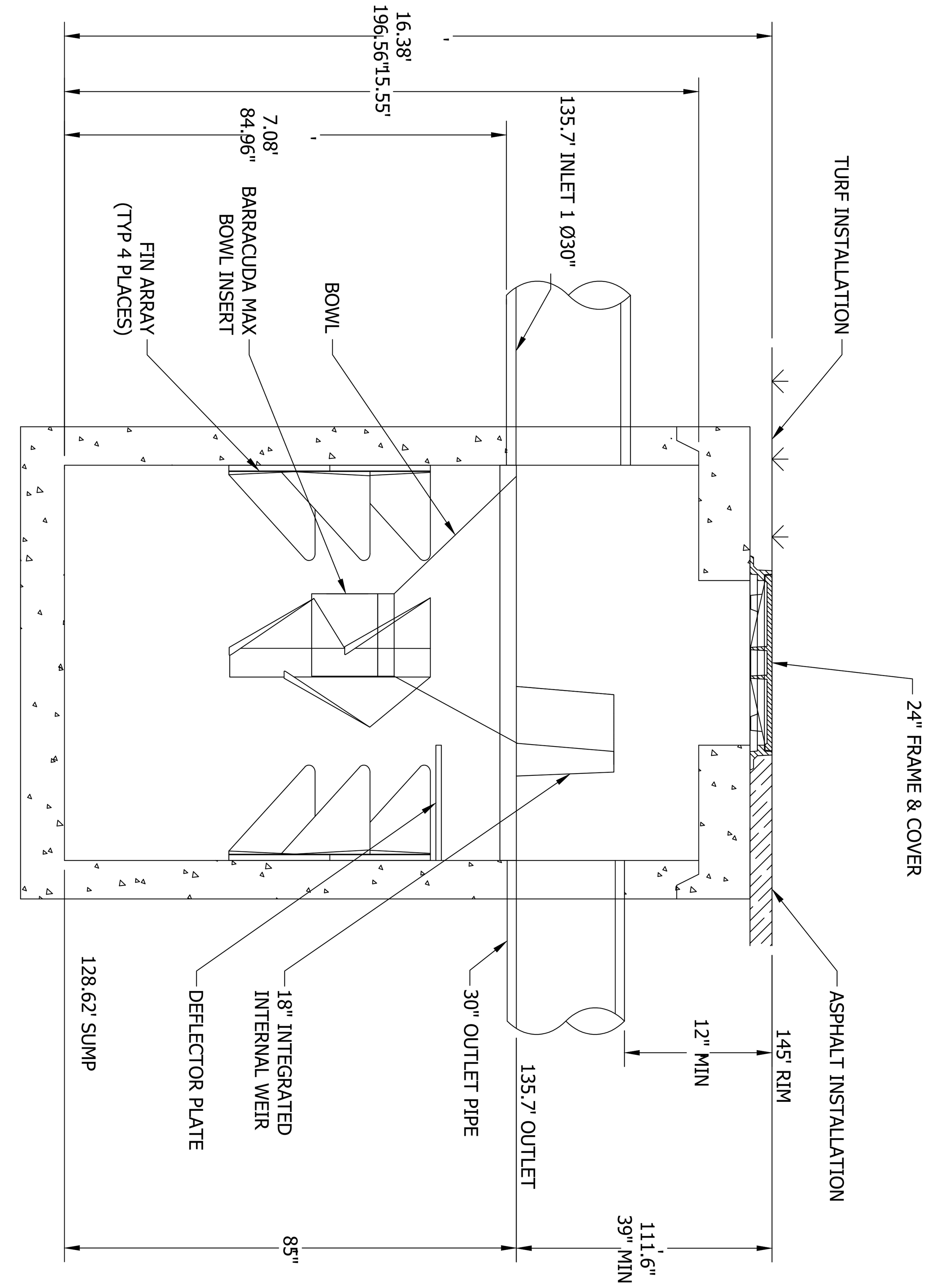
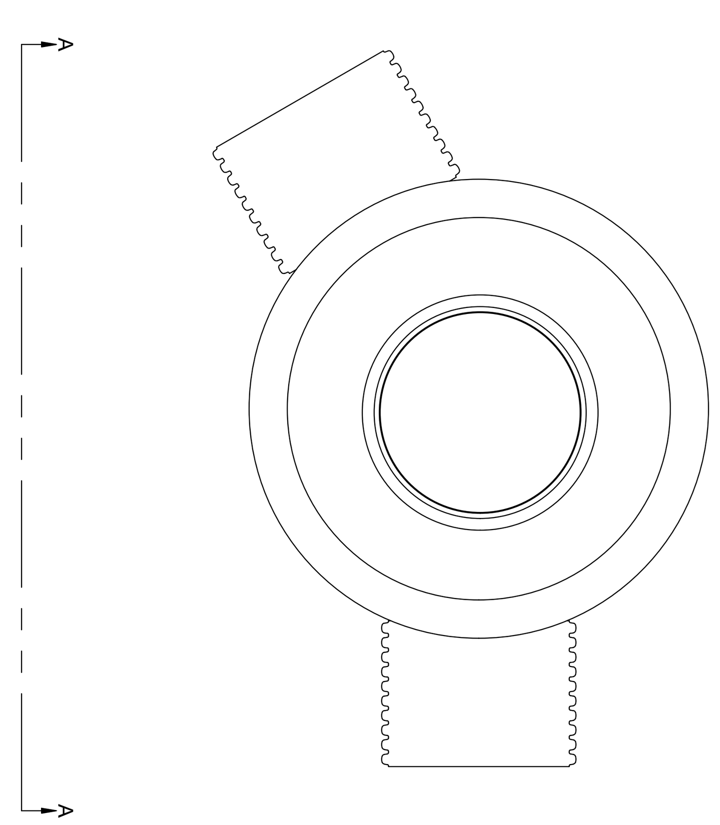
C-552

April 2025

BARRACUDA MAX S6	
UNIT ID	1
PEAK FLOW RATE (CFS)	30
TREATMENT FLOW RATE (CFS)	3.2



SECTION VIEW A-A
N.T.S.



PLAN VIEW
N.T.S.

Pipe 1 30" INLET PIPE AT 30 DEG
Pipe 2 30" OUTLET PIPE AT 180 DEG
Pipe 3
Pipe 4

PRODUCT SPECIFICATIONS

- THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW. IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE, THE UNIT SHALL BE INSTALLED OFFLINE.
- THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 80% OF THE SUSPENDED SOLIDS ON AN ANNUAL AGGREGATE REMOVAL BASIS. SAID REMOVAL SHALL BE BASED ON FULL-SCALE THIRD PARTY TESTING USING OK-110 MEDIA GRADATION OR EQUIVALENT AND 300 mg/L INFLUENT CONCENTRATION. SAID FULL SCALE TESTING SHALL HAVE INCLUDED SEDIMENT CAPTURE BASED ON ACTUAL TOTAL MASS COLLECTED BY THE STORMWATER TREATMENT UNIT.
  -OR -
  THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS USING A MEDIA MIX WITH d/50=75 MICRON AND 200 MG/L INFLUENT CONCENTRATION.
  -OR -
  THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS PER CURRENT NJDEP/NJCAT HDS PROTOCOL.

ADS 4640 TRUEMAN BLVD HILLIARD, OH 43026

Barracuda Max
Stormwater Separator

DATE	DRWN	CHKD	DESCRIPTION

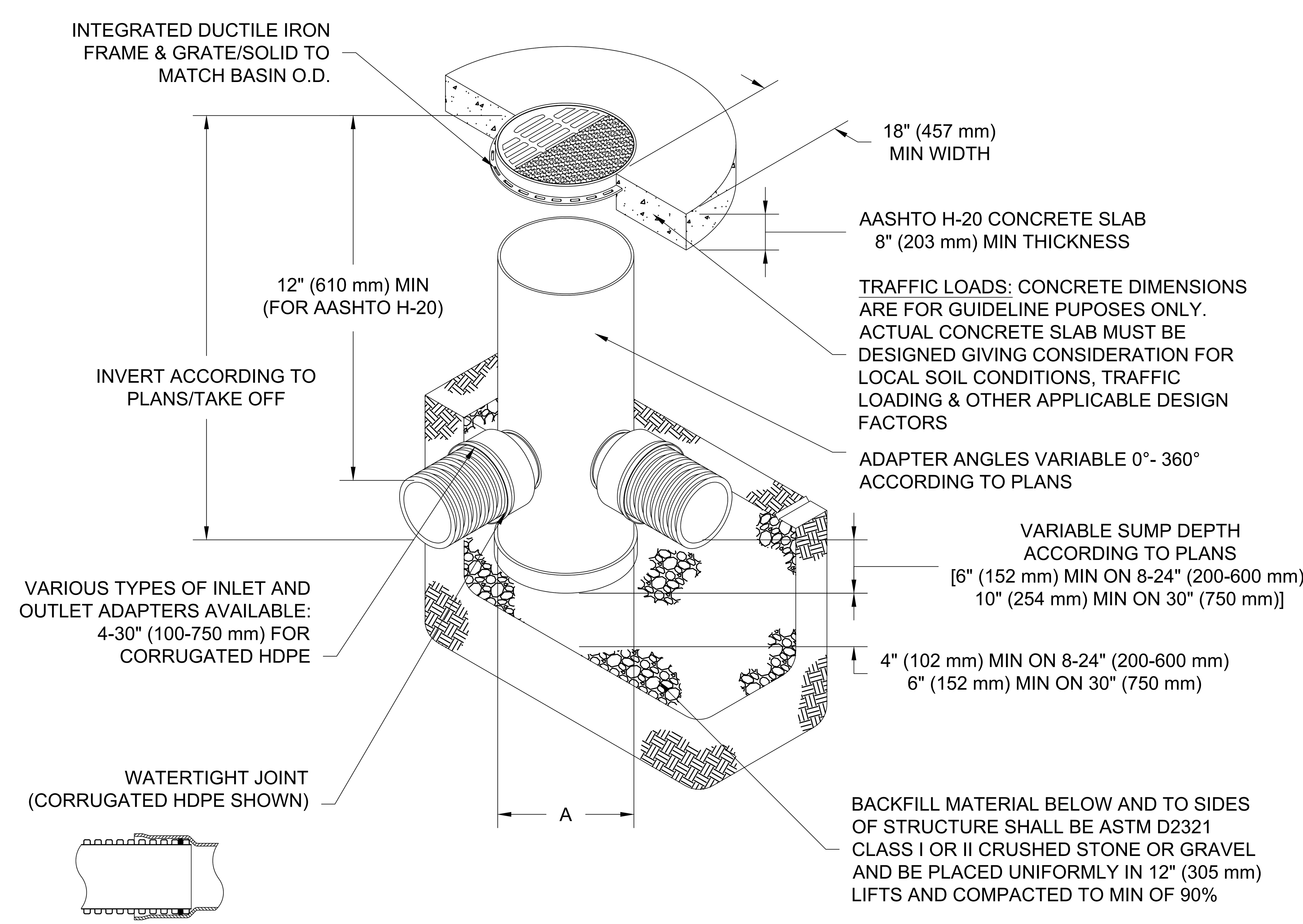
HVRA NORTH SITE HANGARS
WAPPINGER-NY

DATE: 2/20/25	DRAWN:
PROJECT #:	CHECKED: XX

SHEET 2 OF 2

NYLOPLAST DRAIN BASIN

NTS



NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

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ADS ECOSTREAM DETAILS

C-553

April 2025

A. GENERAL NOTES

ALL WORK SHALL BE IN CONFORMANCE WITH STRUCTURAL DRAWINGS, SPECIFICATIONS AND THE REQUIREMENTS OF THE NEW YORK STATE BUILDING CODE 2020 EDITION PLUS UPDATES ("THE BUILDING CODE" REFERENCED IN THE FOLLOWING NOTES).

1. TO THE BEST OF OUR KNOWLEDGE, THE STRUCTURAL DRAWINGS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE GOVERNING BUILDING CODE.

2. CONSTRUCTION IS TO COMPLY WITH THE REQUIREMENTS OF THE GOVERNING BUILDING CODE NOTED ABOVE AND ALL OTHER APPLICABLE FEDERAL, STATE, AND LOCAL CODES, STANDARDS, REGULATIONS, AND LAWS.

3. THE CONTRACTOR SHALL COMPARE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL DRAWINGS BEFORE COMMENCING WITH THE WORK AND SHALL NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES REQUIRING CLARIFICATION OR REVISIONS. DO NOT SCALE STRUCTURAL DRAWINGS, REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS NOT SHOWN. SEE "DIMENSION" SECTION OF GENERAL NOTES FOR ADDITIONAL NOTES.

4. THE CONTRACTOR SHALL USE STRUCTURAL DRAWINGS IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS TO COORDINATE LOCATION OF DEPRESSED SLABS, SLOPES, DRAINS, OUTLETS, RECESSES, OPENINGS, REGLETS, BOLT SETTINGS, SLEEVES, DIMENSIONS, ETC. (DRAWINGS ARE NOT TO BE SCALED).

5. DISCREPANCIES BETWEEN INFORMATION PRESENTED WITHIN PROJECT SPECIFICATIONS AND WITHIN STRUCTURAL NOTES ON PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BY THE CONTRACTOR PRIOR TO PRESENTING HIS OR HER BID. IF SUCH A DISCREPANCY IS DISCOVERED SUBSEQUENT TO BIDDING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THE OPTION SUBSEQUENTLY SELECTED BY THE ENGINEER AT NO ADDITIONAL COST.

6. CONTRACTORS SHALL BE RESPONSIBLE FOR FINAL VERIFICATION OF ALL DIMENSIONS, ELEVATIONS, CLEARANCES, ETC. OF THE FRAMING SHOWN ON THE STRUCTURAL DRAWINGS AGAINST INFORMATION PROVIDED BY MANUFACTURES OF SELECTED MECHANICAL EQUIPMENT PRIOR TO PROCEEDING WITH ANY RELATED PORTION OF WORK. ITEMS REQUIRING SUCH REVIEW SHALL INCLUDE ELEVATORS (ELEVATOR PITS, BEAMS ABOVE ELEVATORS DOORS, ETC.), ESCALATORS, DUCTS, COOLING TOWERS, ETC. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY REMEDIAL WORK AND FOR ITS IMPACT ON THE WORK SCHEDULE RESULTING FROM FAILURE TO PROVIDE EARLY NOTIFICATION OF SUCH CONFLICTS TO THE DESIGN TEAM.

7. POTENTIAL CONFLICTS, ERRORS OR OMISSIONS PRESENT WITHIN THE DRAWINGS (WHETHER WITHIN STRUCTURAL DRAWINGS OR BETWEEN STRUCTURAL, ARCHITECTURAL, AND M.E.P DRAWINGS) SHALL BE IDENTIFIED BY THE CONTRACTOR DURING HIS/HER EARLY REVIEW OF THE PROJECT DOCUMENTS. SUCH CONFLICTS, ERRORS OR OMISSIONS SHALL BE COMMUNICATED TO THE ARCHITECT IN WRITING PRIOR TO COMMENCEMENT OF WORK. IN THE EVENT OF FAILURE TO PROVIDE SUCH A NOTICE AND SUFFICIENT TIME FOR A RESPONSE, THE CONTRACTOR SHALL BECOME RESPONSIBLE FOR COST OF ALL WORK OR REMEDIAL WORK RESULTING FROM SUCH CONFLICTS, ERRORS OR OMISSION, AS WELL AS FOR ITS IMPACT ON THE PROJECT SCHEDULE.

8. ALL COSTS OF INVESTIGATION AND/OR REDESIGN, DUE TO CONTRACTOR MISLOCATION OF STRUCTURAL ELEMENTS OR OTHER LACK OF CONFORMANCE WITH THE PROJECT DOCUMENTS, SHALL BE AT THE CONTRACTOR'S EXPENSE.

9. IN THE EVENT THAT CERTAIN DETAILS OF THE CONSTRUCTION ARE NOT FULLY SHOWN OR NOTED ON THE DRAWINGS, THEIR CONSTRUCTION SHALL BE OF THE SAME TYPE AS FOR SIMILAR CONDITIONS WHICH ARE SHOWN AND NOTED, SUBJECT TO THE STRUCTURAL ENGINEER'S APPROVAL. DETAILS LABELED "TYPICAL" APPLY TO ALL SITUATIONS THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY REFERENCED, WHETHER OR NOT THEY ARE KEYED IN AT EACH LOCATION. QUESTIONS REGARDING THE APPLICABILITY OF TYPICAL DETAILS SHALL BE RESOLVED BY THE PROJECT ARCHITECT.

10. SEE THE ARCHITECTURAL DRAWINGS FOR THE FOLLOWING:
    a. SIZE AND LOCATIONS OF ALL CONCRETE CURBS, FLOOR DRAINS, SLOPES, INSERTS, ETC., EXCEPT AS SHOWN.
    b. SIZE AND LOCATION OF ALL DOOR AND WINDOW OPENINGS EXCEPT AS SHOWN.
    c. SIZE AND LOCATION OF ROOF AND FLOOR OPENINGS, FLOOR AND ROOF FINISHES, TYPES OF WATER PROOFING AND DAMP PROOFING.
    d. FINISHED FLOOR AND EXTERIOR ELEVATIONS.
    e. DIMENSIONS NOT SHOWN ON STRUCTURAL DRAWINGS.
    f. FIRE PROTECTION REQUIREMENTS
    g. MISC. STEEL TUBES, CHANNELS, ANGLES, AND PLATES FOR METAL PANEL WALL AND CURTAIN WALL SUPPORT.
    h. EMBEDS FOR MISC METAL FRAMING AND CLADDING ANCHORAGE.
    i. SIZE AND LOCATIONS OF MASONRY, DRYWALL, NON-LOAD BEARING PARTITIONS AND EXTERIOR WALL. PROVIDE SLIP CONNECTIONS THAT ALLOW VERTICAL MOVEMENT AT THE HEADS OF ALL SUCH PARTITIONS. CONNECTIONS SHALL BE DESIGNED TO SUPPORT THE TOP OF THE WALLS LATERALLY FOR THE CODE-REQUIRED LATERAL LOAD.

11. SEE THE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR THE FOLLOWING:
    a. PIPE AND DUCT RUNS, SLEEVES, HANGERS, TRENCHES, WALL AND SLAB OPENINGS, ETC., EXCEPT AS SHOWN OR NOTED.
    b. ELECTRICAL CONDUIT RUNS, BOXES, OUTLETS IN WALLS AND SLABS.
    c. CONCRETE INSERTS FOR ELECTRICAL, MECHANICAL OR PLUMBING FIXTURES.
    d. ANCHOR BOLTS FOR MOTOR MOUNTS, EXCEPT AS SHOWN OR NOTED.
    e. SIZE AND LOCATION OF MACHINE OR EQUIPMENT BASES (HOUSEKEEPING PADS). NOTE THAT HOUSEKEEPING PADS SHOWN ON THE STRUCTURAL DRAWINGS ARE APPROXIMATE AND ARE INCLUDED FOR GENERAL REFERENCE ONLY.

12. OPENINGS, POCKETS, ETC., LARGER THAN 6" SHALL NOT BE PLACED IN CONCRETE SLABS, DECKS, OR WALLS UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS. NOTIFY THE STRUCTURAL ENGINEER WHEN DRAWINGS BY OTHERS SHOW OPENINGS, POCKETS, ETC., LARGER THAN 6" WHICH ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS, BUT WHICH ARE LOCATED IN STRUCTURAL MEMBERS.

13. ALL SUSPENDED MECHANICAL, ELECTRICAL, OR OTHER SYSTEM LOADS EXCEEDING 100 POUNDS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER PRIOR TO INSTALLATION UNLESS SPECIFICALLY DETAILED ON THE DRAWINGS. ANY REINFORCEMENT, ETC. REQUIRED BY SUCH LOADS SHALL BE BY THE TRADE REQUIRING THE EQUIPMENT.

14. PROVIDE ADDITIONAL STRUCTURAL STEEL EQUIVALENT TO 1% OF THE TOTAL WEIGHT OF STRUCTURAL STEEL, INCLUDING FABRICATION AND INSTALLATION COST. THE STRUCTURAL STEEL WILL BE ADDED AT THE DIRECTION OF THE ARCHITECT AND RECORDED BY THE ON-SITE INSPECTION AGENCY.

15. EOR SHALL NEITHER HAVE CONTROL OVER OR CHARGE OF, NOR BE RESPONSIBLE FOR, THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, SINCE THESE ARE SOLELY THE CONTRACTOR'S RIGHTS AND RESPONSIBILITIES UNDER THE CONTRACT DOCUMENTS. EOR SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO PERFORM THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL PROTECT ADJACENT PROPERTY, HIS OWN WORK, AND THE PUBLIC FROM HARM. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOBSITE SAFETY INCLUDING ALL OSHA REQUIREMENTS.

16. THE STRUCTURE WAS DESIGNED TO BE SELF-SUPPORTING AND STABLE FOLLOWING INSTALLATION OF ALL COMPONENTS AS INDICATED ON THE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE METHOD AND SEQUENCE OF ERECTION PROCEDURES (INCLUDING IMPLEMENTATION OF TEMPORARY SHORING, BRACING, ETC.) AND TO ENSURE SAFETY THROUGH THE PERIOD OF CONSTRUCTION. CONTRACTOR AGREES THAT HE WILL HOLD OWNER, ARCHITECT, ENGINEER, AND/OR ANY OF THEIR EMPLOYEES OR AGENTS, HARMLESS FROM ANY AND ALL DAMAGE AND CLAIMS WHICH MAY ARISE BY A REASON OF ANY NEGLIGENCE ON THE PART OF THE CONTRACTOR, OR ANY OF HIS SUBCONTRACTORS, OR ANY MATERIAL AND EQUIPMENT SUPPLIERS, AND/OR ANY OF THEIR EMPLOYEES OR AGENTS, IN THE PERFORMANCE OF THIS CONTRACT. IN CASE ANY ACTION IS BROUGHT AGAINST THE OWNER, OR ARCHITECT, OR ENGINEER, OR ANY OF THEIR EMPLOYEES OR AGENTS, CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DEFENSE THEREOF, TO THE FULL SATISFACTION OF THE LATTER PARTY.

17. DO NOT PLACE CONCRETE WITHOUT APPROVED STRUCTURAL SHOP DRAWINGS INCLUDING ALL MECHANICAL/ARCHITECTURAL SHOP DRAWINGS RELATED TO THE CONCRETE WORK. RELATED ITEMS INCLUDE LOCATIONS OF OPENINGS, PIPE SLEEVES, REGLETS, DOVETAIL SLOTS, DRIPS, INSERTS FOR MECHANICAL EQUIPMENTS, HUNG CEILINGS, AND ANY OTHER ITEMS REQUIRED TO BE INSTALLED AND/OR TO BE COORDINATED BY THE ARCHITECTURAL/MECHANICAL TRADES.

18. CONTRACTOR IS TO PROVIDE DURING CONSTRUCTION AND MAKE ALLOWANCE FOR DESIGN, DETAILING, AND PURCHASE, DURING BID PHASE FOR ALL MISCELLANEOUS STEEL REQUIRED FOR THE SUPPORT OF ARCHITECTURAL FEATURES THAT ARE NOT STRUCTURAL ITEMS TO THE BASE STRUCTURE, SUCH ITEMS INCLUDE MEP HANGINGS, CEILING, AND CURTAIN WALL SUPPORTS.

19. SUPPLEMENT SKETCHES/DRAWINGS: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FORWARD A COPY OF ALL CORRESPONDENCE AFFECTING THE STRUCTURE TO THE PROJECT'S INSPECTOR THROUGHOUT THE DURATION OF CONSTRUCTION.

B. SHOP DRAWINGS AND SUBMITTALS

1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE ARCHITECT'S APPROVAL PRIOR TO COMMENCEMENT OF WORK. SUCH DRAWINGS SHALL INCLUDE ERECTION PLANS, WORK PROCEDURE, SEQUENCE, AND DETAILS INTO WHICH ALL FIELD CONDITIONS HAVE BEEN INCORPORATED.

2. SHOP DRAWINGS WILL BE REVIEWED FOR COMPLIANCE WITH CONTRACT DOCUMENTS, CONSTRUCTION METHODS, DIMENSIONING AND OTHER TRADE REQUIREMENTS BY THE CONTRACTOR PRIOR TO SUBMITTAL TO THE PROJECT ENGINEER. DRAWINGS WITHOUT CONTRACTOR'S APPROVAL STAMP SHALL BE RETURNED WITHOUT ENGINEER'S REVIEW.

3. IN CASE OF A CONFLICT, INFORMATION PRESENTED ON STRUCTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THAT WITHIN SHOP DRAWINGS, UNLESS SPECIFICALLY ADDRESSED BY THE ENGINEER IN WRITING.

4. THROUGH THE PROCESS OF A CURSORY REVIEW, ENGINEER ASSUMES NO RESPONSIBILITY FOR DIMENSIONS, QUANTITIES, ERRORS OR OMISSIONS. ANY ERRORS OR OMISSIONS IRRESPECTIVE OF ENGINEER'S COMMENTS OR DURATION OF THE REVIEW SHALL BE THE RESPONSIBILITY OF AND MUST BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL SERVICE CHARGE EVEN IF SUCH WORK WAS DONE IN ACCORDANCE WITH THE SHOP DRAWINGS.

5. REPRODUCTION OF ANY PORTION OF THE STRUCTURAL CONTRACT DRAWINGS FOR RESUBMITTAL AS SHOP DRAWINGS IS PROHIBITED. SHOP DRAWINGS PRODUCED IN SUCH A MANNER WILL BE REJECTED AND RETURNED.

6. ON FIRST SUBMITTAL, CLEARLY FLAG AND CLOUD ALL DIFFERENCES FROM THE CONTRACT DOCUMENTS. ON RESUBMITTALS, FLAG AND CLOUD ALL CHANGES AND ADDITIONS TO PREVIOUS SUBMITTAL; ONLY CLOUDED ITEMS WILL BE REVIEWED FOR RESUBMITTED SHOP DRAWINGS.

7. DELEGATED/SPECIALTY ENGINEER SUBMITTALS: SUBMITTALS SHALL BE PREPARED IN ACCORDANCE WITH THE BUILDING CODE. ENGINEERS NAME, LICENSE NUMBER AND BUSINESS ADDRESS SHALL BE LEGIBLY INDICATED ON ALL SIGNED AND SEALED DOCUMENTS. SPECIALTY ENGINEER SHALL BE SOLELY RESPONSIBLE FOR DIRECT CONTACT WITH THE BUILDING DEPARTMENT WHILE OBTAINING BUILDING DEPARTMENTS APPROVAL FOR HIS/HER PORTION OF WORK (INCLUDING PROVIDING RESPONSES TO REVIEW COMMENTS, SUPPLYING ADDITIONAL CALCULATIONS AND PLANS, ATTENDING MEETINGS, ETC). DELEGATED/SPECIALTY ENGINEER IS DEFINED AS ONE WHO SPECIALIZES IN AND UNDERTAKES THE DESIGN OF STRUCTURAL COMPONENTS OR STRUCTURAL SYSTEMS INCLUDED IN A SPECIFIC SUBMITTAL PREPARED FOR THIS PROJECT AND IS AN EMPLOYEE OR OFFICER OF, OR CONSULTANT TO, THE CONTRACTOR OR FABRICATOR RESPONSIBLE FOR THE SUBMITTAL.

8. IN ADDITION TO THE ABOVE, THE STRUCTURAL ENGINEER'S REVIEW OF DELEGATED/SPECIALTY ENGINEER SUBMITTAL IS LIMITED TO VERIFYING THAT THE SPECIFIED STRUCTURAL SUBMITTAL HAS BEEN FURNISHED, SIGNED AND SEALED BY THE DELEGATED/SPECIALTY ENGINEER AND THAT THE DELEGATED/SPECIALTY ENGINEER HAS UNDERSTOOD THE DESIGN INTENT AND USED THE SPECIFIED STRUCTURAL CRITERIA. NO DETAILED CHECK OF CALCULATIONS WILL BE MADE. THE DELEGATED/ SPECIALTY ENGINEER IS SOLELY RESPONSIBLE FOR HIS/HER DESIGN, INCLUDING BUT NOT LIMITED TO THE ACCURACY OF HIS/HER CALCULATIONS AND COMPLIANCE WITH THE APPLICABLE CODES AND STANDARDS.

C. SPECIAL INSPECTIONS AND TESTING NOTES

1. SPECIAL INSPECTIONS SHALL BE IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE SECTIONS. SIGNED COPIES OF ALL TESTS AND INSPECTIONS REPORTS SHALL BE FILED WITH THE DEPARTMENT OF BUILDINGS THROUGH THE APPLICANT.

2. G.C. SHALL PROVIDE THE TESTING AGENCY THE FOLLOWING:
    a. A FULL SET OF STRUCTURAL DRAWINGS AND GENERAL NOTES.
    b. SUFFICIENT NOTICE, AS AGREED AT THE START OF THE PROJECT, PRIOR TO THE WORK TO PERFORM TESTING WITHOUT DELAYING THE WORK.
    c. EASY ACCESS TO ALL MATERIALS AND COMPONENTS TO BE TESTED.

3. THE TESTING AGENCY SHALL SUBMIT RESULTS OF ALL TESTS TO THE OWNER AND ARCHITECT. THE TESTING AGENCY WILL BE RESPONSIBLE FOR CONDUCTING AND INTERPRETING THE TESTS AND WILL PREPARE REPORTS WHICH STATE WHETHER OR NOT THE RESULTS COMPLY WITH THE CONTRACT DOCUMENTS. REPORTS SHALL SUMMARIZE THE TYPE OF TEST, THE LOCATION OR COMPONENT TESTED, AND RECOMMEND ANY REMEDIAL MEASURES REQUIRED. THE REPORT SHALL ALSO NOTE ANY OTHER DEVIATIONS FROM THE CONTRACT DOCUMENTS.

4. MINIMUM QUALIFICATIONS FOR SPECIAL INSPECTOR:
    a. EXCAVATION, STRUCTURAL FILLS, SOIL BEARING, AND RELATED GEOTECH INSPECTIONS: LICENSED PROFESSIONAL ENGINEER WITH RELEVANT EXPERIENCE.
    b. REINFORCED CONCRETE: LICENSED PROFESSIONAL ENGINEER WITH RELEVANT EXPERIENCE.
    c. MASONRY: CURRENT ICC STRUCTURAL MASONRY CERTIFICATION AND TWO YEARS OF RELEVANT EXPERIENCE.
    d. WELDING: CURRENT AWS CERTIFIED WELDING INSPECTOR.
    e. HIGH STRENGTH BOLTING AND STEEL FRAMING: LICENSED PROFESSIONAL ENGINEER WITH RELEVANT EXPERIENCE.

5. THE FOLLOWING ITEMS OF WORK, AS APPROPRIATE, SHALL BE SUBJECT TO SPECIAL INSPECTION:
    a. GENERAL
    - STRUCTURAL STABILITY DURING CONSTRUCTION
    b. FOUNDATIONS
    - SUBGRADE
    - COMPACTION OF FILL
    - PIERS, WALLS, AND FOOTINGS, PILE CAPS IF APPLICABLE.
    c. CONCRETE
    - CONCRETE MIX QUALITY AND STRENGTH AND PLACEMENT OPERATIONS (SEE ADDITIONAL NOTES BELOW)
    - REBAR PLACEMENT
    - FORMWORK
    d. MASONRY
    - MASONRY MATERIALS
    - MASONRY STRENGTH
    - GROUT AND MORTAR MIX QUALITY AND STRENGTH AND CONSTRUCTION OPERATIONS
    - REBAR PLACEMENT AND GROUTING
    e. STRUCTURAL STEEL
    - HIGH STRENGTH BOLTING
    - WELDING
    - COMPLIANCE WITH DETAILS
    f. THE OWNER WILL RETAIN AN INDEPENDENT TESTING AGENCY TO CARRY OUT THE SPECIAL INSPECTIONS AND STRUCTURAL OBSERVATIONS SEE NOTES BELOW FOR ADDITIONAL TESTS, ETC. REQUIRED FOR WELDING AND CONCRETE.
    g. WELDS SHALL BE TESTED AS FOLLOWS:
    - VISUALLY INSPECT ALL WELDS
    - FULL PENETRATION WELDS: ULTRASONIC TESTING OR MAGNETIC PARTICLE TESTING 100% OF WELDS.
    - PARTIAL PENETRATION BUTT WELDS AND FILLET WELDS WITH A LEG LENGTH GREATER THAN 1/2": ULTRASONIC TESTING OR MAGNETIC PARTICLE TESTING: 20% OF WELDS.
    - ALL OTHER FILLET WELDS: MAGNETIC PARTICLE TESTING OF 10% OF WELDS.
    - MAGNETIC PARTICLE TESTING TO CONFORM TO ASTM E709 AND ULTRASONIC TESTING TO CONFORM TO AWS D1.1 SECTION 6 BY ANSI LEVEL II TECHNICIAN.
    - ULTRASONIC TESTING OF ALL GROOVE WELDS AND ALL FILLET WELDS OF LEG LENGTH GREATER THAN 3/8" IN WELDED MOMENT JOINTS AND IN BASE METAL GREATER THAN 1 3/8" THICK. THIS EXAMINATION IS TO CONFIRM THE ABSENCE OF BOTH LAMINATION AND LAMELLAR TEARING. THE PRESENCE OF EITHER WILL BE CONSIDERED A CAUSE FOR REJECTION. THE ULTRASONIC EXAMINATION WILL INCLUDE THE PARENT MATERIAL TO A DISTANCE OF 6" ON EACH SIDE OF THE WELD.
    - ALL GROOVE WELDS AND FILLET WELDS WITH LEG LENGTH OVER 3/8" IN MATERIAL GREATER THAN 1 3/8" THICK SHALL BE ULTRASONICALLY INSPECTED A SECOND TIME A MINIMUM OF 2 WEEKS AFTER COMPLETION OF THE WELDS.
    h. CONCRETE TESTING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING CODE. REPORTS OF ALL CONCRETE POURS AND THE LABORATORY CYLINDER TEST REPORTS CORRESPONDING TO THE PERIOD OF POUR SHALL BE FILED WITH THE BUILDING DEPARTMENT AT A PERIOD NOT TO EXCEED TEN DAYS FROM CONCRETE POUR. CONCRETE TESTING SHALL BE AS FOLLOWS:
    i. MIXER TESTING: COMPRESSION TEST SAMPLES WILL BE TAKEN DIRECTLY FROM THE MIXER IN ACCORDANCE WITH ASTM C172, MADE AND CURED IN ACCORDANCE WITH ASTM C31, AND TESTED AT THE AGE OF 28 DAYS IN ACCORDANCE WITH ASTM C39.

    - FOUR (4) TEST CYLINDERS WILL BE MOLDED FOR EACH 50 CUBIC YARDS OR FRACTION THEREOF FOR EACH TYPE AND STRENGTH OF CONCRETE PLACED IN ANY ONE DAY'S CONCRETING.

    - TWO (2) CYLINDERS WILL BE TESTED AT 7 DAYS AND TWO (2) CYLINDERS TESTED AT 28 DAYS.

    - EACH CYLINDER SHALL BE SUITABLY IDENTIFIED BY A MARK AND THE AREA WHERE THE CONCRETE IS PLACED SHALL BE RECORDED.

    - ADDITIONAL TESTS: TEST CYLINDERS WILL BE MADE FROM CONCRETE TAKEN OUT OF THE BUCKET, HOPPER, OR FORMS AS DIRECTED BY THE ENGINEER DESIGNATED FOR INSPECTION WHEN CONCRETE IS PLACED FROM AN INTERMEDIATE CONVEYANCE.

    - THESE TEST CYLINDERS SHALL BE SEPARATE AND DISTINCT FROM THOSE MADE FROM THE MIXER AND SHALL BE MADE FROM THE SAME BATCH, CURED AND TESTED IN THE SAME MANNER AS DESCRIBED FOR THE SAMPLES TAKEN FROM THE MIXER.

    - THE NUMBER OF TEST CYLINDERS MADE FROM THE CONCRETE TAKEN OUT OF THE BUCKET, HOPPER OR FORMS MAY BE REDUCED TO A MINIMUM OF ONE (1) SET OF FOUR (4) CYLINDERS FROM EVERY 150 CUBIC YARDS OR FRACTION THEREOF, FOR EACH STRENGTH OF CONCRETE PLACED IN ANY ONE DAY'S CONCRETING.

    - WHEN CONCRETE IS PLACED DIRECTLY FROM THE MIXER INTO THE FORMS, WITHOUT ANY INTERMEDIATE CONVEYANCE, THE ABOVE ADDITIONAL CYLINDERS WILL NOT BE REQUIRED.
    - SLUMP TESTS IN COMPLIANCE WITH ASTM C143.
    - ENTRAINED AIR CONTENT IN COMPLIANCE WITH ASTM C231 FOR AIR ENTRAINED CONCRETE.
    - CONCRETE TEMPERATURE AT POUR AND DENSITY TEST FOR LIGHT WEIGHT CONCRETE.
    - IN CONFORMANCE WITH THE BUILDING CODE, THE AUTHORITY WILL ASSIGN A LICENSED PROFESSIONAL ENGINEER, APPROVED BY THE ENGINEER OF RECORD, TO SUPERVISE THE TESTING OF THE MATERIALS AND THE INSPECTION OF CONCRETE CONSTRUCTION AND TO CHECK THAT ALL REQUIRED TESTS ARE MADE AND LABORATORY TESTS ARE SUBMITTED. THE ENGINEER SHALL HAVE THE RIGHT TO ORDER THE CONTRACTOR TO MAKE SUCH CHANGES OF THE MIX OF CONCRETE AS REQUIRED TO PRODUCE CONCRETE OF THE NECESSARY STRENGTH AND TO REPORT TO THE BUILDING DEPARTMENT SUPERINTENDENT ANY DEVIATION FROM THE REQUIREMENTS OF THE CODE AS INDICATED BY RECORDS OF INSPECTION AND REPORTS OF TEST.

    A PRE CONSTRUCTION SURVEY OF ALL EXISTING BUILDINGS AND UTILITIES AT PROJECT SITE SHALL BE PERFORMED BY THE CONTRACTOR. THE SURVEY SHALL PROVIDE THE OWNER AND THE FOUNDATION CONTRACTOR WITH DOCUMENTATION OF EXISTING CONDITIONS IN CASE OF FUTURE DAMAGE CLAIM. THE SURVEY SHOULD BE CONDUCTED BY A PROFESSIONAL ENGINEER EXPERIENCED IN SUCH SURVEY WORK. THE SURVEY SHOULD INCLUDE PHOTOGRAPHS, DIMENSIONED SKETCHES, AND MEASUREMENTS OF AMBIENT VIBRATIONS.

D. TEMPORARY WORK NOTES

1. ALL TEMPORARY WORK SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE APPLICABLE BUILDING CODE.

2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DESIGN AND PROVIDE PROPER SHEETING, SHORING, AND BRACING WHEREVER NECESSARY. SHOP DRAWINGS SHALL BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER AND RETAINED BY THE CONTRACTOR. TEMPORARY BRACING OF THE STEEL FRAME REQUIRED TO MAINTAIN PLUMBNESS AND STABILITY DURING CONSTRUCTION WILL BE THE RESPONSIBILITY OF THE STEEL ERECTOR.

3. CONSTRUCTION LOADS SHALL NOT EXCEED THE CODE REDUCED DESIGN LIVE LOAD PER SQUARE FOOT. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING TO SUPPORT ANY LOADS WHERE STRUCTURE HAS NOT ATTAINED DESIGN STRENGTH.

4. THE DRAWINGS INDICATE THE COMPLETED STRUCTURE. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ALL TEMPORARY MEASURES NECESSARY FOR ERECTION.

5. WHEN EXCAVATIONS ARE 5'-0" OR GREATER IN DEPTH FROM THE LEVEL OF ADJACENT GROUND, THE SIDES SHALL BE SHORED. PROVIDE GUARD RAILS OR FENCE AT EXCAVATIONS AS REQUIRED.

E. DIMENSIONS

1. WHILE THE POSITION OF MOST CONCRETE, STEEL, AND DECKING MEMBERS ARE DEFINED DIRECTLY ON THE STRUCTURAL DRAWINGS THERE ARE INSTANCES WHERE REFERENCE MUST BE MADE TO ARCHITECTURAL OR OTHER DRAWINGS TO DEDUCE A DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR SUCH DIMENSIONAL COORDINATION AND CROSS REFERENCING.

2. WITH THE POSITION OF MOST CONCRETE, MASONRY, STEEL, AND DECKING MEMBERS THUS FIXED, THE CONTRACTOR SHALL STILL NEED TO DEDUCE AND COMPUTE OTHER DIMENSIONS THAT ARE DERIVATIVE FROM THE BASIC DIMENSIONS. THESE MAY INCLUDE TRUE DISTANCE BETWEEN WORK POINTS, TRUE LENGTH, AND ORIENTATION OF MEMBERS, AND SO ON. SUCH DERIVATION OF DIMENSIONS IS THE RESPONSIBILITY OF THE CONTRACTOR.

3. TO ENSURE ACCURACY OF THESE DERIVED DIMENSIONS, THE CONTRACTOR IS TO PRODUCE LAYOUT DRAWINGS FOR COORDINATION WITH OTHER TRADES, AS WELL AS DETAILED SHOP DRAWINGS. ALTHOUGH THEY WILL NOT BE CHECKED, THESE LAYOUT DRAWING ARE TO BE SUBMITTED AT THE SAME TIME AS THE RELEVANT SHOP DRAWING.

F. EARTHWORK NOTES

1. ALL EARTH WORK INCLUDING EXCAVATION, FILLING, AND SUBGRADE PREPARATION SHALL BE IN CONFORMANCE WITH THE SPECIFICATIONS AND GEOTECHNICAL INVESTIGATIONS PREPARED BY WHITESTONE ASSOCIATES, INC.; TITLED "REPORT OF GEOTECHNICAL INVESTIGATION" DATED FEBRUARY 28, 2020. REQUIREMENTS CONTAINED IN THE GEOTECH INVESTIGATION ARE PART OF THIS WORK.

2. ALL MATERIAL, FABRICATION, INSTALLATION AND INSPECTION REQUIREMENTS RELATING TO FOUNDATIONS SHALL CONFORM TO THE BUILDING CODE.

3. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS, AND UTILITIES IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL BUILDING DEPARTMENT AND OSHA REGULATIONS. DO NOT EXCAVATE WITHIN ONE FOOT OF THE ANGLE OF REPOSE OF ANY SOIL BEARING FOUNDATION UNLESS THE FOUNDATION IS PROPERLY PROTECTED AGAINST SETTLEMENT.

4. BACKFILLING AT RETAINING WALLS SHALL BE DONE IN SUCH A MANNER THAT THE DIFFERENCE IN GRADES ON EITHER SIDE OF THE WALL SHALL NOT EXCEED 2 FEET AT ANY STAGE OF BACKFILLING UNTIL THE CONTRACT GRADES ARE REACHED. THE QUALIFIED SOIL INSPECTOR AND PROJECT STRUCTURAL ENGINEER SHALL BE NOTIFIED 48-HOURS IN ADVANCE PRIOR TO ANY BACKFILLING OF RETAINING WALLS.

5. SEE CIVIL/LANDSCAPE ARCHITECTURE AND ARCHITECTURAL DRAWINGS FOR SCOPE OF WORK BEYOND FOOT PRINT OF THE BUILDING.

6. EXCAVATIONS BELOW FOOTINGS OF ALL TYPES AS WELL AS SLABS ON GRADE SHOULD BE MADE SO AS TO PROVIDE A CLEAN EVEN BEARING AREA AND SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND THE GEOTECH. REPORT.

7. CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL ACCUMULATED WATER IN A MANNER THAT DOES NOT INCONVENIENCE OR DAMAGE THE WORK.

8. ALL UNDERPINNING, SHEETING, SHORING OR OTHER CONSTRUCTION REQUIRED FOR THE SUPPORT OF ADJACENT PROPERTIES, BUILDINGS, SIDEWALKS, UTILITIES, ETC. SHALL BE SUBJECT TO SPECIAL INSPECTION AS REQUIRED BY THE CODE. THE CONTRACTOR SHALL RETAIN A LICENSED PROFESSIONAL ENGINEER ACCEPTABLE TO THE ENGINEER OF RECORD TO PROVIDE THE NECESSARY DESIGN AND THE REQUIRED INSPECTION. THE CONTRACTOR'S PROFESSIONAL ENGINEER SHALL PREPARE AND FILE THE REQUIRED FORMS FOR THE WORK WITH THE BUILDING DEPARTMENT.

9. THE REMOVAL WORK TO PREPARE THE PROPOSED LOCATION FOR THE FOUNDATION I.E. REMOVAL OF TREES, STUMPS, SHRUBS, CONCRETE SLABS, ASPHALT PAVING, CATCH BASINS, YARD DRAINS, PLAYGROUND EQUIPMENT, FLAG AND UTILITY POLES, ETC. IS THE RESPONSIBILITY OF THE CONTRACTOR.

10. CONTRACTOR TO PROVIDE A SURVEY OF THE ADJACENT BUILDING AND TO SUBMIT THE SURVEY IMMEDIATELY TO THE ENGINEER OF RECORD AND THE AUTHORITY.

11. WHERE EXISTING FOOTING OR FOUNDATION OF ADJACENT PROPERTY IS LOWER THAN ELEVATIONS SHOWN, NEW FOUNDATIONS ARE TO BE LOWERED TO MATCH WITH THE ELEVATION OF EXISTING FOUNDATION; WHERE NEW FOUNDATION IS LOWER THAN EXISTING FOUNDATIONS, CONTRACTOR IS TO UNDERPIN EXISTING FOUNDATION PER SUGGESTED DETAIL. CONTRACTOR IS TO ESTABLISH EXISTING CONDITIONS BEFORE COMMENCING WORK AND NOTIFY THE ENGINEER.

12. WHERE EXCAVATION WILL EXTEND MORE THAN 10'-0" BELOW THE LEGALLY ESTABLISHED GRADE, THE DETAILS OF UNDERPINNING AND/OR BRACING REQUIRED FOR THE SUPPORT OF ADJACENT BUILDINGS OR PROPERTIES SHALL BE PREPARED BY A PROFESSIONAL ENGINEER HIRED BY THE CONTRACTOR. SEE SPECIFICATIONS.

G. FOUNDATION NOTES

1. THE CONTRACTOR SHALL COMPACT SUBGRADE, AND PREPARE WITH VAPOR BARRIER AND DENSE GRADED AGGREGATE UNDER THE STRUCTURE SLAB. SEE "EARTHWORK" SPECIFICATIONS FOR ADDITIONAL INFORMATION. SEE ARCHITECTURAL DRAWINGS FOR WATERPROOFING REQUIREMENTS.

2. MAINTAIN GROUND WATER LEVEL A MINIMUM OF 2 FEET BELOW EXCAVATION DURING CONSTRUCTION. CONTRACTOR IS TO VERIFY GROUND WATER LEVEL. CONTRACTOR IS FULLY RESPONSIBLE FOR ALL DEWATERING DURING CONSTRUCTION REGARDLESS OF THE LEVEL OF GROUND WATER.

3. WATER SHALL NOT BE ALLOWED TO STAND IN TRENCHES BEFORE OR AFTER CONCRETE IS PLACED. IF TRENCHES BECOME SOFTENED DUE TO RAIN OR OTHER WATER BEFORE THE FOOTINGS ARE CAST, THE CONTRACTOR SHALL EXCAVATE THE SOFTENED MATERIAL AND REPLACE WITH CONCRETE.

4. EXCAVATION AND STRUCTURAL FILL COMPACTION TO BE CARRIED OUT IN ACCORDANCE WITH THE GEOTECH. REPORT AND SPECIFICATION. ALL EXCAVATIONS AND SUBGRADE BEARING LEVELS FOR FOUNDATIONS SHALL BE APPROVED BY AN INDEPENDENT TESTING AGENCY OR SITE REPRESENTATIVE PRIOR TO CASTING OF CONCRETE.

5. ALL BEARING SURFACES SHALL BE PROTECTED FROM CHANGES IN MOISTURE CONTENT IN ACCORDANCE WITH THE FOUNDATION REPORT AND SPECIFICATIONS.

6. ALL FOUNDATIONS ARE TO BE FORMED AND CENTERED ON COLUMNS ABOVE AS SHOWN ON DRAWINGS. PROVIDE DOWELS IN FOOTINGS FOR ALL PIERS, COLUMNS, WALLS, AND SHEAR WALLS OF SAME NUMBER AND SIZE AS THE VERTICAL REINFORCEMENT ABOVE, U.N.O.

7. PROVIDE CONCRETE ENCASEMENT FOR ALL STEEL THAT WOULD OTHERWISE BE EXPOSED TO EARTH IN ITS FINAL CONDITION U.N.O. MINIMUM CONCRETE COVER SHALL BE 4".

8. ALL EXTERIOR FOOTINGS SHALL BE PLACED AT A MINIMUM OF 4'-0" BELOW FINAL GRADING FOR FROST PROTECTION.

9. ALL LOAM, LOOSE SOIL FILL AND LOOSE SAND BELOW AND WITHIN 1'-0" OF THE FOOTPRINT OF THE BUILDING ARE NOT SUITABLE FOR FOUNDATION AND SLAB ON GRADE SUPPORT AND MUST BE ENTIRELY REMOVED AND REPLACED WITH CONTROLLED COMPACTED STRUCTURAL FILL. COMPACTED STRUCTURAL FILL SHALL CONSIST OF ACCEPTABLE ON-SITE / OFF SITE SOILS, AS APPROVED BY THE INSPECTING SOIL'S ENGINEER, COMPACTED TO A MINIMUM OF 95% OF ITS MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST (ASTM-D1557). THE CONTROLLED FILL MATERIAL SHALL HAVE NO MORE THAN 10% BY WEIGHT PASSING # 200 SIEVES.

10. SLAB ON GRADE:
    a. TOP SLAB REINFORCEMENT SHALL BE SUPPORTED ON HIGH CHAIRS.
    b. BOTTOM SLAB REINFORCEMENT SHALL BE SUPPORTED ON CONCRETE DOBIES.
    c. FOR TYPE OF FLOOR FINISH, SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. THE FLOOR SLABS SHALL BE DEPRESSED AS REQUIRED, SEE DETAILS. THE BOLTS FOR MECHANICAL EQUIPMENT SHALL BE INSTALLED BEFORE THE CONCRETE IS PLACED.
    d. SLABS SHALL BE FLAT & LEVEL PER SPECIFICATIONS; BUT NOT LESS THAN THE FOLLOWING UNLESS WRITTEN APPROVAL IS RECEIVED FROM ARCHITECT:
    e. SLAB ON GRADE: FF 25 / FL 20.
    f. SLABS ON STEEL: FF 25.

H. CONCRETE AND STEEL REINFORCEMENT NOTES

1. ALL CONCRETE WORK SHALL BE IN CONFORMANCE WITH THE SPECIFICATION SECTION 03200 AND 03300, AND AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318-14 (ACI).
    a. "ACI MANUAL OF CONCRETE PRACTICE" - PART 1 TO 6, BY AMERICAN CONCRETE INSTITUTE.
    b. "MANUAL OF STANDARD PRACTICE" BY CRSI.
    c. "ACI DETAILING MANUAL" BY ACI.

2. NO CONCRETE FOOTING, FOUNDATION PIER, OR FOUNDATION WALL SHALL BE PLACED UNTIL SUBGRADE FOR SAME HAS BEEN APPROVED BY A LICENSED PROFESSIONAL ENGINEER.

3. ALL CONCRETE SHALL BE NORMAL WEIGHT CONTROLLED CONCRETE (U.O.N) AND COMPLY WITH THE BUILDING CODE, PROJECT SPECIFICATIONS, ACI 301, AND ACI 318. APPLICATION FOR CONTROLLED CONCRETE WITH CONCRETE DESIGN MIX PREPARED BY AN APPROVED LABORATORY MUST BE SUBMITTED TO THE ENGINEER FOR FILING WITH THE BUILDING DEPARTMENT. NO CONCRETE SHALL BE PLACED WITHOUT THE DESIGN MIX BEING APPROVED BY THE BUILDING DEPARTMENT.

4. CONCRETE STRENGTH SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
    a. CONCRETE MIX FOR FOUNDATION (FOOTINGS, PIERS, BEAMS) SHALL BE AIR-ENTRAINED NORMAL WEIGHT STONE CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS AND A MAXIMUM WATER TO CEMENT RATIO OF 0.45.
    b. CONCRETE MIX FOR COLUMNS, BEAMS, WALLS SHALL BE AIR-ENTRAINED NORMAL WEIGHT STONE CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS AND A MAXIMUM WATER TO CEMENT RATIO OF 0.45.
    c. CONCRETE MIX FOR INTERIOR SLABS (NOT EXPOSED TO WEATHER AND DEICING SALT) SHALL BE NON-AIR-ENTRAINED NORMAL WEIGHT STONE CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS AND A MAXIMUM WATER TO CEMENT RATIO OF 0.45.
    d. CONCRETE MIX FOR SLABS (OR ANY OTHER ELEMENT) EXPOSED TO WEATHER AND DEICING SALT SHALL BE AIR-ENTRAINED NORMAL WEIGHT CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS AND A MAXIMUM WATER TO CEMENT RATIO OF 0.40.

5. ALL STEEL REINFORCEMENT SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF 90,000 psi AS PER ASTM A615, GRADE 60. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL THE NECESSARY CHAIRS, REBARS, TIES, SPACERS, ETC., TO SECURE AND SUPPORT THE REINF. WHILE PLACING THE CONCRETE. REINFORCING SHALL BE EPOXY COATED WHERE INDICATED IN THESE NOTES AND/OR ON PLANS.

6. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS SHALL COMPLY WITH THE REQUIREMENTS OF ACI 315 AND ACI 318. THE CONTRACTOR MUST SUBMIT REINFORCING SHOP DRAWINGS TO THE STRUCTURAL ENGINEER FOR REVIEW. NO CONSTRUCTION IS TO BE STARTED UNTIL THE SHOP DRAWINGS ARE REVIEWED BY THE ENGINEER AND APPROVED BY THE BUILDING DEPARTMENT.

7. THE STRUCTURAL ENGINEER OR HIS FIELD QUALIFIED REPRESENTATIVE SHALL CHECK AND APPROVE ALL STEEL REINFORCEMENT PRIOR TO CONCRETE PLACEMENT. THE CONTRACTOR SHALL INCLUDE IN HIS BID THE COST OF 2 TONS OF ADDITIONAL REINFORCING STEEL, INCLUDING FABRICATION, BENDING, FURNISHING AND PLACING. THIS EXTRA STOCK SHALL BE USED FOR SPECIAL CONDITIONS AS DIRECTED BY THE ARCHITECT, THE ARCHITECT'S AGENT OF THE OWNER'S CONSTRUCTION SUPERVISOR. THE COST OF ALL UN-USED EXTRA STOCK SHALL BE CREDITED TO THE OWNER'S ACCOUNT.

8. REINFORCING SHALL BE ACCURATELY PLACED, RIGIDLY SUPPORTED AND FIRMLY TIED IN PLACE, WITH APPROPRIATE BAR SUPPORTS AND SPACERS. LAP CONTINUOUS REINFORCING THE GREATEST OF 48 BAR DIAMETER AND LAP SPLICE TABLES INDICATED ON DRAWING. LAP BOTTOM STEEL OVER SUPPORTS AND TOP STEEL AT MIDSPAN (UNO). HOOK DISCONTINUOUS ENDS OF ALL TOP BARS AND ALL BARS IN WALLS (UNO). PROVIDE COVER REINFORCING AS FOLLOWS:

ELEMENTS	BOTTOM	TOP	SIDE
FOOTINGS	3"	2"	3"
BEAMS ABOVE GRADE	11/2"	11/2"	11/2"
COLUMNS	-	-	11/2"
SLABS ON GRADE	3"	1"	2"
SLABS ABOVE GRADE	3/4"	3/4"	1"
SLABS EXPOSED TO WEATHER	11/2"	11/2"	11/2"
WALLS RETAINING FILL	-	-	3"
WALLS ABOVE GRADE	-	-	3/4"

9. ALL SPLICES SHALL BE LAPPED IN ACCORDANCE WITH ACI 318. THE LOCATIONS SHALL BE INDICATED ON THE SHOP DRAWINGS AND APPROVED BY THE ENGINEER OF RECORD. GENERALLY, ALL SPLICES SHALL BE STAGGERED AND LOCATED AWAY FROM THE SECTION OF MAXIMUM TENSILE STRESS. ALL REINFORCEMENT SHALL BE ACCURATELY PLACED AND SECURELY WIRED TO PREVENT DISLOCATION FROM PROPER POSITION. PROVIDE CHAIRS FOR SUPPORT OF ALL REINFORCEMENTS. LIFTING OF BARS OR MESH DURING PLACEMENT OF CONCRETE IS NOT PERMITTED.

10. VERTICAL CONSTRUCTION JOINTS IN ALL WALLS SHALL BE LOCATED AT LEAST 4'-0" FROM ANY SUPPORTING COLUMN OR WALL OPENING. THE DISTANCE BETWEEN JOINTS IN A WALL SHALL BE AS PER SPECS. HORIZONTAL JOINTS IN WALLS, OTHER THAN THOSE DETAILED, SHOULD BE AVOIDED UNLESS UNAVOIDABLE. ADDITIONAL REINFORCING REQUIRED IN SUCH CASES SHALL BE AS DIRECTED BY THE ENGINEER AT NO COST TO THE CLIENT. NO HORIZONTAL JOINTS WILL BE ALLOWED IN GRADE BEAMS.

11. THE CONTRACTOR IS TO INSTALL ALL PIPE SLEEVES, BOXED OPENINGS, ANCHOR BOLTS, ETC., AS REQUIRED FOR THE VARIOUS TRADES. WALL POCKETS TO RECEIVE BEAMS AND SLABS SHALL BE PROVIDED AS REQUIRED FOR THE SUPERSTRUCTURE. SHOP DRAWINGS SHOWING POSITION OF OPENINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER PRIOR TO PLACING CONCRETE. ALL LOCATIONS ARE TO BE OBTAINED FROM "MEP" AND ARCHITECTURAL DRAWINGS.

12. FRAMED SLABS IN CONTRACT WITH THE GROUND SHALL HAVE EPOXY COATED REINFORCEMENT. REBARS WITH DAMAGED COATING ARE UN-ACCEPTABLE FOR USE AND SHALL BE REPLACED.

13. FOR PIER SIZES SEE STRUCTURAL DRAWINGS. WHERE A PIER IS REQUIRED BUT THE SIZE IS NOT SHOWN ON PLANS; THE SIZE OF THE PIER SHOULD BE 4" LARGER ON EACH SIDE THAN THE BUTTRESS OR COLUMN BASE PLATE, WITH A MINIMUM PIER SIZE OF 24"x24". THE PIER SHOULD BE REINFORCED WITH 8-#7 VERTICAL BARS AND #4@12 TIES.

14. PROVIDE POCKETS AND DOWELS FOR ALL BEAMS FRAMING INTO FOUNDATION WALLS. ALL PIER DEPRESSIONS AT COLUMNS OR BEAMS BEARING ON WALLS SHALL BE FILLED WITH CONCRETE TO THE TOP ELEVATION OF ADJACENT WALLS AFTER COLUMNS AND BEAMS ARE IN PLACE. KEYS ARE TO BE PROVIDED FOR ALL DEPRESSIONS EXCEEDING 12" IN DEPTH. PROVIDE MINIMUM (2) #5 BARS ALL AROUND OPENINGS HORIZONTALLY, VERTICALLY, AND DIAGONALLY UNLESS OTHERWISE SHOWN ON DETAILS. BARS SHALL BE EXTENDED 2'-0" BEYOND OPENINGS.

15. DO NOT INCREASE QUANTITY OF WATER IN EXCESS OF THAT ESTABLISHED BY DESIGN MIX. IF LOSS OF SLUMP OCCURS BECAUSE OF THE USE OF FIBERMESH; ADD SUPERPLASTICIZER IN ACCORDANCE WITH TESTING LABORATORIES INSTRUCTIONS.

16. WHEN MEAN-DAILY-TEMPERATURE RISES ABOVE 90F, PROVIDE HOT WEATHER PROTECTION IN ACCORDANCE WITH ACI-305. WHEN MEAN-DAILY-TEMPERATURE FALLS BELOW 40F, PROVIDE COLD WEATHER PROTECTION IN ACCORDANCE WITH ACI 306. SUBMIT PROPOSED METHODS FOR COLD AND/OR HOT WEATHER CONCRETING FOR REVIEW.

17. DESIGN AND CONSTRUCTION OF FORMWORK IS TO COMPLY WITH THE ACI CODE. PROVIDE 3/4" CHAMFER FOR ALL EXPOSED CORNERS.

18. WHERE NO REINFORCEMENT IS SPECIFIED ON DRAWINGS, PROVIDE MINIMUM TEMPERATURE REINFORCEMENT IN ACCORDANCE WITH ACI-318; BUT, NOT LESS THAN #4 REBARS AT 16" ON CENTER.

19. WHEN INSTALLING EXPANSION BOLTS OR ADHESIVE ANCHORS, THE CONTRACTOR SHALL TAKE MEASURES TO AVOID DRILLING OR CUTTING OF ANY EXISTING REINFORCING AND DESTRUCTION OF THE CONCRETE. HOLES SHALL BE BLOWN CLEAN PRIOR TO PLACING BOLTS OR ADHESIVE ANCHORS.

20. VOID FORMERS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE RIGID CLOSED CELL EXPANDED POLYSTYRENE CONFORMING TO ASTM C578. VOID FORMERS SHALL UNDERGO 10% DEFORMATION WHEN SUBJECTED TO THE FOLLOWING LOADS AS PER ASTM D1621.
    a. COMPRESSIBLE VOID FORMERS 5.0 psi
    b. RIGID VOID FORMERS 25.0 psi

LAST MODIFIED DATE:

PLAN N MAG

OWNER

SkyHarbour

ARCHITECT

MH
Margulies Hoelzli Architecture

STRUCTURAL

DECIS

GPI

FIRE PROTECTION

HOWE ENGINEERS

NO.	DATE	DESCRIPTION
1	04/22/2025	BUILDING DEPARTMENT SUBMISSION

REVISIONS

PROJECT

SKY HARBOUR
HUDSON VALLEY REGIONAL AIRPORT NORTH SITE
253 NEW HACKENSACK ROAD
WAPPINGERS FALLS, NY 12590

DRAWING TITLE

GENERAL FOUNDATION NOTES I

SEAL AND SIGNATURE

STATE OF NEW YORK · SUSAN C. BACAS · No. 063672 · LICENSED PROFESSIONAL ENGINEER

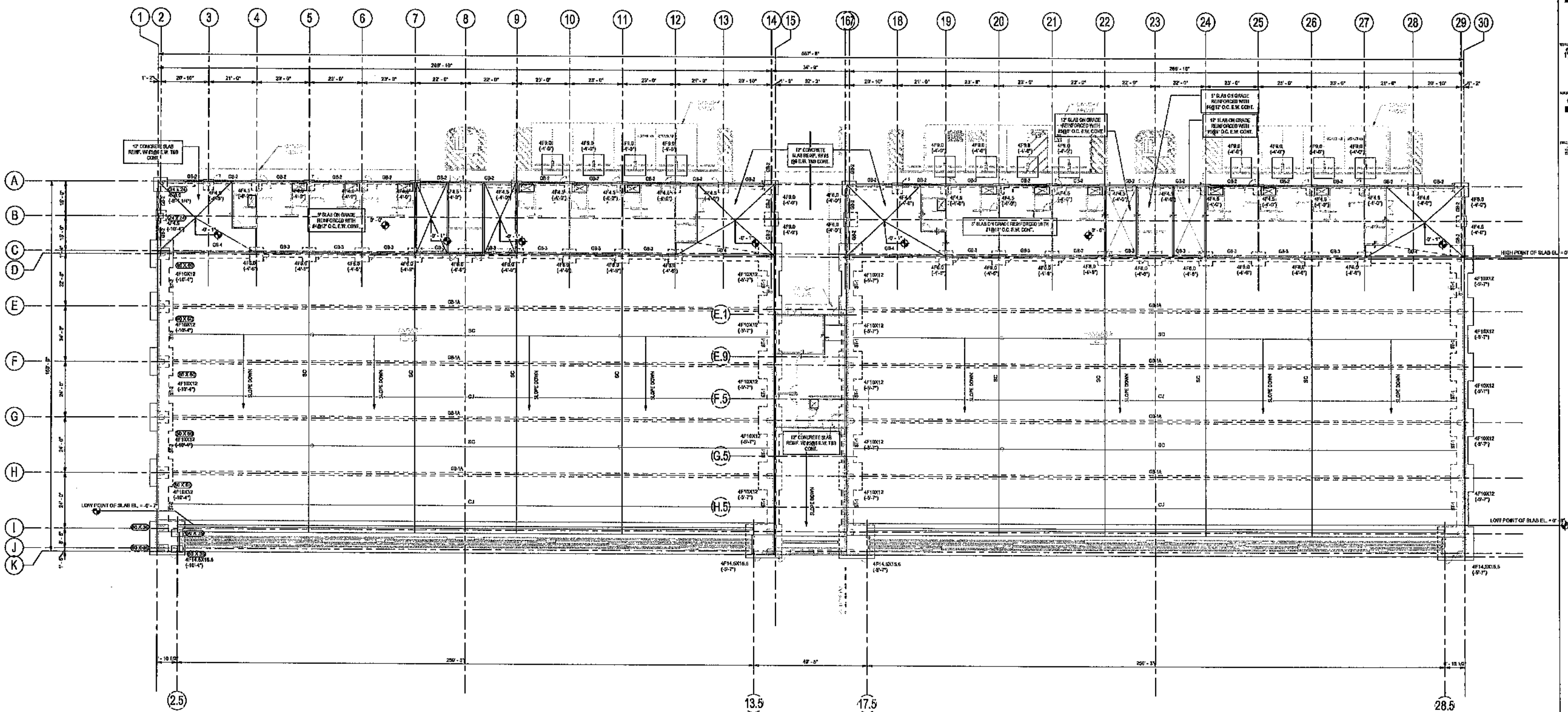
PROJECT NUMBER 24061.00

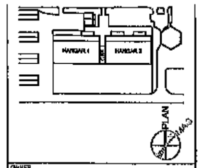
SCALE AS INDICATED

DATE

DRAWING NUMBER

FO-001





SkyHarbour

Margulies Hoelzli Architecture

HOWE ENGINEERS

OVERALL FOUNDATION PLAN

1 / FO-101

1/16" = 1'-0"

1/16" = 1'-0" 0 8 32 FT

NOTES:

1. TOP OF NEW FRAMED OFFICE SLAB ON GRADE TO BE AT ELEVATION 0'-0" = EL.150.1 HANGAR SLAB SLOPES FROM ELEV. 150.1 TO ELEV 149.5, TOP OF SLAB ELEVATION, EDGE OF SLAB, DIMENSIONS AND EXTENT OF SLAB DEPRESSIONS TO BE COORDINATED WITH ARCHITECTURAL EDGE OF SLAB DRAWINGS.
2. NEW SLAB ON GRADE FOR OFFICE TO BE 5-IN THICK, REINFORCED WITH #4@12" O.C. TOP, E.W. CONTINUOUS. FOR SLAB FINISHES SEE ARCH DRAWINGS. NEW SLAB ON GRADE FOR HANGAR TO BE 12" THICK, REINFORCED WITH #5@12" O.C. TOP AND BOTTOM CONTINUOUS.
3. FOR SUBGRADE UNDER SLAB ON GRADE SEE TYPICAL DETAILS ON FO200 SERIES DRAWINGS.
4. FOR FOUNDATION SECTIONS SEE DRAWINGS FO300 SERIES.
5. SEE SITE SURVEY DRAWINGS, PLUMBING, ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR PROPOSED AND EXISTING UNDERGROUND UTILITIES.
6. FOR SLAB ON GRADE PROOF ROLL AND BACKFILL USING 1'-0" COMPACTED THICK GRAVEL LAYER BELOW SLAB. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. COORDINATE LAYOUT AND DIMENSIONS OF PITS, IF ANY, WITH ARCHITECTURAL/MEP DRAWINGS.
8. MEMBRANE TO BE PROVIDED UNDER NEW BUILDING FRAMED SLAB ON GRADE AS SHOWN ON SECTIONS AND/OR ARCHITECTURAL DETAILS.
9. FOR ADDITIONAL NOTES SEE DRAWINGS FO 001.
10. PROVIDE KEYS AND SCREW-IN DOWELS FOR HORIZONTAL REINFORCEMENT AT CONSTRUCTION JOINT FOR ADJACENT HANGAR FOUNDATION ELEMENTS.
11. (X'-X") INDICATES BOTTOM OF FOOTING RELATIVE TO TOP OF SLAB ELEV. 150.1'.

GRADE BEAM SCHEDULE

MARK	SIZE	BOTTOM REINF. CONT.	TOP REINF. CONT.	STIRRUPS SIZE	STIRRUPS Type	STIRRUPS SPACING	REMARKS
GB-1A	20 X 14	4-#9	4-#9	#4		12"	
GB-2	16 X 36	3-#7	2-#7	#4		6"	PROVIDE 2-#7 CONT. FACE BARS EACH SIDE
GB-3	20 X 36	3-#7	3-#7	#4		10"	PROVIDE 2-#7 CONT. FACE BARS EACH SIDE
GB-4	36 X 47	3-#7	4-#7	#4		10"	PROVIDE 2-#7 CONT. FACE BARS EACH SIDE

STRAP BEAM SCHEDULE

MARK	SIZE	BOTTOM REINF. CONT.	TOP REINF. CONT.	STIRRUPS SIZE	STIRRUPS Type	STIRRUPS SPACING	REMARKS
ST-1	60 X 47	6-#9	6-#9	#4		6"	#5 @ 12" O.C. CONT FACE BARS
ST-2	60 X 60	7-#9	7-#9	#4		6"	#5 @ 12" O.C. CONT FACE BARS

FOOTING SCHEDULE (FOOTING ON 4.0 TON/SF)

MARK	SIZE	DEPTH	REINFORCEMENT BOTT. SHORT	BOTT. LONG	TOP SHORT	TOP LONG	REMARKS
4F4.5	4'-6" X 4'-6"	3'-0"	6-#5	6-#5	-	-	-
4F6.0	6'-0" X 6'-0"	3'-0"	6-#7	6-#7	-	-	-
4F9.0	9'-0" X 9'-0"	3'-0"	9-#8	9-#8	9-#8	9-#8	2-#8 FACE BARS
4F10X12	10'-0" X 12'-0"	3'-6"	11-#10	9-#10	11-#10	9-#10	2-#8 FACE BARS
4F14.5X15.5	14'-6" X 15'-6"	3'-6"	15-#10	14-#10	15-#10	14-#10	2-#8 FACE BARS

NO.	DATE	DESCRIPTION
1	04/22/2025	BUILDING DEPARTMENT SUBMISSION

PROJECT

SKY HARBOUR
HUDSON VALLEY REGIONAL AIRPORT NORTH SITE
263 NEW HACKENSACK ROAD
WAPPINGERS FALLS, NY 12590

DRAWING TITLE

OVERALL FOUNDATION PLAN

SEAL AND SIGNATURE

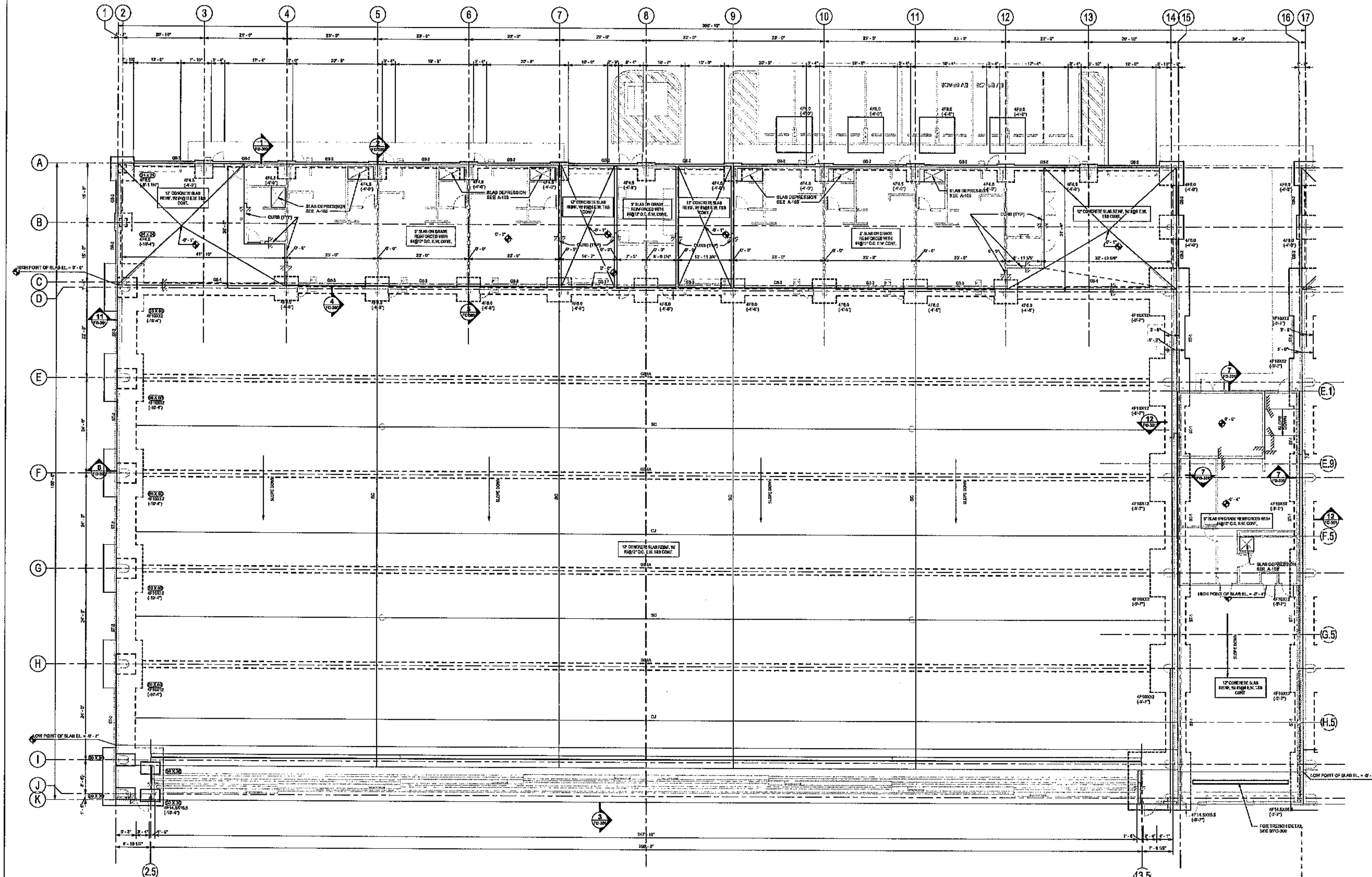
PROJECT NUMBER 24061.00

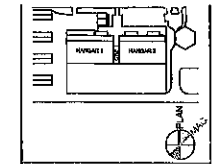
SCALE As Indicated

DATE 02/18/25

DRAWING NUMBER FO-101

LAST MODIFIED DATE: 4/28/2025





Sky Harbour

Margulies Hoelzli Architecture

GPI

HOWE ENGINEERS

HANGAR 1 FOUNDATION PLAN

1 / FO-101A

1/8" = 1'-0"

1/8" = 1'-0" 0 4 16 FT

NOTES:

1. TOP OF NEW FRAMED OFFICE SLAB ON GRADE TO BE AT ELEVATION 0'-0" = EL.150.1' HANGAR SLAB SLOPES FROM ELEV. 150.1 TO ELEV 149.8. TOP OF SLAB ELEVATION, EDGE OF SLAB, DIMENSIONS AND EXTENT OF SLAB DEPRESSIONS TO BE COORDINATED WITH ARCHITECTURAL EDGE OF SLAB DRAWINGS.
2. NEW SLAB ON GRADE FOR OFFICE TO BE 5 IN THICK, REINFORCED WITH #4@12" O.C. TOP, E.W. CONTINUOUS. FOR SLAB FINISHES SEE ARCH DRAWINGS. NEW SLAB ON GRADE FOR HANGAR TO BE 12" THICK, REINFORCED WITH #5@12" O.C. TOP AND BOTTOM CONTINUOUS.
3. FOR SUBGRADE UNDER SLAB ON GRADE SEE TYPICAL DETAILS ON FO200 SERIES DRAWINGS.
4. FOR FOUNDATION SECTIONS SEE DRAWINGS FO300 SERIES.
5. SEE SITE SURVEY DRAWINGS, PLUMBING, ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR PROPOSED AND EXISTING UNDERGROUND UTILITIES.
6. FOR SLAB ON GRADE PROOF ROLL AND BACKFILL USING 1'-0" COMPACTED THICK GRAVEL LAYER BELOW SLAB. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. COORDINATE LAYOUT AND DIMENSIONS OF PITS, IF ANY, WITH ARCHITECTURAL/MEP DRAWINGS.
8. MEMBRANE TO BE PROVIDED UNDER NEW BUILDING FRAMED SLAB ON GRADE AS SHOWN ON SECTIONS AND/OR ARCHITECTURAL DETAILS.
9. FOR ADDITIONAL NOTES SEE DRAWINGS FO-001.
10. PROVIDE KEYS AND SCREW-IN DOWELS FOR HORIZONTAL REINFORCEMENT AT CONSTRUCTION JOINT FOR ADJACENT HANGAR FOUNDATION ELEMENTS.
11. (X'-X") INDICATES BOTTOM OF FOOTING RELATIVE TO TOP OF SLAB ELEV. 150.1'.

GRADE BEAM SCHEDULE

MARK	SIZE	BOTTOM REINF. CONT.	TOP REINF. CONT.	STIRRUPS SIZE	STIRRUPS Type	STIRRUPS SPACING	REMARKS
GB-1A	20 X 14	4-#9	4-#9	#4		12"	
GB-2	18 X 36	3-#7	2-#7	#4		8"	PROVIDE 2-#7 CONT. FACE BARS EACH SIDE
GB-3	20 X 36	3-#7	3-#7	#4		10"	PROVIDE 2-#7 CONT. FACE BARS EACH SIDE
GB-4	30 X 42	3-#7	4-#7	#4		10"	PROVIDE 2-#7 CONT. FACE BARS EACH SIDE

STRAP BEAM SCHEDULE

MARK	SIZE	BOTTOM REINF. CONT.	TOP REINF. CONT.	STIRRUPS SIZE	STIRRUPS Type	STIRRUPS SPACING	REMARKS
ST-1	60 X 42	6-#9	6-#7	#4		8"	#5 @ 12" O.C. CONT FACE BARS
ST-2	60 X 60	7-#9	7-#9	#4		8"	#5 @ 12" O.C. CONT FACE BARS

FOOTING SCHEDULE (FOOTING ON 4.0 TON/SF)

MARK	SIZE	DEPTH	REINFORCEMENT BOTT. SHORT	REINFORCEMENT BOTT. LONG	REINFORCEMENT TOP SHORT	REINFORCEMENT TOP LONG	REMARKS
4F4.5	4'-6" X 4'-6"	3'-0"	6-#6	6-#6	-	-	-
4F6.0	6'-0" X 6'-0"	3'-0"	6-#7	4-#7	-	-	-
4F9.0	9'-0" X 9'-0"	3'-0"	9-#8	9-#8	9-#8	9-#8	2-#6 FACE BARS
4F10X12	10'-0" X 12'-0"	3'-6"	11-#10	9-#10	11-#10	9-#10	2-#6 FACE BARS
4F14.5X15.5	14'-6" X 15'-6"	3'-6"	15-#10	14-#10	15-#10	14-#10	2-#6 FACE BARS

NO.	DATE	DESCRIPTION
1	04/22/2025	BUILDING DEPARTMENT SUBMISSION

REVISIONS

PROJECT

SKY HARBOUR

HUDSON VALLEY REGIONAL AIRPORT NORTH SITE

263 NEW HACKENSACK ROAD
WAPPINGERS FALLS, NY 12590

DRAWING TITLE

HANGAR 1 FOUNDATION PLAN

SEAL AND SIGNATURE

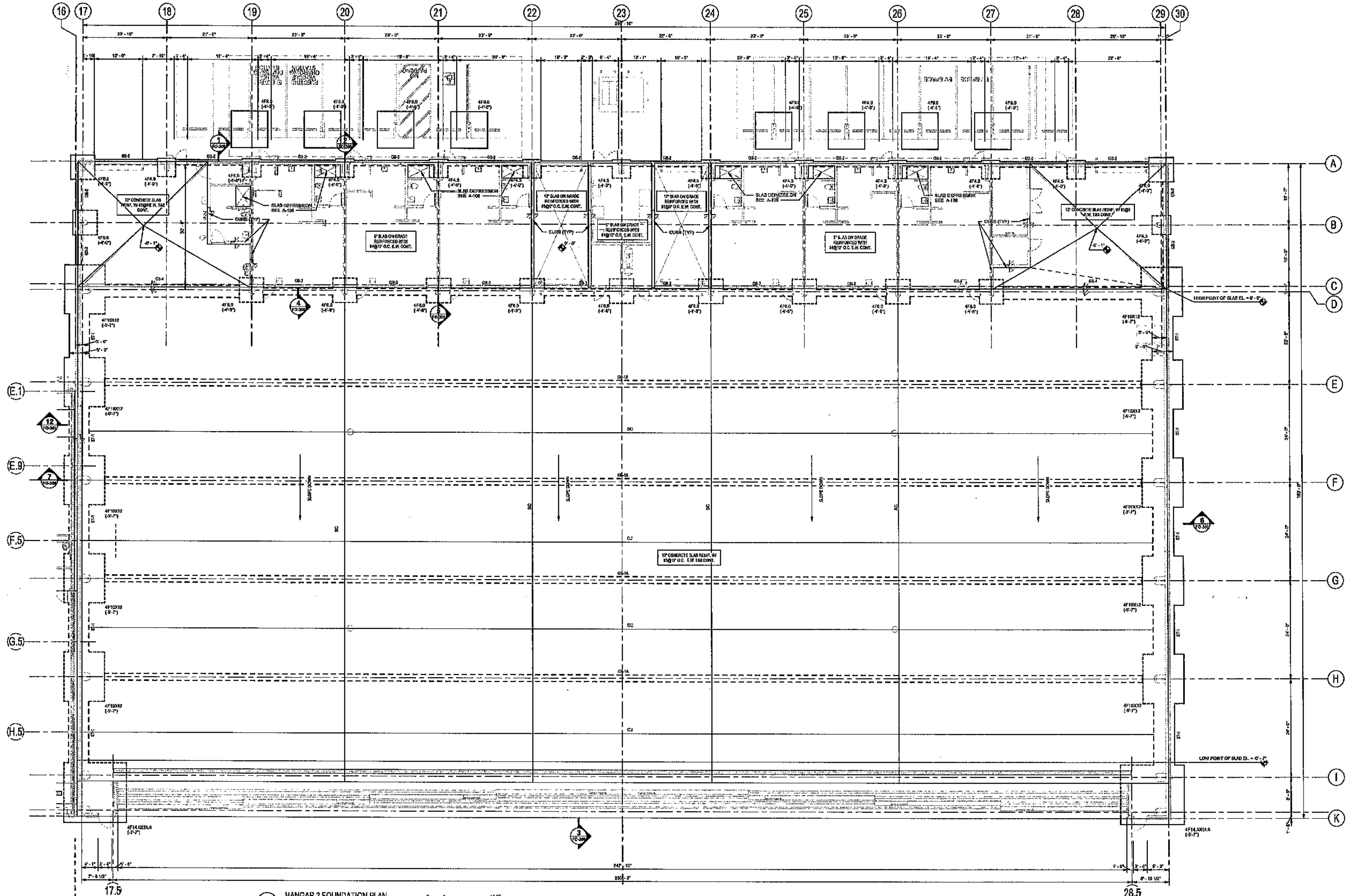
PROJECT NUMBER: 24061.00

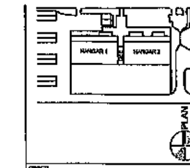
SCALE: 1/8" = 1'-0"

DATE: 02/19/25

DRAWING NUMBER

FO-101A





Sky Harbour

Margulies Hoeltzl Architecture

GPI

HOWE ENGINEERS

HANGAR 2 FOUNDATION PLAN

1/8" = 1'-0"

1/8" = 1'-0" 0 4 16 FT

NOTES:

1. TOP OF NEW FRAMED OFFICE SLAB ON GRADE TO BE AT ELEVATION 0'-0" = EL.150.1' HANGAR SLAB SLOPES FROM ELEV. 150.1 TO ELEV 149.6. TOP OF SLAB ELEVATION, EDGE OF SLAB, DIMENSIONS AND EXTENT OF SLAB DEPRESSIONS TO BE COORDINATED WITH ARCHITECTURAL EDGE OF SLAB DRAWINGS.
2. NEW SLAB ON GRADE FOR OFFICE TO BE 5-IN THICK, REINFORCED WITH #4@12" O.C. TOP, E.W. CONTINUOUS. FOR SLAB FINISHES SEE ARCH DRAWINGS. NEW SLAB ON GRADE FOR HANGAR TO BE 12" THICK, REINFORCED WITH #5@12" O.C. TOP AND BOTTOM CONTINUOUS.
3. FOR SUBGRADE UNDER SLAB ON GRADE SEE TYPICAL DETAILS ON FO200 SERIES DRAWINGS.
4. FOR FOUNDATION SECTIONS SEE DRAWINGS FO300 SERIES.
5. SEE SITE SURVEY DRAWINGS, PLUMBING, ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR PROPOSED AND EXISTING UNDERGROUND UTILITIES.
6. FOR SLAB ON GRADE PROOF ROLL AND BACKFILL USING 1'-0" COMPACTED THICK GRAVEL LAYER BELOW SLAB. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. COORDINATE LAYOUT AND DIMENSIONS OF PITS, IF ANY, WITH ARCHITECTURAL/MEP DRAWINGS.
8. MEMBRANE TO BE PROVIDED UNDER NEW BUILDING FRAMED SLAB ON GRADE AS SHOWN ON SECTIONS AND/OR ARCHITECTURAL DETAILS.
9. FOR ADDITIONAL NOTES SEE DRAWINGS FO 001.
10. PROVIDE KEYS AND SCREW-IN DOWELS FOR HORIZONTAL REINFORCEMENT AT CONSTRUCTION JOINT FOR ADJACENT HANGAR FOUNDATION ELEMENTS.
11. (X'-X") INDICATES BOTTOM OF FOOTING RELATIVE TO TOP OF SLAB ELEV. 150.1'.

GRADE BEAM SCHEDULE

MARK	SIZE	BOTTOM REINF. CONT.	TOP REINF. CONT.	STIRRUPS SIZE	STIRRUPS Type	STIRRUPS SPACING	REMARKS
GB-1A	20 X 18	4-#9	4-#9	#4		12"	
GB-2	18 X 30	3-#7	2-#7	#4		8"	PROVIDE 2-#7 CONT. FACE BARS EACH SIDE
GB-3	20 X 30	3-#7	3-#7	#4		10"	PROVIDE 2-#7 CONT. FACE BARS EACH SIDE
GB-4	30 X 42	3-#7	4-#7	#4		10"	PROVIDE 2-#7 CONT. FACE BARS EACH SIDE

STRAP BEAM SCHEDULE

MARK	SIZE	BOTTOM REINF. CONT.	TOP REINF. CONT.	STIRRUPS SIZE	STIRRUPS Type	STIRRUPS SPACING	REMARKS
ST-1	60 X 42	6-#9	6-#9	#4		8"	#5 @ 12" O.C. CONT FACE BARS
ST-2	60 X 60	7-#9	7-#9	#4		8"	#5 @ 12" O.C. CONT FACE BARS

FOOTING SCHEDULE (FOOTING ON 4.0 TON/SF)

MARK	SIZE	DEPTH	REINFORCEMENT BOTT. SHORT	REINFORCEMENT BOTT. LONG	REINFORCEMENT TOP SHORT	REINFORCEMENT TOP LONG	REMARKS
4F4.5	4'-6" X 4'-6"	3'-0"	5-#6	5-#6	-	-	-
4F6.0	6'-0" X 6'-0"	3'-0"	6-#7	6-#7	-	-	-
4F8.0	8'-0" X 8'-0"	3'-0"	9-#8	9-#8	9-#6	9-#6	2-#5 FACE BARS
4F10X12	10'-0" X 12'-0"	3'-6"	11-#10	9-#10	11-#10	9-#10	2-#5 FACE BARS
4F14.5X15.5	14'-6" X 15'-6"	3'-6"	15-#10	14-#10	15-#10	14-#10	2-#5 FACE BARS

PROGRESS SET - NOT FOR BID OR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	04/22/2025	BUILDING DEPARTMENT SUBMISSION

REVISIONS

PROJECT

SKY HARBOUR

HUDSON VALLEY REGIONAL AIRPORT NORTH SITE

263 NEW HACKENSACK ROAD
WAPPINGERS FALLS, NY 12590

DRAWING TITLE

HANGAR 2 FOUNDATION PLAN

SEAL AND SIGNATURE

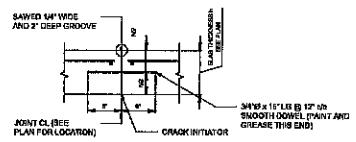
PROJECT NUMBER: 24061.00

SCALE: 1/8" = 1'-0"

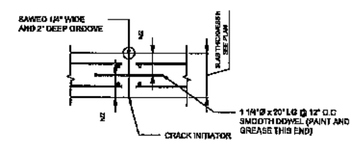
DATE: 02/19/25

DRAWING NUMBER

FO-101B



1 FO-200 TYPICAL SAW CUT JOINT DETAIL FOR OFFICE BUILDING SLAB-ON-GRADE
SCALE: N.T.S.



2 FO-200 TYPICAL SAW CUT JOINT DETAIL FOR HANGAR SLAB-ON-GRADE
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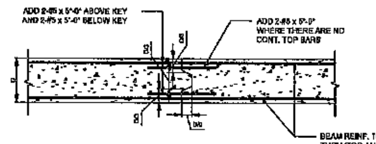
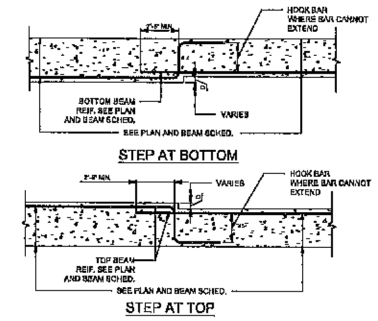
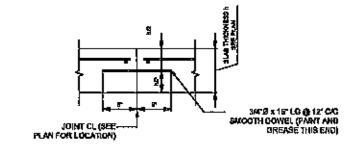


3 FO-200 TYPICAL CONSTRUCTION JOINT DETAIL IN GRADE BEAM
SCALE: N.T.S.

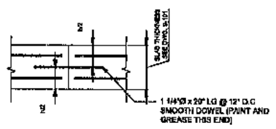


4 FO-200 TYPICAL DETAIL ON STEP IN GRADE BEAM
SCALE: N.T.S.



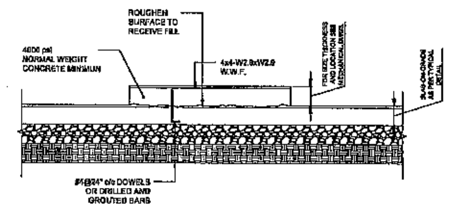
TYPICAL CONSTRUCTION JOINT

5 FO-200 DETAIL FOR OFFICE BUILDING SLAB-ON-GRADE
SCALE: N.T.S.

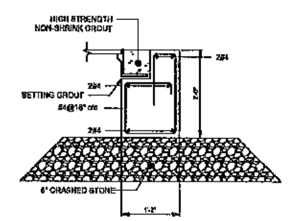


TYPICAL CONSTRUCTION JOINT

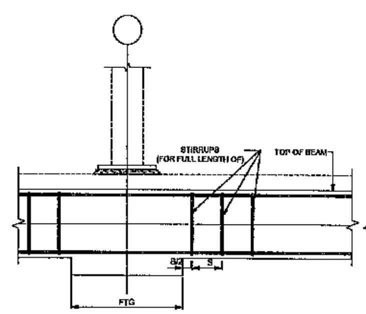
6 FO-200 DETAIL FOR HANGAR SLAB-ON-GRADE
SCALE: N.T.S.



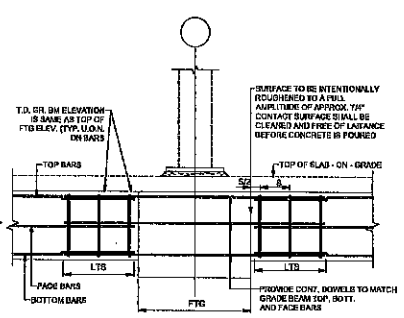
7 FO-200 TYPICAL DETAIL OF MECHANICAL HOUSEKEEPING PADS (OFFICE BUILDING SLAB ONLY)
SCALE: N.T.S.



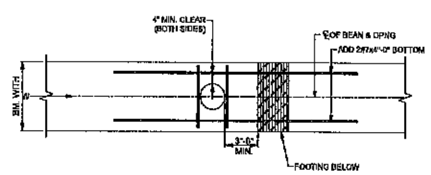
8 FO-200 CONCRETE COLLAR DETAIL
SCALE: N.T.S.



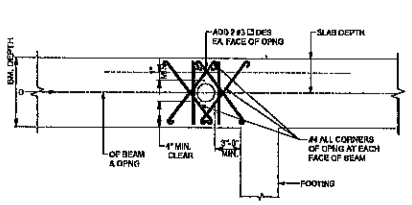
GRADE BEAM IS POURED MONOLITIC WITH FOOTING



GRADE BEAM IS NOT POURED MONOLITIC WITH FOOTING



PLAN
FOR VERTICAL HOLES IN BEAMS (OPNG DIA. NOT GREATER THAN 8")



ELEVATION
FOR HORIZ. HOLES IN BEAMS (OPNG DIA. NOT GREATER THAN 8")

9 FO-200 TYPICAL COLUMN OVER GRADE BEAM DETAILS
SCALE: N.T.S.

REBAR DEVELOPMENT AND SPLICE LENGTH

(Based on ACI318-05, Section 12.2.2 and Section 12.2.3)

Properties: fc = 5,000 psi; Fy = 60,000 psi

Bar Size	Bar Dia. (db)	Straight Tension Bar: Development Length (Lap Splice: CASE I Top Bar	CASE I Other	CASE II Top Bar	CASE II Other	Lap Splice Length (Class B) (inches): CASE I Top Bar	CASE I Other	CASE II Top Bar	CASE II Other	Straight Compression Bar: Development Length (in.)	Lap Splice Length (in.)	Standard Hook: Development Length (in.)
#3	0.375	17	13	25	19	22	17	32	25	8	12	6
#4	0.500	22	17	33	25	29	22	43	33	9	15	8
#5	0.625	28	21	41	32	36	28	54	41	11	19	11
#6	0.750	33	25	50	38	43	33	65	50	14	23	13
#7	0.875	48	37	72	56	63	48	94	72	16	26	15
#8	1.000	55	42	83	64	72	55	108	83	18	30	17
#9	1.128	62	48	93	72	81	62	121	93	20	34	19
#10	1.270	70	54	105	81	91	70	137	105	23	38	22
#11	1.410	78	60	117	90	101	78	152	117	25	42	24
#14	1.693	83	72	140	108	—	—	—	—	30	—	29
#18	2.257	124	96	187	144	—	—	—	—	41	—	38

Notes:

1) Case I
For beams and columns, concrete clear cover >= db, and c to c bar spacing >=2db and with stirrups or ties throughout L(d) not less than the code minimum.
For other elements, clear concrete cover >= db and c to c bar spacing >= 3db.

2) Case II
For Beams and columns, clear concrete cover < db or c to c bar spacing < 2db.
For other elements, clear concrete cover < db or c to c bar spacing < 3db

3) Top bars are horizontal bars placed such that more than 12 inches of fresh concrete is cast below the development length or splice.

4) Tabulated values above use following factors in calculation.
ψt = 1.3 for top bar, ψt = 1.0 for other bar.
ψs = 0.8 for #6 and smaller bar, ψs = 1.0 for #7 and larger bar
ψe = 1.0 for uncoated bars, λ = 1.0 for normal weight concrete

The tabulated values above must be multiplied by the following factors where applicable:
a) For epoxy coated bars or light weight concrete straight bars in tension, factors.
ψe = 1.5 if epoxy coated bars with clear cover < 3db, or clear spacing < 6db.
ψe = 1.2 if epoxy coated bars with clear cover >= 3db, and clear spacing >= 6db.
λ = 1.3 If light weight concrete.
ψt*ψe <= 1.7 Maximum Limit.
b) For compression bars.
for development length calculation, multiplied by 0.75 if rebars enclosed with ties #4@<=4"
for lap splice length calculation, multiplied by 0.83 if rebars enclosed with ties #4@<=4"
c) For Development of Standard 90 degree Hook in Tension:
multiplied by 0.7 if hook side cover not less than 2.5" and end cover not less than 2".
multiplied by 0.8 if hook enclosed with Ties @ <= 3*db
multiplied by 1.2 if rebars are epoxy coated

REBAR DEVELOPMENT AND SPLICE LENGTH

(Based on ACI318-05, Section 12.2.2 and Section 12.2.3)

Properties: fc = 4,500 psi; Fy = 60,000 psi

Bar Size	Bar Dia. (db)	Straight Tension Bar: Development Length (inch) CASE I Top Bar	CASE I Other bars	CASE II Top Bar	CASE II Other bars	Lap Splice Length (Class B) (inches) CASE I Top Bar	CASE I Other bars	CASE II Top Bar	CASE II Other bars	Straight Compression Bar: Development Length (in.)	Lap Splice Length (in.)	Standard Hook: Development Length (in.)
#3	0.375	17	13	26	20	23	17	34	26	8	12	7
#4	0.500	23	18	35	27	30	23	46	35	9	15	9
#5	0.625	29	22	44	34	38	29	57	44	11	19	11
#6	0.750	35	27	52	40	45	35	68	52	14	23	13
#7	0.875	51	39	76	59	66	51	99	76	16	26	16
#8	1.000	58	45	87	67	76	58	113	87	18	30	18
#9	1.128	66	50	98	76	85	66	128	98	20	34	20
#10	1.270	74	57	111	85	96	74	144	111	23	38	23
#11	1.410	82	63	123	95	107	82	160	123	25	42	25
#14	1.693	98	76	148	114	—	—	—	—	30	—	30
#18	2.257	131	101	197	151	—	—	—	—	41	—	40

REBAR EMBEDMENT AND SPLICE LENGTH SCHEDULE

(Based on ACI318-02, Section 12.2.2)

Properties: fc = 4000 psi; Fy = 60000 psi; Aggregate: Normal; Coating: Uncoated; Weight λ = 1; β 1

Bar Size	Bar Dia. (db)	Compression: Embedment Length LCE	xdb	Lap Splice Length LCS	xdb	Tension Embedment Length CASE I: Top Bars LTE	xdb	Other bars LTE	xdb	CASE II: Top Bars LTE	xdb	Other bars LTE	xdb	Lap Splice Length (Class B) CASE I: Top Bars LTS	xdb	Other bars LTS	xdb	CASE II: Top Bars LTS	xdb	Other bars LTS	xdb
#3	0.375	8	21	12	32	18	49	14	38	28	74	21	57	24	64	18	49	36	96	28	74
#4	0.500	10	20	15	30	25	49	19	38	37	74	28	57	32	64	25	49	48	96	37	74
#5	0.625	12	19	19	30	31	49	24	38	46	74	36	57	40	64	31	49	60	96	46	74
#6	0.750	16	20	23	31	37	49	28	38	55	74	43	57	48	64	37	49	72	96	55	74
#7	0.875	17	19	27	31	54	62	42	47	81	92	62	71	70	80	54	62	105	120	81	92
#8	1.000	19	19	30	30	62	62	47	47	92	92	71	71	80	80	62	62	120	120	92	92
#9	1.128	22	20	34	30	70	62	54	47	104	92	80	71	90	80	70	62	136	120	104	92
#10	1.270	25	20	38	31	78	62	60	47	117	92	90	71	102	80	78	62	153	120	117	92
#11	1.410	27	19	43	30	87	62	67	47	130	92	100	71	113	80	87	62	170	120	130	92

10 FO-200 REBAR EMBEDMENT & SPLICE LENGTH SCHEDULE
SCALE: N.T.S.

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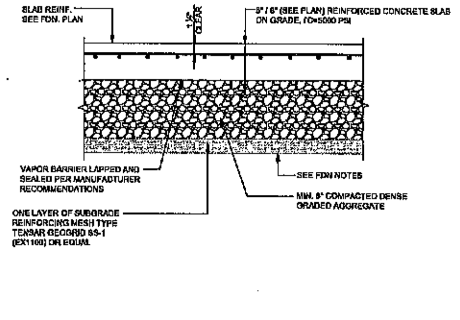
SKY HARBOUR
HUDSON VALLEY REGIONAL AIRPORT NORTH SITE
263 NEW HACKENSACK ROAD
WAPPINGERS FALLS, NY 12590

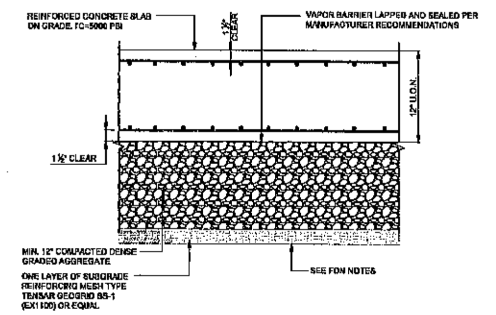
TYPICAL FOUNDATION DETAILS - SHEET 1

24061.00

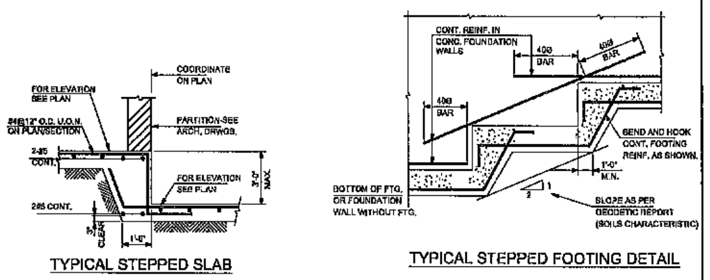
AS INDICATED



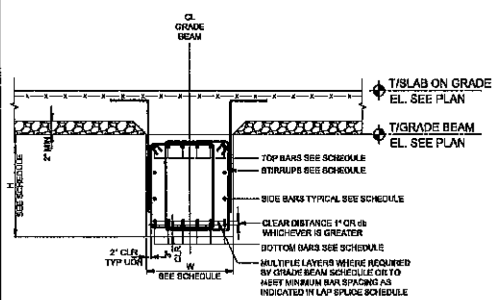
1 FO-201 TYPICAL SLAB-ON-GRADE DETAIL FOR OFFICE BUILDING
SCALE: 1 1/2"=1'-0"
SCALE IN FEET



2 FO-201 TYPICAL SLAB-ON-GRADE DETAIL FOR HANGAR
SCALE: 1 1/2"=1'-0"
SCALE IN FEET



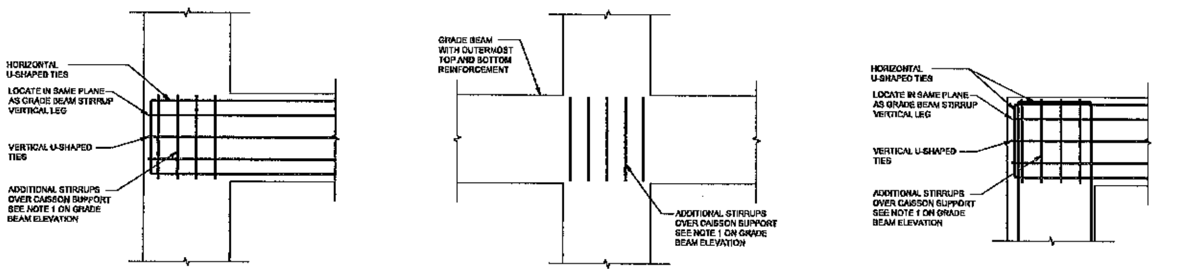
3 FO-201 DETAILS
SCALE: 1/2"=1'-0"
SCALE IN FEET



4 FO-201 GRADE BEAM SECTION TYPICAL
SCALE: N.T.S.

NOTE:

1. IF H IS GREATER THAN 24" PROVIDE SIDE BARS #5@16" MAXIMUM UON IN SCHEDULE.



GRADE BEAM - T - INTERSECTION

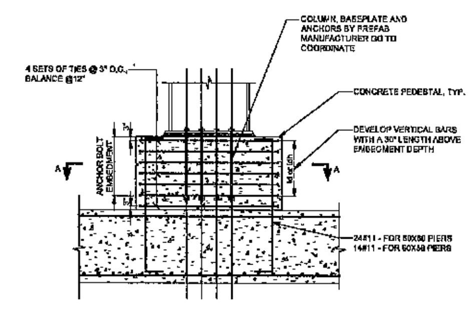
GRADE BEAM - INTERIOR INTERSECTION

GRADE BEAM - CORNER CONDITION

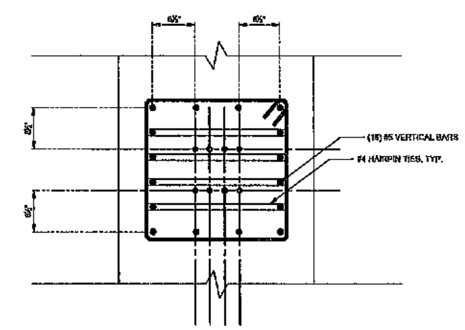
5 FO-201 TYPICAL GRADE BEAM INTERSECTION PLAN DETAILS
SCALE: N.T.S.

NOTE:

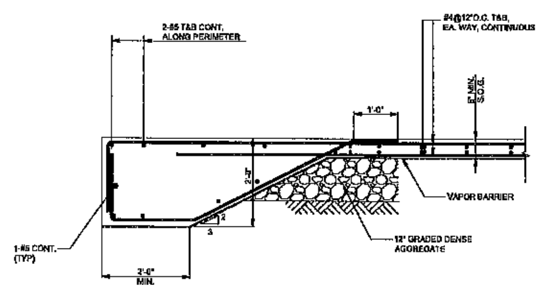
1. GRADE BEAM LONGITUDINAL REINFORCEMENT AND STIRRUPS NOT SHOWN FOR CLARITY.
2. FOR U-SHAPED TIES SEE TYPICAL GRADE BEAM ELEVATION.



6 FO-201 TYPICAL PIER DETAIL
SCALE: 1 1/2"=1'-0"



A-A
SCALE: 1"=1'-0"



7 FO-201 TYPICAL SLAB EDGE DETAIL
SCALE: 3/4"=1'-0"
SCALE IN FEET

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1 04/22/2025 BUILDING DEPARTMENT SUBMISSION

SKY HARBOUR
HUDSON VALLEY REGIONAL AIRPORT NORTH SITE
263 NEW HACKENSACK ROAD WAPPINGERS FALLS, NY 12590

TYPICAL FOUNDATION DETAILS - SHEET 1

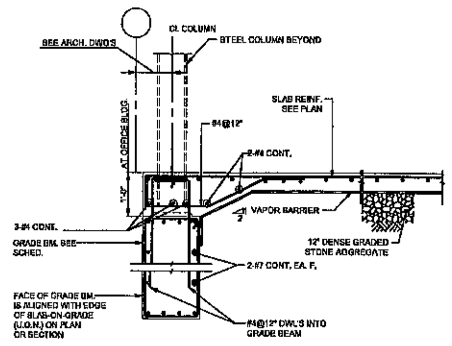
24061.00

AS INDICATED

PROGRESS SET - NOT FOR BID OR CONSTRUCTION

FO-201

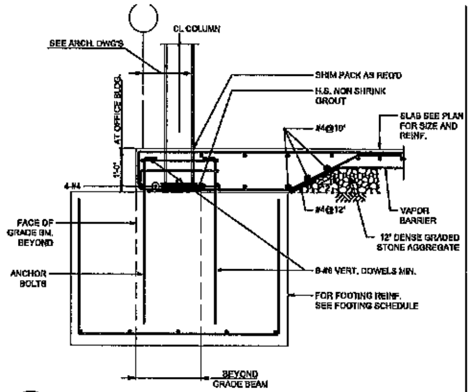
LAST MODIFIED DATE:



1 FO-300 SECTION (TYPICAL AT GRADE BM'S)
SCALE: 3/4"=1'-0"
SCALE IN FEET

NOTES:

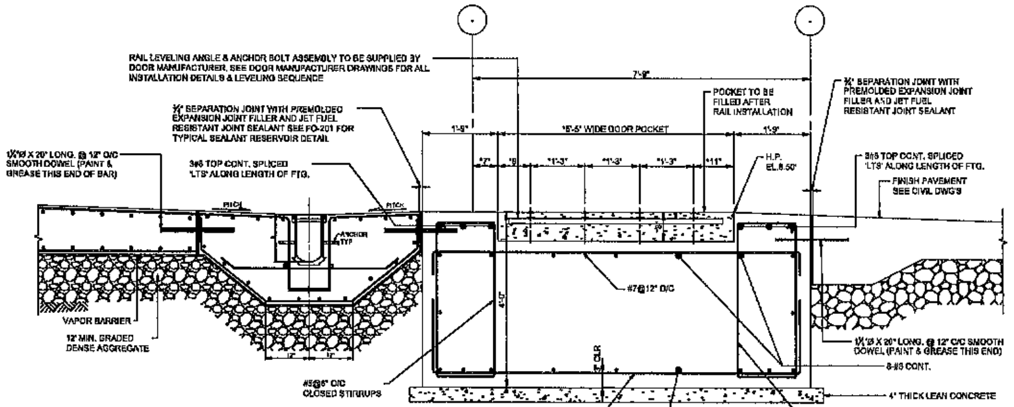
1. MIRROR SLAB REINFORCEMENT WHEN SLAB IS AT BOTH SIDES OF BEAM.
2. COLUMN, BASEPLATE AND ANCHORS BY PREFAB MANUFACTURER GC TO COORDINATE.



2 FO-300 TYPICAL COLUMN SUPPORT DETAIL
SCALE: 3/4"=1'-0"
SCALE IN FEET

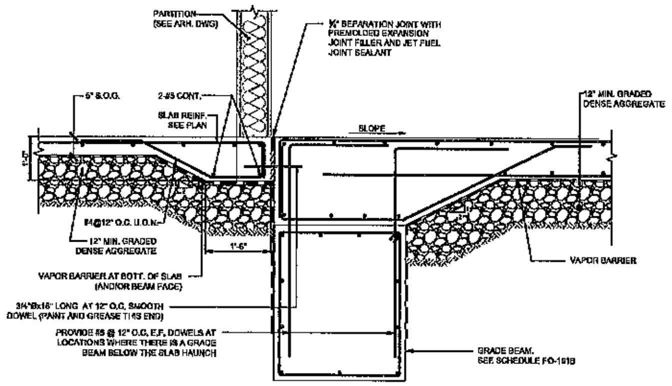
NOTES:

1. ALL ANCHORS TO HAVE DOUBLE NUT TOP AND BOTTOM. TYPICAL AT ALL COLUMNS.

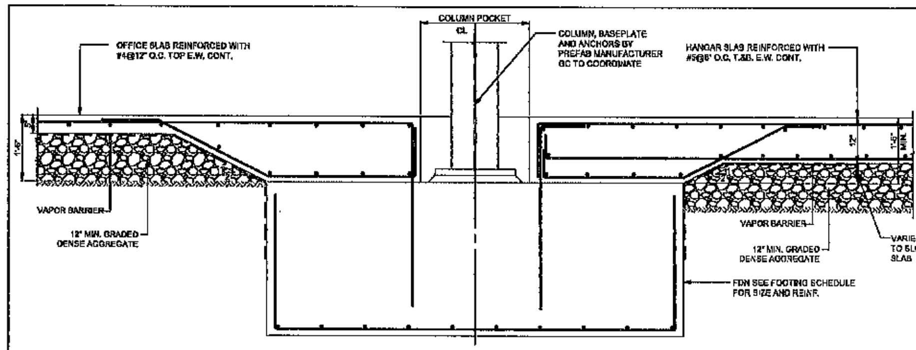


3 FO-300 SECTION
SCALE: 3/4"=1'-0"
SCALE IN FEET

NOTES: (SECTIONS OR PLAN).
1. DIMENSION MARKED WITH SYMBOL "*" ARE PROVIDED FOR REFERENCE ONLY. COORDINATE (VERIFY) WITH DOOR MANUFACTURER PRIOR TO CONSTRUCTION.



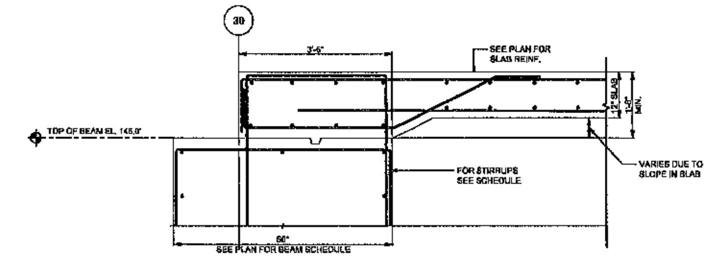
4 FO-300 SECTION
SCALE: 3/4"=1'-0"
SCALE IN FEET



5 FO-300 SECTION - HANGAR/OFFICE SLAB TRANSITION
SCALE: 3/4"=1'-0"
SCALE IN FEET

NOTES:

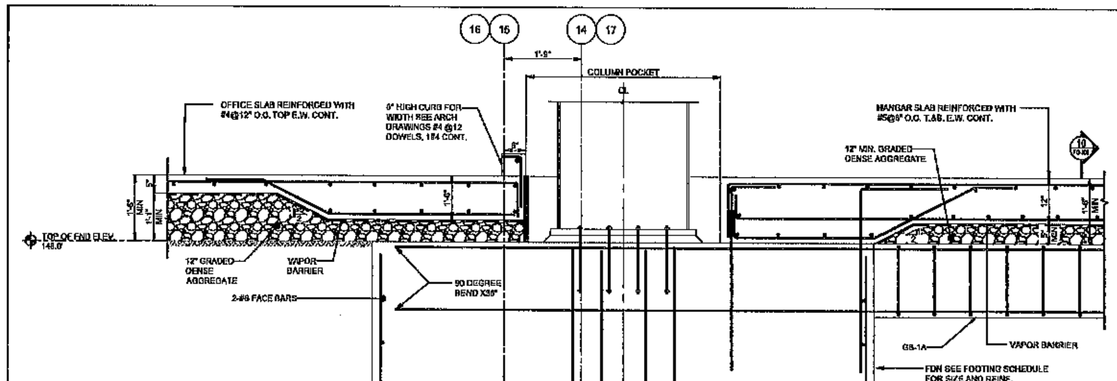
1. ALL ANCHORS TO HAVE DOUBLE NUT TOP AND BOTTOM. TYPICAL AT ALL COLUMNS.



6 FO-300 SECTION - BEAM/SLAB AT EDGE - HANGAR
SCALE: 3/4"=1'-0"
SCALE IN FEET

NOTES:

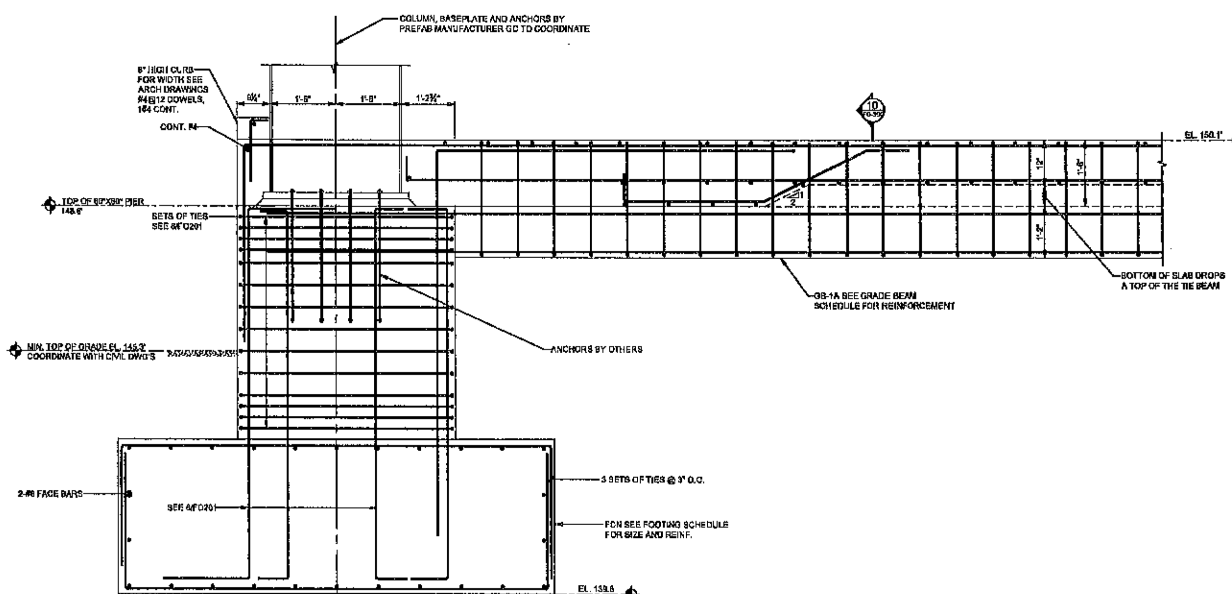
1. SLAB THICKNESS TO BE 12" U.O.N. ON PLAN.
2. SEE PLAN FOR BEAM SCHEDULE.
3. FOR ADDITIONAL INFORMATION SEE SECTION 1/FO202 TYPICAL FOR GRADE BEAMS.



7 FO-300 SECTION - HANGAR/OFFICE SLAB TRANSITION
SCALE: 3/4"=1'-0"
SCALE IN FEET

NOTES:

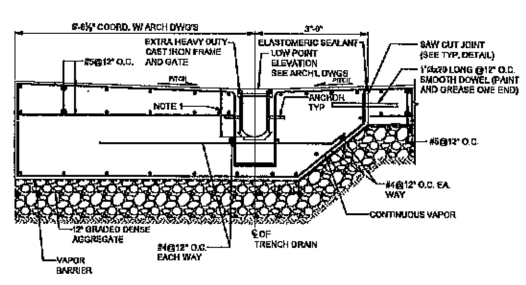
1. ALL ANCHORS TO HAVE DOUBLE NUT TOP AND BOTTOM. TYPICAL AT ALL COLUMNS.
2. COLUMN, BASEPLATE AND ANCHORS BY PREFAB MANUFACTURER GC TO COORDINATE.



8 FO-300 SECTION - HANGAR/COLUMN WITH PIER
SCALE: 3/4"=1'-0"
SCALE IN FEET

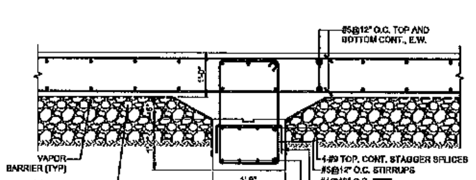
NOTES:

1. ALL ANCHORS TO HAVE DOUBLE NUT TOP AND BOTTOM. TYPICAL AT ALL COLUMNS.



9 FO-300 SECTION
SCALE: 3/4"=1'-0"
SCALE IN FEET

NOTES:
1. a - INDICATES DIMENSION VARIES BASED ON THE SLOPE OF TRENCH DRAIN



10 FO-300 SECTION - TIE BEAM GB-1A
SCALE: 3/4"=1'-0"
SCALE IN FEET

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NO.	DATE	DESCRIPTION
1	04/22/2025	BUILDING DEPARTMENT SUBMISSION

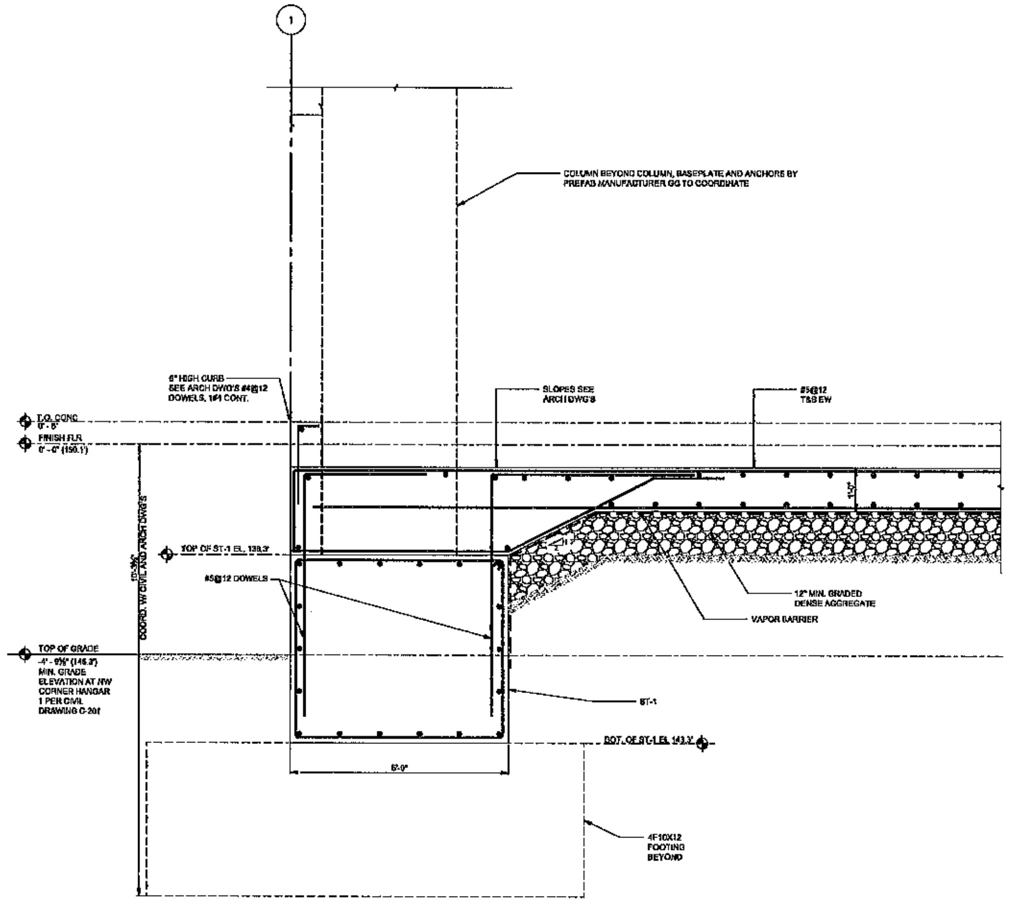
SKY HARBOUR
HUDSON VALLEY REGIONAL AIRPORT NORTH SITE
263 NEW HACKENSACK ROAD
WAPPINGERS FALLS, NY 12590

PROJECT NUMBER: 24061.00

SCALE: AS INDICATED

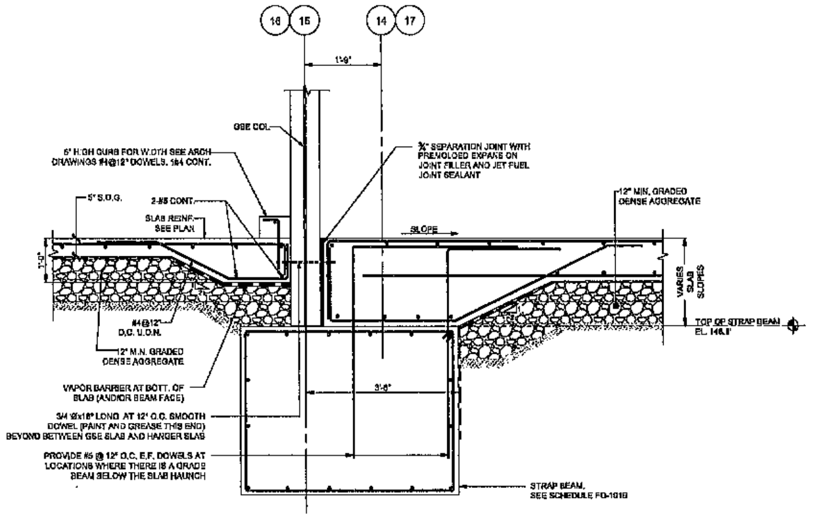
LAST MODIFIED DATE:

PROGRESS SET - NOT FOR BID OR CONSTRUCTION



11 FO-301 SECTION - STRAP BEAM/SLAB AT EDGE - HANGAR
SCALE: 3/4" = 1'-0"

SCALE IN FEET



12 FO-301 SECTION
SCALE: N.T.S.

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NO.	DATE	DESCRIPTION
1	04/22/2025	BUILDING DEPARTMENT SUBMISSION

REVISIONS

PROJECT

SKY HARBOUR
HUDSON VALLEY REGIONAL AIRPORT NORTH SITE
263 NEW HACKENSACK ROAD
WAPPINGERS FALLS, NY 12590

DRAWING TITLE

FOUNDATION SECTIONS - SHEET 2

PROJECT NUMBER 24061.00

SCALE AS INDICATED

DATE

DRAWING NUMBER

FO-301

LAST MODIFIED DATE:

EXHIBIT 2

2019 C.T. Male Site Characterization Report

William F.X. O'Neil
County Executive

Robert H. Balkind, P.E.
Commissioner

David C. Whalen
Deputy Commissioner

County of Dutchess
Department of Public Works

October 24, 2023

Via Email (greta.white@dec.ny.gov) and Electronic Submission

Greta White, P.G., Project Manager
Division of Environmental Remediation
NYS Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, NY 12233-7014

RE: Final Site Characterization Report
Dutchess County Airport/Hudson Valley Regional Airport
NYSDEC Site No. 314129

Dear Ms. White:

Enclosed is the Final Site Characterization Report submitted on behalf of Dutchess County with respect to Dutchess County Airport/Hudson Valley Regional Airport (Site No. 314129) (hereinafter, Site). Site characterization activities were conducted and the associated report, Site Characterization Report (SCR) was prepared in accordance with the Consent Order and Administrative Settlement between the NYS Department of Environmental Conservation (DEC) and the County (Index No.: CO 3-20170920-170) ("Consent Order").

Please be advised that the enclosed Final SCR is the final and last submission the County intends to submit to the DEC with respect the site characterization phase of the remedial program at the Site.

Some history regarding the County's activities at the Site will help illuminate the extensive investigative effort the County has performed with respect to the Site. The Consent Order became effective on March 28, 2018, more than 5 years ago, and the County has carried out a vast scope of activities since that time, all in accordance with the Consent Order and with DEC requirements.

This work included preparation of a Records Search Report (June 2018) and submission of an initial site characterization work plan (SCWP) (May 2018), which the DEC required to be modified to include additional on and off-Site sampling. The County submitted a revised SCWP (May 2019) which was finally approved, conditionally, by the NYSDEC (June 2019).

After conducting the DEC-approved sampling, the County submitted an SCR (August 2019) and a revised SCR (December 2019). Rather than approve the revised SCR, the DEC notified the County (April 2020) that it wanted to County to conduct additional investigative work, including

626 Dutchess Turnpike, Poughkeepsie, New York 12603
(845) 486-2085 • Fax (845) 486-2940
www.dutchessny.gov

sampling of off-Site potable water supply wells and then submit a new, comprehensive SCR incorporating the results of both the initial investigation and the supplemental one. Accordingly, the County prepared and submitted yet another work plan, a draft Supplemental Site Characterization Work Plan (SSCWP) (June 2020), outlining the scope of this additional investigation. DEC issued a letter requesting modifications/corrections to this SSCWP (July 2020) and the County submitted a revised draft SSCWP which included plans for addressing off-airport well testing, bottled water and POET systems (August 2020). The County submitted a third revision of the SSCWP (December 2020). Finally, on December 24, 2020, the DEC and DOH approved the SSCWP (conditioned upon some additional modifications being incorporated into the work plan).

The County conducted the DEC approved on and off-site work in 2021, which included numerous off-site potable well sampling events and installation of POET systems on locations exceeding the 70 ppt Health Advisor Level set forth in the 2018 Consent Order.

Thereafter, the County submitted a draft Site Characterization Report (the draft Final SCR, October 2021) which, as directed by the DEC, incorporated the results of both the County's original 2019 Site Characterization investigative work along with the results of the supplemental investigative work. The DEC provided comments on the draft Final SCR (May 5, 2022) and the County submitted a revised draft Final SCR on August 17, 2022, addressing the issues raised in DEC's comment letter.

It was not until March 10, 2023, *almost 7 months later*, that the DEC issued a comment letter regarding the County's August 2022 draft Final SCR submission. This letter included roughly 6 relatively straight forward comments. Subsequently, the County had some email and phone conversations with the DEC which resolved almost all of the comments, including the language of a statement to be included in the Tables. The County had believed that the DEC's March 2022 letter was the final list of comments from the DEC and that all the County needed to do was to revise (again) the Final SCR to address the letter and resubmit a revised Final SCR, finally bringing the County's long Site Characterization effort to a close.

However, before we were able to resubmit, to the County's surprise and consternation, on June 12, 2023 you, as the newly assigned Project Manager, issued a new comment letter containing almost 17 general and specific comments, *many of which were completely new comments* that were not included in the DEC's March 10th comment letter. One of the most troubling comments was the DEC's requirement that many sections of the Final SCR and all of the tables be revised to "reference the April 2023 version of the Department's *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS)* guidance document, including those updated concentrations contained therein, rather than the July 2021 version of said guidance document." As we explained to the DEC, many of the comments, including the requirement to reference the April 2023 guidance would require very substantial consultant time and expense to the County.

What was most problematic and, frankly, unfair about this particular comment was that the April 2023 guidance did not exist when we submitted our draft Final SCR in October 2021 and the revised version in August 2022 and was still not in place when DEC issued what we believed was its final comment letter in March 2023. The County applied the relevant guidance when it prepared the Final SCR in October 2021 as well as the revised Final SCR in August 2022. Had the DEC not taken almost 7 months to provide comments on our August 2022 submission, the Final SCR --addressing all of the DEC comments -- would likely have been finalized and approved by the DEC long before the April 2023 guidance was even issued.[1]

After we raised some concerns about this letter, the DEC issued another comment letter on June 22, 2023, which appeared to be sent to clarify and simplify some of the June 12th comments. While some clarifications were helpful, the most onerous requirement -- revising the SCR to address the newly issued April 2023 guidance was still included. During a conference call meeting with the DEC on June 28, 2023, it was agreed that the SCR did not have to be revised to include references to the new guidance values, but that an addendum would be included in the Final SCR which would explain why earlier guidance was used and, further state that any future Remedial Investigation Report would incorporate and reference the appropriate DEC guidance (see attached Final SCR with Addendum).

As reflected by the chronology above, the County has expended an extraordinary amount of time and money complying with the 2018 Consent Order and addressing all of the DEC's numerous comment letters and providing the requested revisions to work plans and the SCR. Indeed, it should be clear to all that the County has gone above and beyond throughout these 5 years of site characterization activity.

In light of all of the above, it is our position that the attached Final Site Characterization Report is in full compliance with the 2018 Consent Order and fully addresses all DEC requirements.[2] Accordingly, we anxiously await the DEC approval of this Final Site Characterization Report.[3]

Sincerely,

Robert H. Balkind, P.E.
Commissioner

Enclosures

ec (w/o attachment):
William O'Neil, Dutchess County Executive
Gary S. Bowitch, Esq.
James McIver, P.G., C.T. Male
Kelly. Turturro, Regional Director (kelly.turturro@dec.ny.gov)
Kiera Thompson (kiera.thompson@dec.ny.gov)
Kieran McCarthy (kieran.mccarthy@dec.ny.gov)

[1] We recognize that some of the delay in reviewing and commenting on the August 2022 Final SCR is attributable to delays in obtaining NYSDOH comments on the report. Nonetheless, the combined delay of the 2 State regulatory agencies was roughly 7 months.

[2] One of the issues raised by DEC was with regard to the sampling of soil/sediments in the various outfalls at the Site. Please note that the sampling of the outfalls was conducted in strict compliance with the DEC-approved SSCWP. With respect to PFAS and 1,4-dioxane, the samples were compared to DEC SCGs for soil. DEC did not raise any issues with the procedures used or the standards the results were compared to in its March 10, 2023 comment letter. However, in the two June 2023 DEC comment letters, DEC indicates that the results of outfall soil/sediments samples should have been compared to Department's June 2014 Screening and Assessment of Contaminated Sediment guidance, instead of the SCGs for soil. The problem with DEC's position, as it relates to samples analyzed for PFAS and 1,-4 dioxane, is that ***the referenced guidance does not include any standard for PFAS or 1,4-dioxane.*** (Note: the Final SCR was revised to compare the results of soil/sediment samples taken from Outfall 001 for compounds other than PFAS and 1,4 Dioxane to the 2014 sediment guidance.) Indeed, by our comparing sample results for PFAS/1,4-dioxane to the soil SCG's at least there is some standard to contextualize the results, as opposed to none.

[3] Once the Final SCR is approved, the next step will be for the County to conduct a comprehensive Remedial Investigation, during which all data gaps will be addressed, and to then submit an RI report in which all applicable standards will be referenced.

December 2019
Revised October 2021, August 2022, May, June, and October of 2023

Site Characterization Report

Hudson Valley Regional Airport
18 Griffith Way
Town of Wappinger
Dutchess County, New York
NYSDEC Site #314129

Prepared for:

COUNTY OF DUTCHESS
1626 Dutchess Turnpike
Poughkeepsie, New York 12603

I, James D. McIver, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Draft Site Characterization Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Prepared by:

C.T. MALE ASSOCIATES
12 Raymond Avenue
Poughkeepsie, New York 12603
(845) 454 4400

C.T. Male Associates Project No: 18.8090

SITE CHARACTERIZATION REPORT
HUDSON VALLEY REGIONAL AIRPORT SITE
18 GRIFFITH WAY, TOWN OF WAPPINGER
DUTCHESS COUNTY, NEW YORK

TABLE OF CONTENTS

Page

FIGURES

TABLES

FINAL SITE CHARACTERIZATION REPORT
ADDENDUM

Please note that this Final Site Characterization Report, including the tables and figures contained therein, does not reference the New York State Department of Environmental Conservation's (NYSDEC) guidance for PFAS, entitled *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Guidance*, April 2023. Instead, this Report utilizes the applicable NYSDEC PFAS guidance in place at the time that the site characterization and related work plans were approved by the NYSDEC and in place throughout all of the Site Characterization investigative activities described herein and also utilizes, as applicable, the USEPA Health Advisory Level of 70 ppt in accordance with the Consent Order and Administrative Settlement between the NYSDEC and Dutchess County (Index No.: CO 3-20170920-170).

Please note that subsequent NYSDEC-approved remedial investigation activities at the Site will utilize and all reports will reference applicable PFAS guidance in place at that time, including, if still applicable, *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS)*, April 2023.

APPENDICES

ACRONYMS AND ABBREVIATIONS

AAG	Associated Aircraft Group, Inc.
AOC	Area of Concern
AFFF	Aqueous film forming foam
ARFF	Aircraft Rescue and Firefighting Facilities
ASP	Analytical Services Protocol
CAMP	Community Air Monitoring Plan
CVOC	Chlorinated Volatile Organic Compounds
DER	Division of Environmental Remediation
DER-10	NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (May 2010)
DUSR	Data Usability Summary Report
EDS	Electronic Data Summary
ELAP	Environmental Laboratory Accreditation Program
FSP	Field Sampling Plan
HASP	Health and Safety Plan
IDW	Investigation-Derived Waste
MCL	Maximum Contaminant Level
MS/MSD	Matrix Spike/Matrix Spike Duplicate
ND	Non-Detect
NTU	Nephelometric Turbidity Units
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
NYSGS	New York State Geological Survey
ORP	Oxidation-Reduction Potential
OSHA	Occupational Safety and Health Administration
P-Site	Potential NYS Inactive Hazardous Waste Disposal Site
PCBs	Polychlorinated biphenyls
PFAS	Poly- & Perfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PID	Photoionization Detector
PPE	Personal Protective Equipment
QA/QC	Quality Assurance / Quality Control
QAPP	Quality Assurance Project Plan
SC	Site Characterization
SCR	Site Characterization Report
SCWP	Site Characterization Work Plan
SCO	Soil Cleanup Objectives
SPDES	State Pollution Discharge Elimination System

SOP	Standard Operating Procedure
SVOCs	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TCL	Target Compound List
TOGS	Technical Operations Guidance Series
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

1.0 INTRODUCTION

This document constitutes the Draft Site Characterization (SC) Report for the Hudson Valley Regional Airport site (the "Site") located at 18 Griffith Way in the Town of Wappinger, Dutchess County, New York. The Site is approximately 510.8 acres in size and is identified with tax number 135689-6259-03-225301-0000 on the Town of Wappinger tax maps. A Site Location Map and Site Plan are included as Figures 1 and 2, respectively. This report describes the field sampling efforts and associated analytical results for the environmental media samples collected.

The New York State Department of Environmental Conservation (NYSDEC) has classified the Site as a potential inactive hazardous waste disposal site (P-Site #314129) due to the presence of combined perfluorooctanoic acid (PFOA) and perfluororooctanesulfonic acid (PFOS) at concentrations in one of the potable drinking water supplies at the Site above the former health advisory value of 70 parts per trillion set by the United States' Environmental Protection Agency (USEPA) in May 2016. PFOS and PFOA are members of the class of substances called per- and polyfluoroalkyl substances known as PFAS. Low concentrations of PFAS were also detected in nearby off-Site private water supply wells. Initial private well water samples were collected by the New York State Department of Health (NYSDOH) in September 2017. The NYSDEC informed Dutchess County of the P-Site classification based on these detections by letter dated September 15, 2017. This letter also stated that an investigation was required to be conducted in accordance with NYSDEC's technical requirements for a site characterization.

Dutchess County executed an Order of Consent with the NYSDEC on March 18, 2018. As a result, C.T. Male Associates Engineering, Survey, Architecture, Landscape Architecture & Geology, D.P.C. (C.T. Male) was retained by Dutchess County and developed a Site Characterization Work Plan (SCWP) in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (May 2010) (DER-10) and 6 NYCRR 375 Environmental Remediation Programs (December 14, 2006) which was submitted to NYSDEC on May 24, 2019.

Subsequently, NYSDEC/NYSDOH approved the SCWP in letter sent to the County on July 5, 2019. C.T. Male completed Site Characterization activities and submitted a Draft

Site Characterization Report to NYSDEC in December of 2019. A response from NYSDEC/NYSDOH was received on April 16, 2020. In their response, NYSDEC/NYSDOH identified several areas requiring additional information and did not approve the SC Report. The following summarizes the additional work required by NYSDEC/NYSDOH for consideration in approving the SC Report:

- Collection of surface water samples from the Wappingers Creek;
- Additional off-Site drinking water well sampling; and
- Provision of drinking water to one off-Site building with drinking water results above 70 ppt (identified as Location A / A1, see Figure 12).

Specific requirements for the site characterization work, as set forth in the NYSDEC's comment letter dated April 16, 2020 were also incorporated into a supplemental SCWP.

The subsequent Draft SC Report was submitted to the NYSDEC/NYDOH in October of 2021. A response from NYSDEC/NYDOH was received on May 5, 2022. In their response, NYSDEC/NYSDOH identified several areas requiring additional information and did not approve the SC Report. No additional field work was required from the May 5, 2022 response letter. The following summarizes the additional work required by NYSDEC/NYSDOH for consideration in approving the SC Report:

- Adding references to the proposed guidelines for PFOS, PFOA, and 1,4-Dioxane;
- Adding a summary of the off-Site drinking water well investigation; and
- Revising report figures to include more detailed outlines of specific site features.

The initial phase of the SC Report involved records research, facility inspection, and interviews with facility personnel. To the extent that they were available, records reviewed for the Site generally included historic land usage; past and present industrial/commercial operations; past and present usage/generation of hazardous materials/wastes, petroleum products, firefighting foam and aqueous film forming foam (AFFF); past and present storage containers, tanks and bulk storage areas; past and present environmental permits, reports, work plans and remedial actions; and areas of historic fill placement within the Site. The Records Search Report was submitted for NYSDEC review and comment in May 2018.

Based on the records search, inspections and interviews, nine areas of concern (AOCs) were identified and investigated during the SC investigation: the firefighting AFFF testing area (AOC-1), the former Balefill Landfill (AOC-2), the former Dutchess County Landfill (AOC-3), the former Jackson Road petroleum spill (AOC-4), several stormwater outfalls that may have received AFFF during routine testing(AOC-5), the AAG hangars (former IBM Hanger, NYSDEC Site No. 314078 and Flagship Hanger, NYSDEC Site No. 314101) (AOC-6), the Aircraft Rescue and Firefighting Facilities (ARFF)[1] / maintenance building (AOC-7), the fire pond (AOC-8), and the North/South runway where AFFF was tested annually as required by the Federal Aviation Administration (FAA) (AOC-9). The SCWP was developed to evaluate the overall environmental status of the Site relative to the contaminants of potential concern, including PFAS.

This SC Report was prepared in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (May 2010) (DER-10) and 6 NYCRR 375 Environmental Remediation Programs (December 14, 2006).

1.1 Historical Site Uses

The current site use is as a regional airport known as Hudson Valley Regional Airport (POU). It is a publicly owned, public-use, General Aviation facility, servicing the aviation needs of Dutchess County, metropolitan New York City area, and the southeastern region of New York State.

Based on the historical aerial photographs, the Site was developed as an airport between 1936 and 1940. The Site has undergone several improvements since 1940, such as a runway extension, and the addition of hangers and service buildings. Prior to being developed, the Site appears to have been used for agricultural purposes.

The airfield was originally established by the United States Department of Commerce to be used as an emergency field for air mail runs along the east coast. The field was taken over by the US Army Air Corps at the start of World War II. During that time a control tower was added to the field and the property was used primarily for training. In 1947, the field was deeded to Dutchess County and the airport was managed under contract

[1] A new Aircraft Rescue and Firefighting Facilities (ARFF) building, situated in the southwest corner of the property, was constructed after a significant portion of the subject Site Characterization was completed. All references to the ARFF building in this report refer to the former ARFF building, which remains situated in the southeast corner of the property.

with limited development until 1975, when the Dutchess County Department of Aviation was created, and a Commissioner was appointed to manage the airport.

1.2 Current Site Operations

The Site has several tenants that lease hangars and utilize the airport for helicopter and airplane flights for private clients or personal use. The airport operates by criteria that is outlined and regulated by the FAA pertaining to the following areas: facility requirements for airfield, terminal and general aviation areas, runways and taxiways, land use, instrumentation and lighting, general aviation requirements, fuel storage, and ARFF.

As stated in the Airport's Master Plan, the Federal Aviation Regulation Part 139.315 establishes a system of indexing airports that are regularly served by scheduled commuter aircraft. The overall length of the aircraft having five or more daily departures determines the airports ARFF index. The Hudson Valley Regional Airport operates as an Index A facility. The minimum rescue and firefighting equipment and agents required for Index A are as follows:

- The airport must have one vehicle carrying at least 500 pounds of sodium-based dry chemical or halon 1211;
- Or alternatively, 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF agent to total 100 gallons, for simultaneous dry chemical and AFFF application.

The ARFF vehicle at the airport currently meets the Federal Aviation Regulation Part 139 and has the capability of AFFF application.

The Federal Aviation Regulations also state that ARFF vehicles must be tested annually to ensure that the vehicle is working properly. Additionally, the quantity and the chemical composition of the AFFF must be held to the required standards. Interviews with the Airport Director and the fire fighters at the airport indicated that the testing areas for AFFF application is the North or South end of runway 15-33. Typically, one to two 5-gallon buckets of AFFF were applied during the testing. In 2009-2010, the airport switched the type of AFFF used in the ARFF. The AFFF products now used are Ansulite 3% (AFC-3A) and Chemguard C301MS. The AFFF used after 2009 may not contain PFAS compounds based on a review of the material safety data sheets; however, there are proprietary compounds listed, which may contain the PFAS compounds of concern.

1.3 Purpose and Objectives

This SC investigation was conducted to evaluate the physical setting and environmental quality of the Site for aid in the development of a conceptual model of environmental conditions at the Site, and to determine whether regulated substances are present at the Site at levels above NYSDEC unrestricted use Standards, Criteria, and Guidance (SCGs) values for soils, groundwater standards, or other applicable SCGs for unrestricted use of the Site (DER-10, Section 3.2.1), pursuant to the Order and "P" Site designation.

The work presented in this report is based on the following NYSDEC approved work plans:

- Site Characterization Investigation Work Plan dated July 2019, with included modifications as per NYSDEC letters dated August 21, 2018 and April 12, 2019, and subsequent letter approving the work plan dated July 5, 2019; and
- Supplemental Site Characterization Investigation Work Plan dated December 2020.

As outlined in NYSDEC's DER-10, the SC was performed to meet the following goals:

- Perform a Records Search to identify and review documentation on the Site history and identify potential AOCs; and
- Perform field characterization to establish an environmental baseline and conceptual model for the Site with the intent of acquiring enough data for determining if further Site Investigation is necessary.

2.0 PHYSICAL CHARACTERISTICS

2.1 Surrounding Site Use and Site Improvements

The surrounding land uses, as identified during initial site visits, are described as follows: The areas surrounding the airport to the North, South, East and West are a mix of residential and light industrial/commercial properties.

2.1.1 State Solid Waste Facilities

There are two solid waste facilities reported on-Site. These two NYSDEC sites are:

- 314022, Class N (no further action at this time), Hudson Valley Regional Airport Landfill, approx. 30 acres in size, used for mixed municipal waste, operated between 1968 and 1972. NYSDEC has investigated this landfill, and it is currently in an Operation, Maintenance and Monitoring (OM&M) stage with groundwater monitoring.

- 314023, Class N (no further action at this time), Hudson Valley Regional Airport Balefill, 2.25-acre site, used for disposal of baled refuse between 1976 and 1977. Groundwater monitoring and site inspections are currently being conducted on a semi-annual basis.

2.1.2 State Hazardous Waste Facilities

There are two designated State Hazardous Waste Sites on-Site that are listed on the State's Site Remediation Database.

- 314078, Class 4 (Properly closed but requires continued site management), Hudson Valley Regional Airport Hangar Facility. Former IBM Hanger. The site was listed as an inactive hazardous waste site after a release occurred when spent solvents were discharged to a floor drain and flowed to a septic system. Septic tank, above ground storage tank (AST) and two industrial waste underground storage tanks (USTs) were removed. During the remedial investigation, chlorinated solvents were detected in the groundwater above NYSDEC standards.

- 314101, Class 2 (Site represents a significant threat to public health and environment), Flagship Airlines Hangar (former Command Airways hangar). Work included investigations of leaking heating oil tank and the release of spent solvents from storage tanks and overflows. The facility was used for washing aircraft. During the remedial investigation, chlorinated solvents were detected in the groundwater above NYSDEC standards.

2.2 Site Buildings and Structures

The main facilities at the Hudson Valley Regional Airport are the terminal building, the terminal apron and general aviation parking aprons, support buildings (FAA offices, Maintenance, former Richmor Aviation office, Airport Rescue and Firefighting Facilities (ARFF)), airport parking for both the public and employees, the new Dutchess Community College (DCC) Education building, and several aircraft storage hangars (T-Hangar, AAG Conventional Hangar, former Richmor Hangar, Civil Air Patrol Hangar, Whitefield Conventional Hangar, Frank Reiss Conventional Hanger).

The Hudson Valley Regional Airport is equipped with a three-runway system, with runways designated 6-24 (North/South), 7-25, and 15-33 (East/West). Runway 7-25 is a turf runway, which runs parallel to Runway 6-24. These runways are identified on the Site Plan Map included as Figure 2.

2.3 Site Utilities

The Site is served with gas and electricity by Central Hudson Gas and Electric. Municipal water is available and is being used on-Site by the new Airport Operations/ARFF building (located in the southwest corner of the property), AAG buildings, the new DCC Education building, and the airport terminal building. The remaining on-Site structures are serviced through private wells and septic systems. Site utilities were located, marked and cleared in areas of concern prior to the subsurface exploration activities completed during the SC investigation.

2.4 Roadways or Driveways on or Adjoining the Site

The Site is located adjacent to New Hackensack Rd. and Jackson Rd., Wappingers Falls, NY. The northeastern facilities of the Site can be accessed via New Hackensack Rd. to

Dutchess Airport County Rd. Parking lot entrances off Dutchess Airport County Rd. are gated and require either airport approval or airport employee status for entry. A parking lot on the southern portion of the Site is also accessed via New Hackensack Rd. Western and northwestern Site lands and facilities are accessed via Jackson Rd. to Citation Drive. Some southwestern lands can be accessed directly from Jackson Road but are gated and require airport approval and assistance for access.

2.5 Site Drainage

2.5.1 Site Storm Water and Discharge Location(s)

The Airport has a NYSDEC SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity, NYSDEC Permit ID# GP-0-17-004. There are three outfalls listed in the 2018 first quarter inspection associated with the airport and the SPDES storm water permit. Stormwater at the airport flows into various swales and catch basins located throughout the runways and buildings on-Site. There are also several dry wells located on the airport grounds. The locations of the stormwater outfalls are contained in the Stormwater Pollution Prevention Plan for the Airport, which is included in Appendix I. A drainage plan for stormwater is also included in the Airport Master Plan.

2.5.2 Site Surface Water Bodies/Areas

Wappinger Creek, located on the northern perimeter of the Hudson Valley Regional Airport, generally runs northeast to southwest. Wappinger Creek drains from the north of the site to Wappinger Lake and into the Hudson River. It is a protected B(T) class stream. The best usage of Class B waters is primary and secondary contact recreation and fishing. There is a small-unnamed tributary south of Runway 15-33 that is designated a Class C stream. The best usage of Class C waters is fishing.

There is also a small pond just North of the current AAG hanger that is listed on the Airport layout plan (dated July 2002 by C&S Engineers) as a Fire Pond.

2.6 Site Waste Profile

2.6.1 Solid Wastes/Waste Deposits

Solid wastes generated at the hangars and support buildings on-Site are placed within dumpsters near their respective buildings for periodic pickup and removal. No other solid waste facilities were identified on the Site, except for Hudson Valley Regional Airport Landfill (314022) and Balefill (314023) sites, which are both closed and, in the operations, maintenance, and monitoring stage.

2.6.2 Sludge Waste

No sludge wastes were identified on the Site during the Site visit.

2.6.3 Liquids Waste

There are ASTs used on-Site for fueling and heating purposes at several of the buildings.

In addition, there are liquid hazardous wastes generated on-Site from the Site operations and maintenance activities. Below is a summary of the hazardous waste manifests listed in the EDR database related to the Site:

- 1994, EPA ID#NYD002420826, Flagship Airlines Inc. generator, 1,500 pounds of D001 waste.
- 2009, EPA ID#NYD098332430, Hudson Valley Regional Airport, Dept. of Aviation generator, 35 gallons of D001 waste.
- 2017, EPA ID#NYR000206656, Associated Aircraft Group Inc. (AAG), 100 pounds, D006, D007, D035, D040, F002 waste.

No other liquid wastes were noted during Site visits.

2.6.4 Wastewater Discharge

There were no wastewater discharges identified on the Site. Several of the hangars currently have or previously had wastewater USTs that collect and contain wastewater from the operations at the corresponding hangars.

2.6.5 Waste Lagoons or Disposal Pits

No waste lagoons or disposal pits were identified on the Site during the Site visit.

2.6.6 On-Site Septic Systems

Septic systems are in use for the Site. Several buildings on-Site have septic systems and associated leach fields. There is no municipal sewer system connection to the facilities located on the airport property. The buildings that have septic systems include the terminal building and support buildings (FAA offices, Maintenance), the former Richmor Aviation office, and the Airport Rescue and Firefighting Facilities. Several of the other aircraft storage hangars (T-Hangar, AAG Conventional Hangar, former Richmor Hangar, Civil Air Patrol Hangar, Whitefield Conventional Hangar, Frank Reiss Conventional Hanger are also connected to subsurface disposal systems.

3.0 SITE CHARACTERIZATION METHODS

3.1 Environmental Media Sampling

Following the approved Site Characterization Work Plan, environmental media sampling was completed to characterize geologic and hydrogeologic conditions of the Site. The following environmental media were sampled for field screening and laboratory analysis:

- Surface and Near-Surface Soil
- Subsurface Soil
- Sediment
- Groundwater
- Stormwater and Surface Water
- Drinking Water

The following provides the rationale for the selection of investigation in the areas of concern, which were identified based on the information compiled in the Records Search Report and the NYSDEC's August 21, 2018 and April 12, 2019 comment letters.

1. AOC-1, Firefighting AFFF Testing Area: These were selected because they are AFFF testing areas at the end of East/West runways 15 and 33. To assess if impacts have occurred to soil and groundwater at the end of runway 15 and 33, one soil boring/monitoring well was installed at each location. The borings/monitoring wells were completed at locations that are interpreted as being hydraulically downgradient of the AFFF testing area based on surface topography and location of surface water. At each location, Geoprobe borings were utilized and the test borings were converted into permanent monitoring wells. Test borings were advanced to depths of approximately five feet below the elevation of the shallow water table, which was anticipated to be approximately 4 to 6 feet below ground surface. The soil and groundwater samples were analyzed for PFAS and 1,4-Dioxane.

2. AOC–2, Former Balefill Landfill: The former Balefill landfill is located on the northern portion of the Site, to the northwest of the end of runway 15. The Balefill landfill is in an existing monitoring program for the collection of groundwater from monitoring wells for NYSDEC Part 360 routine baseline parameters. The

assessment of groundwater at the Balefill landfill utilized two existing monitoring wells that were sampled for PFAS, Polychlorinated biphenyls (PCBs), Semi-Volatile Organic Compounds (SVOCs), pesticides, and 1,4-Dioxane. The sampled wells are MW-2S and MW-3S, which were interpreted as being hydraulically down gradient of the landfill.

3. AOC-3, Former Dutchess County Landfill: The former landfill is located on the northeastern portion of the Site. There are existing monitoring wells at this landfill. To assess groundwater at the former Dutchess County Landfill, three existing downgradient wells at the landfill, MW-15, MW-20 and MW-29, were sampled for PFAS, 1,4-Dioxane, PCBs, SVOCs, and pesticides.

4. AOC-4, Jackson Road, former Petroleum Spill: In 2004, an ExxonMobil gasoline cargo tanker truck overturned on Jackson Road releasing approximately 12,500 gallons of gasoline on the shoulder of Jackson Road, just south of its intersection with Citation Drive. The spill occurred on Dutchess County Airport property and AFFF was utilized during the emergency response. The spill was assigned a NYSDEC spill number 0402678, which was investigated, and the spill was closed by the NYSDEC in June 2010. Due to the use of AFFF during the emergency response, and to assess the environmental quality of the soil and groundwater, one test boring/monitoring well was completed in the down gradient vicinity of the former spill area, on the airport property. The soil and groundwater were analyzed for PFAS, 1,4-Dioxane, TAL metals, pesticides, and PCBs. Groundwater was also analyzed for cyanide.

5. AOC-5, Stormwater Outfalls: Airport personnel actively sample three (3) outfall locations as part of their Stormwater Pollution Prevention Plan and SPDES general permit (see Appendix I). Due to activities on-Site, such as fire training activities and vehicle washing, there is a potential for the storm water to contain PFAS. Stormwater is not currently assessed for PFAS as part of the Site's general stormwater SPDES permit. Per the NYSDEC approved Site Characterization Work Plan, stormwater and sediment samples were collected at six (6) locations situated to the north of the North/South runway and analyzed for PFAS and 1,4-Dioxane. These were designated as Outfalls 002 through 007. Additionally, a stormwater and sediment sample were collected at the southern outfall

(designated as Outfall 001), located adjacent to the main terminal and New Hackensack Road, and was additionally analyzed for NYSDECs full suite of Target Compound List / Target Analyte List (TCL/TAL) constituents and cyanide.

6. AOC-6, AAG Hangars (former IBM Hanger, Site No. 314078 and Flagship Hangar, Site No. 314101): The two hangars that AAG currently leases from Dutchess County Airport are also known as the former Flagship Hangar and former IBM Hangar. The two hangars are designated separately as NYSDEC inactive hazardous waste sites due to the presence of chlorinated volatile organic compounds (CVOCs) in groundwater and soils. They are respectively known as the former IBM Hangar (a Class 4 site) and the former Flagship Hangar (a Class 2 site).

   In March 2003, a Record of Decision was issued by the NYSDEC, for the former Flagship Hangar (Site No. 314101). The selected remedy consisted of installation of deeper air-sparging points to clean up naphthalene in the lower reaches of the groundwater column. The enhanced system commenced operation in October 2003 and was shut down in 2007 with the NYSDEC approval. A Site Management Plan was approved in 2011. There are indications in the records that the NYSDEC attempted to put institutional controls on the Flagship Hanger site in 2013 but were unsuccessful.

   At the former IBM Hanger site, substantial investigative work and remedial efforts have occurred to address the CVOCs; however, the current AAG potable well (located at the former IBM hangar) exhibit high PFAS levels. This well was sampled and analyzed for PFAS, 1,4-Dioxane, SVOCs, PCBs, and metals. It should be noted that the buildings operated by AAG are now connected to municipal water.

   In addition, there is an existing network of groundwater monitoring wells (overburden and bedrock) installed at and surrounding the two hangars. To assess the environmental quality of the groundwater, samples were proposed to be collected from existing monitoring wells (A-21G, A-21S, A-21R, MW-1, MW-4, MW-5, and MW-6). C.T. Male conducted a reconnaissance of the Site on July 25, 2019 to locate and sound each of the proposed wells to be sampled for the SC. Monitoring wells MW-1 and MW-5 could not be located. C.T. Male requested via email to the NYSDEC dated October 26, for approval to replace shallow overburden well MW-1 and bedrock well MW-5 with nearby wells ME-18, and MW-3, respectively, which are generally of similar depth and construction as the wells that could not be located. The NYSDEC approved this change in scope via an email to C.T. Male dated July 26, 2019. Samples collected from the existing monitoring wells were analyzed for PFAS and 1,4-Dioxane. Monitoring wells A-21G, A-21R, A-21S, and ME-18 are referred to on the figures as MW-21G, MW-21R, MW-21S, and MW-18, respectively.

7. <u>AOC-7, ARFF / Maintenance Building:</u> The ARFF building has interior floor drains and an exterior septic system with leach field. Past activities within the ARFF may have included washing fire trucks or equipment containing residual AFFF. One test boring/monitoring well was completed in the vicinity of the building's septic system. The approximate location of the septic tank is proximal to the eastern corner of the building as depicted in historical records and confirmed by airport maintenance personnel. This boring/monitoring well was intended to assess the environmental quality of soil and groundwater near the building. A Geoprobe was utilized, and the test boring was converted into a monitoring well. The test boring was intended to be advanced to a depth of approximately five feet below the elevation of the shallow water table, which was anticipated to be less than twenty (20) feet below ground surface. The soil and groundwater samples were analyzed for PFAS and 1,4-Dioxane, and full suite of NYSDEC TCL/TAL constituents and cyanide.

   In addition, the ARFF/Airport Maintenance Building has a potable drinking water well, with an associated Ultraviolet System, that supplies water to the building. It has been reported by airport personnel that the water from this well is mainly used to fill the fire trucks and hand washing, but not for drinking. This well is currently monitored by Dutchess County Health Department and water samples are collected and analyzed at least twice a year for analytes as listed in table 9B of the NYS Sanitary Code. A water sample was collected from the well and analyzed for PFAS, 1,4-Dioxane, SVOCs, PCBs and metals.

8. AOC-8, Fire Pond: The firefighting pond north of the two AAG hangars may have received stormwater runoff from the area that contained AFFF. The pond may also be in hydraulic connection to groundwater which, as indicated above, is impacted by PFAS. To assess the environmental quality of the surface water and sediment in the fire pond, two surface water and sediment samples were collected from the fire pond and analyzed for PFAS and 1,4-Dioxane.

9. AOC-9, North/South Runway: To assess possible impacts to soil and groundwater at the end of runway 6 and 24, one soil boring/monitoring well was installed at each location. At each location, a Geoprobe was utilized, and the test borings were converted into permanent monitoring wells. Test borings were intended to be advanced to depths of approximately five feet below the elevation of the shallow water table, which was anticipated to be less than twenty (20) feet below ground surface. The soil and groundwater samples collected were analyzed for PFAS, 1,4-Dioxane, and the full suite of TCL/TAL constituents and cyanide.

Off-Site Locations: In addition to the AOCs identified above, as part of this investigation off-Site drinking water wells were sampled for PFAS and 1,4-Dioxane. Three drinking water wells were initially included for sampling in the SCWP, which included Location A, Location E, and a third location situated on-Site. However, subsequent to the issuance of the SCWP, the well located at the third location was abandoned and the on-Site building was connected to the municipal water supply; therefore, sampling of this well was not conducted. In addition, the NYSDEC sent out several letters to adjacent and nearby property owner on April 19, 2019, notifying the respective property owners to contact C.T. Male or the NYSDEC if they were interested in having their well tested. Based on the responses received, two additional drinking water wells were added to the off-Site investigation, which are identified as Location D and Location C. Results were also obtained from a fifth location, identified as Location B.

Additionally, in accordance with the Supplemental Site Characterization Investigation Work Plan, C.T. Male sent out letters to sixty-nine (69) homeowners within ¼ to ½ mile radius of the southeastern corner of the Site requesting access for well testing. Forty-two (42) positive responses were received, and these locations were subsequently sampled. Sample locations and corresponding concentrations of PFOA / PFOS are shown on

Figure 12. A summary table of off-Site potable well investigations is included in Appendix H.

3.2 Amendments to Field Sampling Plan (FSP)

Based on conditions encountered on the Site, the following amendments to the Field Sampling Plan were made:

- During the installation of MW105, which was intended to be installed such that the screened interval intersects the water table, the water table was not encountered before drill refusal after several boring attempts. MW105 was instead installed to the greatest depth of casing refusal.

- Pre-existing monitoring wells MW-1 and MW-5 at the AAG Hangars (AOC-6) could not be located during the SC Investigation. Pre-existing monitoring wells ME-18 and MW-3 were sampled as alternatives during groundwater sampling.

3.3 Soil Investigation

On August 5 & 6, 2019, on-Site subsurface investigation was performed through the advancement of six soil borings at pre-selected and approved locations within the Site. The subsurface investigation utilized direct push drilling techniques and conversion of the test borings into permanent monitoring wells. On August 12, 2019, surface and near-surface soil samples were collected at each of the six boring locations using a stainless-steel hand auger. The work was performed under the oversight of C.T. Male personnel. Drilling equipment including augers, rods, plugs, samplers, tools, and a drill unit. Any piece of equipment that contacted the formation was cleaned with a high temperature/high pressure steam cleaner prior to the start of work and between each boring to prevent cross-contamination between borings. The equipment was also cleaned using the same procedure upon completion of the work.

Soil samples were collected from the boreholes/monitoring well locations on a continuous basis using a direct-push drill rig. The recovered soil samples were visually classified by a geologist in general conformance with the Unified Soil Classification System, and subjectively assessed for impacts based on organoleptic perception (sight and smell) and with a photoionization detector (PID). Surface, near-surface and subsurface soil samples were collected for laboratory analyses. Of note, MW100 is located in an asphalt paved area; therefore, a surface soil sample was not collected for laboratory analysis from this location. Soil boring logs are included in Appendix A.

3.3.1 Surface and Near-surface Soils

The following table summarizes the shallow soil samples (less than or equal to 24 inches) collected for laboratory analysis.

Table A: Shallow Soil Sample Analysis

Location	Sample ID	Depth	Analyses	Soil Observations	PID (ppmv*)
MW100	MW100-1.0	2″ – 12″	PFAS, 1,4-Dioxane, Full TCL/TAL, CN	Fill; sand and gravel, trace fragments of brick, asphalt and glass; no sheening, odor, staining	0.0 (0 – 2′)
MW101	MW101-1.5	0 – 6″	PFAS, 1,4-Dioxane, TAL Metals, Pesticides, PCBs	Topsoil; clayey silt, some fine sand; no sheening, odor, staining	0.0 (0 – 2′)
MW101	MW101-2.0	6″ – 24″			
MW102	MW102-0.5	0 – 6″	PFAS, 1,4-Dioxane, Full TCL/TAL, CN	Topsoil; clayey silt, some fine sand; no sheening, odor, staining	0.0 (0 – 2′)
MW102	MW102-2.0	6″ – 24″			
MW103	MW103-0.5	0 – 6″	PFAS, 1,4-Dioxane, Full TCL/TAL, CN	Topsoil; clayey silt, some fine sand; no sheening, odor, staining	0.0 (0 – 2′)
MW103	MW103-2.0	6″ – 24″			
MW104	MW104-0.5	0 – 6″	PFAS, 1,4-Dioxane	Topsoil; clayey silt, some fine sand; no sheening, odor, staining	0.0 (0 – 2′)
MW104	MW104-2.0	6″ – 24″			
MW105	MW105-0.5	0 – 6″	PFAS, 1,4-Dioxane	Topsoil; clayey silt, some fine sand; no sheening, odor, staining	0.0 (0 – 2′)
MW105	MW105-2.0	6″ – 24″			

* ppmv – parts per million in air

3.3.2 Subsurface Soils

The following table summarizes the deeper subsurface soil samples (greater than 12 inches) collected for laboratory analysis.

Table B: Subsurface Soil Sample Analysis

Location	Sample ID	Depth	Analyses*	Soil Observations	PID (ppmv**)
MW100	MW100-6.0	6.0′ – 7.0′	PFAS, 1,4-Dioxane, Full TCL/TAL, CN	Medium and coarse sand; no sheening, odor, staining	0.0 (6′– 8′)
MW101	MW101-8.0	8.0′ – 9.0′	PFAS, 1,4-Dioxane, TAL Metals, Pesticides, PCBs	Coarse sand and gravel; petroleum odor and staining	69.2 (8′– 10′)
MW102	MW102-4.5	4.5′ – 5.5′	PFAS, 1,4-Dioxane, Full TCL/TAL, CN	Till; silt, some gravel; no sheening, odor, staining	0.0 (4′ – 6′)
MW103	MW103-10.0	10.0′ – 11.0′	PFAS, 1,4-Dioxane, Full TCL/TAL, CN	Till; silt and fine sand, some gravel; no sheening, odor, staining	0.0 (10′ – 12′)
MW104	MW104-9.5	9.5′ – 10.5′	PFAS, 1,4-Dioxane	Clayey silt; no sheening, odor, staining	0.0 (8′ – 12′)
MW105	MW105-4.0	4.0′ – 5.0′	PFAS, 1,4-Dioxane	Till; silt and fine sand, some gravel; no sheening, odor, staining	0.0 (4′ – 6′)

** ppmv – parts per million in air
* Full TAL/TCL = TAL Metals, TCL VOCs, SVOCs, PCBs, Pesticides

3.4 Groundwater Investigation

Six monitoring wells were installed in the six soil boring locations at the Site (MW100, MW101, MW102, MW103, MW104 and MW105).

- Soil boring/monitoring well MW100 was completed within AOC-7, the ARFF / Maintenance Building.
- Soil boring/monitoring well MW101 was completed within AOC-4, the Jackson Road former Petroleum Spill.
- Soil borings/monitoring wells MW102 and MW103 were completed within AOC-9, the North/South Runway.
- Soil borings/monitoring wells MW104 and MW105 were completed within AOC-1, the Firefighting AFFF Testing Area.

3.4.1 Monitoring Well Installation

Six monitoring wells were intended to be installed into the water table in the open boreholes, however, MW105 was installed above the water table due to drilling equipment refusal. The monitoring wells were constructed using 1.25-inch diameter, 0.01-inch slot well screen, and 1.25-inch solid PVC well riser. The well screens were installed in the boreholes at depths straddling the water table (apart from MW105) in the overburden formation that was observed during borehole advancement. The monitoring well construction details and logs are presented in Appendix B.

3.4.2 Monitoring Well Survey

Following installation, the top of the monitoring well casings and road box rim elevations were surveyed by C.T. Male relative to NAVD 1988.

3.4.3 Water Levels

Depths to groundwater were recorded in the monitoring wells on August 7, 2019 and are summarized in the following table.

Table C: Groundwater Elevation Summary

Location	Top of Casing Elevation (feet, NAVD88)	Depth to Water (feet) (on date sample collected)	Groundwater Elevation
MW100	160.55	6.51	154.04
MW101	104.39	6.50	97.89
MW102	144.54	12.52	132.02
MW103	151.85	3.98	147.87
MW104	153.90	18.71	135.19
MW105	164.73	DRY	----

3.4.4 Monitoring Well Development

On August 7, 2019, each newly installed monitoring well (except MW105, which was dry) was developed to remove any accumulated fine sediment within the well and to establish a hydraulic connection with the surrounding aquifer. Monitoring wells were developed by surging and purging using a dedicated disposable plastic bailer and peristaltic pump. Purge water was containerized in DOT approved 55-gallon steel drums, covered, labeled, and stored outdoors at the Site. The wells were then left to recharge for at least 24-hours prior to collecting groundwater samples for laboratory analysis.

3.4.5 Groundwater Sampling

On August 8 and 9, 2019, five (5) of the six (6) newly installed groundwater monitoring wells were sampled for laboratory analysis, as MW105 remained dry. Additionally, the following pre-existing groundwater monitoring wells were sampled for laboratory analysis between July 31 and August 2, 2019: MW-2S and MW-3S located at the Former Balefill Landfill; MW-15, MW-20 and MW-29 located at the Former Dutchess County Landfill; A-21S, A-21G, A-21R, MW-3, MW-4, MW-6, and ME-18 located at the AAG Hangars. The analysis of the samples was performed by Alpha Analytical Laboratories, a NYSDOH certified ELAP laboratory. Monitoring well development and sampling logs are presented in Appendix D. The following table summarizes the groundwater samples collected for laboratory analysis.

Table D: Groundwater Sample Summary

Monitoring Well ID	Date Collected	Area of Concern	Analyses*
MW104	August 9, 2019	AOC-1	PFAS, 1,4-Dioxane
MW105	Not Sampled		DRY, Not Sampled
MW-2S	August 1, 2019	AOC-2	PFAS, PCBs, SVOCs, Pesticides, 1,4-Dioxane
MW-3S	August 1, 2019		
MW-15	August 2, 2019	AOC-3	PFAS, PCBs, SVOCs, Pesticides, 1,4-Dioxane
MW-20	August 2, 2019		
MW-29	August 2, 2019		
MW101	August 9, 2019	AOC-4	PFAS, TAL Metals, PCBs, Pesticides, 1,4-Dioxane
MW-3	August 1, 2019	AOC-6	PFAS, 1,4-Dioxane
MW-4	August 1, 2019		
MW-6	August 1, 2019		
ME-18	August 1, 2019		
A-21G	July 31, 2019		
A-21S	July 31, 2019		
A-21R	July 31, 2019		
MW100	August 8,2019	AOC-7	PFAS, Full TAL/TCL, 1,4-Dioxane
MW102	August 9, 2019	AOC-9	PFAS, Full TAL/TCL, 1,4-Dioxane
MW103	August 9, 2019		

* Full TAL/TCL = TAL Metals, TCL VOCs, SVOCs, PCBs, Pesticides

3.5 Surface Water and Sediment Investigation

Surface water and accompanying underlying sediment samples were collected from several stormwater outfalls and locations in the Fire Pond. Surface water and sediment sampling occurred on July 23 and 24, 2019, except for the sediment sample from the southern stormwater outfall (Outfall-001), which was collected on August 8, 2019.

On January 15, 2021, C.T. Male mobilized to collect five (5) surface water samples from the Wappingers Creek. One (1) background sample, designated as B-1, and four (4) in stream samples were collected, designated SW-1, SW-2, SW-3 and SW-5. Additionally, a sixth sample was collected from an unnamed tributary to the Wappingers Creek, designated SW-4. Approximate sample locations and corresponding analytical test results are shown on Figure 8.

3.5.1 Stormwater Outfall Sampling

Six surface water samples were collected from stormwater outfalls located to the north of the North/South runway (Outfall-002 through Outfall-007). The northern outfalls were analyzed at the laboratory for PFAS and 1,4-Dioxane. One surface water sample was collected from the stormwater outfall located adjacent to the main terminal and New Hackensack Road, south of the Site (Outfall-001). The southern outfall (Outfall 001) samples were analyzed at the laboratory for PFAS, 1,4-Dioxane, TCL VOCs, SVOCs, PCBs, Pesticides, and TAL Metals. An underlying sediment sample was collected at each of the surface water sample locations, and each accompanying sediment sample was analyzed for the same parameters at the laboratory as its corresponding surface water sample.

3.5.2 Fire Pond Sampling

Two (2) surface water samples were collected from the Fire Pond on-Site (Fire Pond-01 and Fire Pond-02). An underlying sediment sample was collected at each of the surface water sample locations. The Fire Pond surface water and sediment samples were each analyzed for PFAS and 1,4-Dioxane.

3.6 Drinking Water Well Investigation

Several on and off-Site drinking water well samples were collected during the SC Investigation. On-Site drinking water well samples were collected from the AAG potable well (at the former IBM hangar) and the Maintenance Building potable well on July 16-17, 2019, and August 7, 2019, respectively. The AAG potable well was sampled just prior to the well being taken off-line, as the facility was connected to the municipal water line. At the request of the NYSDEC, the Dutchess County Department of Behavioral and Community Health allowed the well to remain as a monitoring point as long as the well was disconnected from the building. These two (2) on-Site drinking water samples were analyzed at the laboratory for PFAS, 1,4-Dioxane, SVOCs, PCBs, and metals.

Off-Site drinking water well samples were collected from forty-two (42) potable wells near the Site. Three (3) drinking water wells were sampled twice once in 2019 and designated Locations B, C, and E and again in 2021 designated A5, A13 and A18, respectively. A sample location map is included as Figure 12.

Off-Site drinking water samples were analyzed at the laboratory for PFASs and 1,4-Dioxane. Drinking Water Well Sampling Logs are provided in Appendix E.

A summary of homeowner contact attempts, dates sampled, targeted properties, and actions required are included in Appendix H.

3.7 Data Validation

In accordance with the SC Work Plan, laboratory analytical data produced during the Site Characterization was validated by a third-party data validator in accordance with DER-10 Appendix 2B Data Usability Summary Report requirements. Quality assurance/quality control (QA/QC) samples (duplicate, matrix spike, matrix spike duplicate, trip blank, method blank, field blank and equipment blank samples) were collected. The QA/QC samples were collected in accordance with the QAPP. Laboratory reports are provided as Appendix F. Data Usability Summary Reports (DUSRs) are included in Appendix G. The laboratory reported results were usable as reported or with minor qualification as discussed in the DUSRs.

3.8 Community Air Monitoring Program

A Community Air Monitoring Program was implemented during site characterization activities in accordance with the Health and Safety Plan, and with NYSDOH regulations. All VOC and particulate readings collected during the field investigation were below response levels.

3.9 Investigation-Derived Waste Disposal

The investigation derived waste, groundwater and soils, were collected in DOT approved 55-gallon drums and stored outside at the facility, along the fence that marks the western edge of property near the maintenance building. The investigation derived waste will be held on-Site until further notice and will be properly disposed off-Site in accordance with applicable regulations later.

4.0 SITE PHYSICAL SETTING

4.1 SETTING

The Site is approximately 510.8 acres in size and is identified with tax number 135689-6259-03-225301-0000 on the Town of Wappinger tax maps. The New York State Department of Environmental Conservation (NYSDEC) has classified the Site as a potential inactive hazardous waste disposal site (P-Site #314129) as a result of the presence of combined perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) at concentrations in one (1) of the potable drinking water supplies at the Site above the former health advisory value of 70 parts per trillion (ppt) set by the United States' Environmental Protection Agency (USEPA) in May 2016.

4.1.1 Topography

The Site is nearly flat across the area that is maintained immediately surrounding the airport runways, associated hangars, and airport terminal. Site elevation ranges between approximately 100 feet above mean sea level (amsl) at the southwestern property boundary to approximately 170 feet amsl at the northeastern property boundary. The land was presumably filled and built up using local, repositioned soils to flatten the grade for the runways, especially in the southwestern, western, and northwestern portions of the Site where grade slopes sharply toward the Wappinger Creek immediately beyond the areas that buffer the runways. Additionally, the Balefill and Dutchess County Landfill, to the northwest and northeast of the Site, respectively, are artificially mounded from landfilling. The grade of both landfills generally slopes downward radially, but more predominantly to the north in both instances, in the direction of the Wappinger Creek. The natural topography surrounding the Site also slopes to the northwest in the direction of the Wappinger Creek.

4.1.2 Regional Features and Landscape

The Dutchess County region surrounding the Site is moderately hilly, with an average grade that slopes downward toward both the Wappinger Creek and the Hudson River. The region lies within the Hudson River Valley and has been eroded heavily by both glacial and fluvial processes. The Wappinger Creek runs predominantly from northeast to southwest and ultimately feeds into the Hudson River on its eastern side at the Hamlet of New Hamburg. The Wappinger Creek's follows and erratic path and fluctuates largely in width. In the village of Wappinger Falls, downgradient of the Site, the creek forms Wappinger Lake, which is a man-made reservoir. The Wappinger Creek has several tributaries of varying size and has the largest watershed in the County.

4.2 GEOLOGY

The Site is relatively large and expresses variations in both overburden soils and bedrock. Soils generally consist of sandy loams, river deposits and glacial tills, which have been heavily reworked in some sections of the Site. Bedrock is predominantly shale or limestone, but varies drastically in extent of weathering, and elevation relative to grade across the Site.

The recovered soils in borings advanced at the Site were observed to be loose sands and gravels overlying dense tills or silts. Bedrock was not encountered during on-Site drilling for the SC Investigation. Refusal at boring MW105 may have been the result of encountering bedrock.

4.2.1 Geologic History

The oldest bedrock found in Dutchess County is a mixture of gneiss and granite that were formed from pre-existing sedimentary rocks during a continental collision known as the Grenville Orogeny, approximately 1 billion years ago (bya). Roughly 0.5 bya, the supercontinent formed by the Grenville Orogeny broke apart, leaving the area now known to be Dutchess County on the edge of the North American continent, subject to sedimentary deposition that varied as sea level changed. The limestones and shales that now underly much of the County were largely deposited in their present location during periods of deeper sea level. About 450 million years ago (mya), North America was affected by another continental collision that is now known as the Taconic Orogeny, resulting in significant mountain building along the eastern edge of present-day New York, and the ultimate formation of a foreland basin that spanned much of the state, including Dutchess County. An extensive series of thrust faulting occurred during the Taconic Orogeny, which pushed large masses of sandstones and shales over much of the previously formed sedimentary rocks of Dutchess County. The foreland basin formed during the Taconic Orogeny which ultimately led to the deposition and lithification of other sedimentary rocks including sandstones and shales, as the Taconic Mountain Range that formed during the Orogeny eroded. A combination of sedimentary rocks formed through these events now underly Dutchess County, though the oldest metamorphic and igneous rocks have been encountered as bedrock in some areas as well (Budnik et al., 2010).

The Laurentide Ice Sheet fully covered Dutchess County roughly 20,000 years ago and is the most recent geologic force to drastically influence the regional geology and topography. Glaciers associated with the ice sheet's retreat scoured the bedrock, forming undulating valleys and leaving behind surficial deposits (glacial till) of varying source and grain size that are still present today. Fluvial processes of erosion have since dominated the area and continue to modify the landscape (Budnik et al., 2010).

4.2.2 Soils

Overburden soils at the Site consist of primarily silts and sands. Gravelly sections of overburden also exist but are less extensive, based on review of the soil borings for previous site investigations. Deeper sections of soil consist of glacial till with a silty-clay matrix and highly variable grain size. Till was observed or reported to be somewhat weathered, saturated, and only moderately dense in most instances. Additionally, like most overburden units encountered at the Site, the till was not found extensively, likely having been eroded away entirely in some locations. Overburden soils generally reflect fluvial deposits expected given the Site's proximity to the Wappinger Creek.

Soils on the Site are mapped by the United States Department of Agriculture (USDA) Web Soil Survey primarily as udorthents, or gravelly loam, likely derived from glacial outwash and kame deposits. Udorthents are described by the USDA as well drained soils that have often been disturbed or reworked by cuffing or filling in areas that are covered by buildings or pavement. The Wappinger loam and Pawling Silt loam are both mapped by the USDA in the western portions of the Site, and are siltier, fine-grained loams that are likely derived from lake and stream sediments.

4.2.3 Bedrock

Boring logs for pre-existing monitoring wells which extended into the surface of bedrock at the Site indicate that the bedrock beneath the Site is predominantly shale accompanied by intermittent to abundant veins of quartz. Some of the boring logs indicate limestone as bedrock. Upon additional review of bedrock mapping completed for Dutchess County, it is suspected that the bedrock beneath the Site is primarily the Austin Glen Member of the Normanskill Formation. This is a Middle Ordovician unit of interbedded greywackes and shales whose depositional setting would most likely correlate to the foreland basin of Taconic Orogeny, described in the sections above (Fisher et al., 1970). It is possible that greywacke was misclassified as limestone in limited instances at the Site where limestone was reportedly encountered. It is also possible that limestone encountered at the Site is an autochthonous unit, older than the Taconic Orogeny, or a section of Taconic Melange, thrusted into the foreland during the collision event. The predominantly shale bedrock at the Site was noted to be moderately to heavily eroded at most locations, and can be seen in outcrops surrounding the Site, as well as in the bed of the Wappinger Creek immediately adjacent to the Site.

Using on-Site data from boring logs which penetrated bedrock, and depth-to-bedrock data taken from the NYSDEC's Records of Registered Water Well's, a regional and site bedrock elevation map was created and is included as Figure 13. Kriging was used as the gridding method to infer contours of the bedrock surface in feet above mean sea level (ft. amsl) using the available data.

4.3 Hydrology

A Fire Pond located adjacent to the former IBM Hangar is the only surface water body located on-Site. The Wappinger Creek is located topographically downgradient from, and approximately 100 to 500 feet to the north and west of the Site boundary. The creek flows southwest toward Wappingers Falls and Wappinger Lake, ultimately discharging to the Hudson River. Greens Pond is located topographically downgradient from, and approximately 500 feet to the south of the Site across New Hackensack Road. The pond drains via a seasonal, unnamed stream to the Wappinger Creek. Lastly, a series of unnamed, perennial streams are noted to the east and south of the Site, which ultimately drain to either Wappinger Lake or Wappinger Creek.

4.3.1 Stream Gauges

Four surface water/stream gauges were installed in surface water bodies surrounding the Site by CTM Field Staff in May 2021 ahead of the collection of monthly water level data. Two gauges are located in the Wappinger Creek, adjacent to the Site at one upstream location and one downstream location. One stream gauge was installed in Greens Pond, and another stream gauge was installed in the unnamed stream that drains from Greens Pond, upstream of its mouth to the Wappingers Creek. The gauges were intended to supplement monthly water level events and to evaluate the potential influence of surface water fluctuations on groundwater flow, or vice versa.

4.3.2 Site Hydrogeology

The Site hydrogeology is relatively complex, largely due to the heterogeneity of soils across the roughly 500-acre area. The Site's soils were presumably reworked in several areas to develop the land surface in a manner necessary for site operations, adding to the complexity. Monitoring well and soil boring logs were obtained from previous site investigations and information compiled in the Records Search Report and were carefully considered during the development of the conceptual site model. However, logs for several boring/monitoring well locations could not be obtained.

Monitoring wells were gauged monthly in March, April, and May of 2021 for the purpose of groundwater flow mapping and to observe single-season variations in groundwater behavior.

4.3.3 Hydrogeologic Units

After review of the available boring and monitoring well installation logs, it appears that three distinct aquifers exist at the Site, pending further evaluation and aquifer testing: 1) a bedrock aquifer (Bedrock Aquifer), 2) a deep unconsolidated aquifer, located directly above bedrock or till stratigraphically, (Unconsolidated Semi-confined Aquifer) separated by a leaky aquitard and 3) a shallow or perched water table aquifer (Perched or Water Table Aquifer).

The readily available monitoring well construction logs were compiled and a summary table of the available logs was prepared that includes the well name, installation date, well type (overburden vs bedrock), total drilled depth (feet below ground surface), well total depth (feet below ground surface), and screened interval (feet below ground surface. The summary table and associated logs are included in Appendix D.

<u>Confining Layers and Aquitards</u>

The distinction of each of the three aquifers categorized above stems from the identification of two confining units, or more likely, leaky aquitards: The first being the interface of the weathered bedrock surface and basal till, where encountered, and the second being a clayey silt and/or sand unit encountered at several deep monitoring well locations which extends from about 10-15 feet below the water table to about 20-40 feet below the water table.

4.3.4 Classification of Existing Monitoring Wells

A large, but localized monitoring well network exists at the Site from several previous environmental investigations. Most pre-existing groundwater monitoring wells are in the immediate vicinity of the Former IBM and Flagship Hangars. Smaller sets of pre-existing monitoring wells exist for the Balefill and Dutchess County Landfills.

Pre-existing monitoring wells at the Site were classified into the one of the following three aquifer categories: 1) bedrock 2) unconsolidated semi-confined 3) perched. The following methods were used to aid in the classification in a fashion of decreasing priority and confidence based on the information available: 1) Monitoring wells with available soil logs were classified first into one of the three categories above based on the combined interpretation of their soil log and monitoring well installation specifications, 2) Monitoring wells without available logs were classified by their total well depth paired with knowledge of wells with boring and installation logs in close proximity, 3) Monitoring wells without available logs and without close proximity to other wells with available logs were classified by their total well depth paired with gauged water table elevation, relative to other site monitoring wells. Finally, in instances where none of the above assumptions could be applied with a reasonable degree of confidence in order to classify a monitoring well, the monitoring well was omitted from groundwater flow mapping. Furthermore, if significant and obvious outliers were determined to exist during preliminary groundwater flow mapping, those points were henceforth omitted from groundwater flow mapping.

Note that while the confining units/leaky aquitards described in the sections above may be discontinuous, the monitoring well classification scheme was applied site-wide for the sake of consistency. If either of the confining units could not be identified at a given location, the monitoring well classification was based on the location of the screened interval stratigraphically.

4.3.5 Supplemental Monitoring Well Network

Six monitoring wells were installed under the supervision and instruction of C.T. Male Associates (CTM) Field Staff in August 2019 in accordance with the Site Characterization Work Plan (2018). The wells were intended to supplement the pre-existing monitoring well network and to address immediately identifiable data gaps at the Site. They target the shallow groundwater aquifer at ends both major runways, the Jackson Rd. Spill area, and the Maintenance/ARFF Building.

4.3.6 Groundwater Flow

The entire site monitoring well network was gauged monthly from March through May of 2021. A monitoring well survey was also completed in March of 2021 to acquire elevation data for groundwater mapping purposes. The calculated groundwater elevations from each event were used to prepare a groundwater flow contour map as depicted in Figures 3. Kriging was used with linear drift as the gridding method to infer contours of the groundwater surface in feet above mean sea level (ft. amsl) using each available dataset.

The shallow groundwater aquifer generally flows west and northwest, across the Site in the direction of the Wappinger Creek and mirroring the topography and drainage characteristics of the area surrounding the Site. Groundwater in the shallow unconsolidated soils exists under typical unconfined aquifer conditions. Based on the observed shallow groundwater flow pattern and local topography, the shallow aquifer likely discharges at the Wappinger Creek, which exists at an elevation approximately 60 feet lower than the central portion of the Site. Finally, no significant variation in shallow groundwater flow could be identified over the course of the Spring season.

The deep groundwater aquifer generally flows northwest across the Site in the direction of the Wappinger Creek and mirroring the topography and drainage characteristics of the area surrounding the Site. Deep groundwater flow aligns closely with shallow groundwater flow, though it should be noted that the deep aquifer monitoring well network is much more limited. Groundwater in the deep unconsolidated soils most likely exists under leaky confined conditions beneath the Site, but it is suspected that the aquifer may transition to unconfined and blend with the shallow aquifer at some point down-groundwater gradient of the Site. Based on the observed deep groundwater flow pattern, the deep aquifer likely discharges with the shallow aquifer at the Wappinger Creek. No significant variation in deep groundwater flow could be identified over the course of the Spring season. A groundwater contour map is included as Figure 3.

The bedrock aquifer is lacking water level data due to the limited monitoring well network, which are located only in the immediate vicinity of the Former IBM and Flagship Hangars. Since AFFF was sprayed directly to the ground surface, the subject investigation focused largely on the shallow aquifer system. The shallow groundwater appears to flow in a westerly direction, toward the Wappinger Creek. We do not have enough data to make conclusions related to the direction of groundwater flow in the bedrock aquifer. It should be noted that the monitoring well network was established prior to on-Site buildings connecting to the municipal water supply. Groundwater flow direction in the bedrock aquifer is interpreted to be primarily to the west. However, due to the limited data available, this interpretation needs to be further investigated. Flow to the west under non-pumping influence is best depicted in Figure 13, mapped from the water level data collected on April 24, 2021. Groundwater in the bedrock aquifer most likely exists under leaky confined aquifer conditions but may vary on a larger scale. Discharge for the bedrock aquifer is again inconclusive due to the limited dataset. No significant variation in bedrock groundwater flow could be identified over the course of the Spring season. A bedrock groundwater flow contour map is depicted in Figure 13.

Vertical Flow Direction

Long term pressure transducer data loggers were deployed in a monitoring well triplet on-Site with a well screened in the shallow (A-21S), deep (A-21G), and bedrock (A-21R) aquifers. The purpose of the long-term monitoring was to examine changes in water level and potentiometric surface of each of the hydrogeologic units and correlate any observable trends, potentially providing insight as to the degree of which the three units may communicate with one another. Preliminary evaluations of the data logs suggest that each of the three units respond similarly to events of significant rainfall, but at a diminished rate with increasing depth, supporting the inference that the three units are separated by leaky aquitards and are not truly confined.

5.0 SITE CHARACTERIZATION RESULTS

5.1 General

The SC investigation involved the collection and laboratory analysis of soil, groundwater, surface water, sediment, and drinking water samples. The samples were analyzed for a combination of the following, depending on the AOC: NYS TCL VOCs, SVOCs, 1,4-Dioxane, PCBs, pesticides, TAL Metals, total cyanide and PFAS. Detected chemical compounds in the various media sampled as part of the SC and the analytical results are presented in Tables 1 through 43. The analyses of the samples were performed by Alpha Analytical Laboratories (Alpha) a NYSDOH certified ELAP laboratory. A summary of the media sampled and analyzed is provided in the sections below. The following table summarizes the analytical tables and figures relative to the respective AOCs.

Table E: Analytical Table and Figure Summary

AOC	Media	Table(s)	Figure(s)
1: Firefighting AFFF Testing Area	Soil	1A	4
	Groundwater	1	6
2: Former Balefill Landfill	Groundwater	2-5	6
3: Former Dutchess County Landfill	Groundwater	6-9	6
4: Jackson Road, Former Petroleum Spill	Soil	10A-13A	4
	Groundwater	10-13	6, 7
5: Stormwater Outfalls	Surface Water	14-18, 42	8, 9
	Sediment	14A-18A, 42A	10, 11
6: AAG Hangers	Groundwater	23	6
	Drinking Water	19-22	6, 7, 12

AOC	Media	Table(s)	Figure(s)
7: ARFF / Maintenance Building	Soil	24A-29A	4, 5
	Groundwater	24-29	6, 7
	Drinking Water	30-33	6, 7, 12
8: Fire Pond	Surface Water	34	8
	Sediment	34A	10
9: North /South Runway	Soil	35A-40A	4
	Groundwater	35-40	6, 7
Off-Site Locations	Surface Water	Not Applicable	8
	Drinking Water	42	12

Compounds detected in the various media analyzed during this SC were compared to the following New York State guidance documents and standards that were in effect at the time of the Department approved Work Plan and data collection:

- NYSDEC Division of Water Technical and Operational Guidance Series (TOGS 1.1.1); Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations dated October 1993; Revised June 1998; errata sheet dated January 1999; and Addendum dated April 2000 (NYSDEC Class GA);

- NYSDEC Regulation, 6 NYCRR Subpart 375-6, "Remedial Program Soil Cleanup Objectives". Soil analytical results for this investigation were compared against NYSDEC 6 NYCRR Part 375-6 Unrestricted Use Soil Cleanup Objectives (SCO), protection of public health; and

- USEPA Drinking Water Health Advisory for PFOA and perfluorooctane-sulfonic acid (PFOS) dated May 2016.

Additionally, the following guidance documents are available from the NYSDEC:

- NYSDEC July 2020 Maximum Contaminant Levels for drinking water for PFOA, PFOS, and 1,4-Dioxane;
- NYSDEC June 2021 Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS); and,
- NYSDEC October 2021 Addendum to TOGS 1.1.1 AQWS for PFOA, PFOS, and 1,4-Dioxane.

At the time of the Department approved Work Plan and data collection, no NYSDEC regulatory standards were available for 1,4-Dioxane in water. The NYSDEC had proposed guidance values of 0.35 ppb for 1,4-Dioxane in raw water sources for the protection of human health.

5.2 AOC-1; Firefighting AFFF Testing Area – Soil Analytical Results

Surface soil and subsurface soil samples were collected at soil boring locations within AOC-1. Two test borings were completed and converted into permanent monitoring wells. Groundwater samples were collected from the monitoring wells after well development. Surface and near-surface soil samples were collected from 0 to 6 inches (including the root zone) and 6 to 24 inches below grade. Subsurface soil samples were collected based on subjective field screening of soils, or otherwise directly above the water table.

The soil and groundwater samples were analyzed for PFAS and 1,4-Dioxane. Sample results are presented below, and the reported laboratory results are presented in Tables 1 and 1A.

5.2.1 AOC-1; Surface and Near-Surface Soils Analytical Results

Results from the surface and near-surface soil samples (collected from 0 to 6 inches and 6 to 24 inches below grade) identified detections of PFAS at both soil boring locations. Figure 4 depicts the soil concentrations at each boring for PFAS. Currently there are no

NYSDEC regulatory standards or guidance values for PFAS in soils. The PFAS detections are summarized below:

- MW104 surface soil sampling results detected fifteen PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 2.42 ppb. PFOS was detected at 129 ppb. The near-surface soil sample detected twelve PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.688 ppb. PFOS was detected at 109 ppb.

- MW105 surface soil sampling results detected fourteen PFAS compounds, including estimated detections ("J" qualified) of PFOA at 1.1 ppb. PFOS was detected at 113 ppb. The near-surface soil sample detected fourteen PFAS compounds, including estimated detections ("J" qualified) of PFOA at 1.1 ppb. PFOS was detected at 89.5 ppb.

1,4-Dioxane was not detected in any surface soil samples collected within AOC-1.

5.2.2 AOC-1; Subsurface Soils Analytical Results

Results from the subsurface soil samples identified detections of PFAS at both soil boring locations. Figure 4 depicts the soil concentrations at each boring for PFAS. Currently there are no NYSDEC regulatory standards or guidance values for PFAS in soils. The PFAS detections are summarized below:

- MW104 soil sampling results detected five PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.14 ppb. PFOS was detected at 43.8 ppb.
- MW105 sampling results detected ten PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.16 ppb. PFOS was detected at 56.9 ppb.

1,4-Dioxane was not detected in any subsurface soil sample collected within AOC-1.

5.2.3 AOC-1; Groundwater Analytical Results

Results from the groundwater samples identified detections of PFAS at the sampled location. At MW104, PFOA and PFOS were detected in exceedance of the former USEPA health advisory level of 70 ppt in drinking water for each respective compound. Figure 6 depicts the groundwater concentrations at each well for PFAS. The PFAS detections are summarized below:

- MW104 sampling results detected eleven PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 122 ppt and PFOS was detected at 1,720 ppt.
- MW105 was not sampled.

1,4-Dioxane was not detected in any groundwater sample collected within AOC-1.

5.3 AOC-2; Former Balefill Landfill – Analytical Results

Groundwater samples were collected from two pre-existing monitoring wells at the Balefill Landfill which were interpreted as being hydraulically down gradient of the landfill.

The groundwater samples were analyzed for PFAS, 1,4-Dioxane, SVOCs, PCBs and Pesticides. Sample results are presented below, and the reported laboratory results are presented in Tables 2 through 5.

5.3.1 AOC-2; Groundwater Analytical Results

Results from the groundwater samples identified detections of PFAS at the sampled locations. At MW-2S and MW-3S, PFOS was detected in exceedance of the former USEPA health advisory level of 70 ppt in drinking water. At MW-3S, PFOA was detected in exceedance of the former USEPA health advisory level of 70 ppt in drinking water. Figure 6 depicts the groundwater concentrations at each well for PFAS and 1,4-Dioxane. The PFAS detections are summarized below:

- MW-2S sampling results detected eleven PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 22.5 ppt and PFOS was detected at 932 ppt.
- MW-3S sampling results detected eleven PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 35.8 ppt and PFOS was detected at 21.4 ppt.

1,4-Dioxane was detected at 0.635 ppb in both groundwater samples. There are currently no NYSDEC regulatory standards for 1,4-Dioxane in groundwater. NYSDEC has proposed guidance values of 0.35 ppb for 1,4-Dioxane in raw water sources for the protection of human health. There were no detections of SVOCs, PCBs or Pesticides that exceeded NYSDEC TOGS 1.1.1 for groundwater.

5.4 AOC-3; Former Dutchess County Landfill – Analytical Results

Groundwater samples were collected from three pre-existing monitoring wells at the Dutchess County Landfill which were interpreted as being hydraulically down gradient of the landfill.

The groundwater samples were analyzed for PFAS, 1,4-Dioxane, SVOCs, PCBs and Pesticides. Sample results are presented below, and the reported laboratory results are presented in Tables 6-9.

5.4.1 AOC-3; Groundwater Analytical Results

Results from the groundwater samples identified detections of PFAS at the sampled locations. At MW-20, PFOA and PFOS were detected in exceedance of the former USEPA health advisory level of 70 ppt for each respective compound in drinking water. Figure 6 depicts the groundwater concentrations at each well for PFAS and 1,4-Dioxane. The PFAS detections are summarized below:

- MW-15 sampling results detected eleven PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 31.1 ppt and PFOS was detected at 19.7 ppt.
- MW-20 sampling results detected thirteen PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 76.6 ppt and PFOS was detected at 79.2 ppt.
- MW-29 sampling results detected ten PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 8.71 ppt and PFOS was detected at 8.86 ppt.

1,4-Dioxane was detected in concentrations of 1.92 ppb, and 15.4 ppb at MW-15 and MW-20, respectively. 1,4-Dioxane was non-detect (ND) at MW-29. There are currently no NYSDEC regulatory standards for 1,4-Dioxane in water. NYSDEC has proposed guidance values of 0.35 ppb for 1,4-Dioxane in raw water sources for the protection of human health. There were no detections of SVOCs, PCBs or Pesticides that exceeded NYSDEC TOGS 1.1.1 for groundwater.

5.5 AOC-4; Jackson Road, Former Petroleum Spill – Analytical Results

Surface soil and subsurface soil samples were collected at a soil boring location within AOC-4. One test boring was completed and converted into a permanent monitoring well.

A groundwater sample was collected from the monitoring well after well development. Surface soil samples were collected from 0 to 2 inches and 2 to 12 inches below grade. Subsurface soil samples were collected based on subjective field screening of soils, or otherwise directly above the water table.

The soil and groundwater samples were analyzed for PFAS, 1,4-Dioxane, TAL Metals, PCBs and Pesticides. The groundwater sample was also analyzed for cyanide. Sample results are presented below, and the reported laboratory results are presented in Tables 10 through 13.

5.5.1 AOC-4; Surface and Near-Surface Soils Analytical Results

Results from the surface soil samples (collected from 0 to 6 inches and 6 to 24 inches below grade) identified detections of PFAS at the soil boring location. Currently there are no NYSDEC regulatory standards or guidance values for PFAS in soils. Figure 4 depicts the soil concentrations at each boring for PFAS. The PFAS detections are summarized below:

- MW101 surface soil sampling results detected nine PFAS compounds, including estimated detections (“J” qualified) of PFOA at 0.132 ppb and PFOS at 2.72 ppb. The near-surface soil sample detected ten PFAS compounds, including estimated detections (“J” qualified) of PFOA at 0.45 ppb. PFOS was detected at 11.3 ppb.

1,4-Dioxane was not detected in any surface soil samples collected within AOC-4. Metals, PCBs and Pesticides did not exceed their respective NYSDEC concentrations for Unrestricted SCO in any surface soil samples.

5.5.2 AOC-4; Subsurface Soils Analytical Results

Results from the subsurface soil sample identified detections of PFAS at the soil boring location. Currently there are no NYSDEC regulatory standards or guidance values for PFAS in soils. Figure 4 depicts the soil concentrations at each boring for PFAS. The PFAS detections are summarized below:

- MW101 sampling results detected five PFAS compounds, including estimated detections (“J” qualified) of PFOA at 0.06 ppb. PFOS was detected at 1.12 ppb.

1,4-Dioxane was not detected in the subsurface soil sample collected within AOC-4. Metals, PCBs and Pesticides did not exceed their respective NYSDEC concentrations for Unrestricted SCO in any subsurface soil samples.

5.5.3 AOC-4; Groundwater Analytical Results

Results from the groundwater sample identified detections of PFAS at the sampled location. PFOA and PFOS were not detected in exceedance of the former USEPA health advisory level of 70 ppt for each respective compound; however, the combined PFOA/PFOS concentrations exceed 70 ppt. Figure 6 depicts the groundwater concentrations at each well for PFAS. The PFAS detections are summarized below:

- MW101 sampling results detected thirteen PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 11.3 ppt and PFOS was detected at 68.1 ppt.

1,4-Dioxane, PCBs and Pesticides were not detected in the groundwater sample collected within AOC-4. However, Total Iron was detected at a concentration of 7,690 ppb and Total Manganese was detected at a concentration of 1,657 ppb, both in exceedance of the respective NYSDEC TOGS 1.1.1 criteria for groundwater. No other Metals were detected in exceedance of the NYSDEC TOGS 1.1.1 for groundwater. Cyanide was not detected in groundwater. Figure 7 depicts the groundwater concentrations at each well for non-PFAS constituents.

5.6 AOC-5; Stormwater Outfalls – Analytical Results

Seven surface water samples were collected from various stormwater outfalls associated with the Site. A sediment sample was also collected from each stormwater outfall in association with the surface water samples.

Six surface water and six sediment samples collected from stormwater outfalls north of the North/South runway were analyzed for PFAS and 1,4-Dioxane. One surface water and one sediment sample collected from Outfall 001, located adjacent to the main terminal and New Hackensack Road were analyzed for PFAS, 1,4-Dioxane, TAL Metals plus Cyanide, TCL VOCs, SVOCs, PCBs and Pesticides. Sample results are presented below, and the reported laboratory results are presented in Tables 14 through 18, and 42.

5.6.1 AOC-5; Surface Water Analytical Results

Results from the surface water samples identified detections of PFAS at the sampled locations. At Outfall-001 and Outfall-003, PFOS was detected in exceedance of the former USEPA health advisory level of 70 ppt in drinking water. Figure 8 depicts the surface water concentrations at each location for PFAS. The PFAS detections are summarized below:

- Outfall-001 sampling results detected fourteen PFAS compounds, including estimated detections (“J” qualified). PFOA was detected at 21.4 ppt and PFOS was detected at 140 ppt.
- Outfall-002 sampling results detected nine PFAS compounds, including estimated detections (“J” qualified). PFOA was detected at 2.39 ppt and PFOS was detected at 13.4 ppt.
- Outfall-003 sampling results detected twelve PFAS compounds, including estimated detections (“J” qualified). PFOA was detected at 8.3 ppt and PFOS was detected at 339 ppt.
- Outfall-004 sampling results detected nine PFAS compounds, including estimated detections (“J” qualified). PFOA was detected at 2.75 ppt and PFOS was detected at 12.7 ppt.
- Outfall-005 sampling results detected twelve PFAS compounds, including estimated detections (“J” qualified). PFOA was detected at 14.9 ppt and PFOS was detected at 9.24 ppt.
- Outfall-006 sampling results detected nine PFAS compounds, including estimated detections (“J” qualified). PFOA was detected at 6.16 ppt and PFOS was detected at 2.68 ppt.
- Outfall-007 sampling results detected nine PFAS compounds, including estimated detections (“J” qualified). PFOA was detected at 10.5 ppt and PFOS was detected at 4.23 ppt).

1,4-Dioxane was not detected in any surface water samples collected within AOC-5. At Outfall-001, VOCs, PCBs and Pesticides were not detected in the surface water sample. The following SVOCs were detected at Outfall-001 in exceedance of the respective NYSDEC TOGS 1.1.1 criteria for surface water: Benzo(a)anthracene at 0.04 ppb, Benzo(a)pyrene at 0.02 ppb, Benzo(b)fluoranthene at 0.04 ppb, Benzo(k)fluoranthene at 0.02 ppb, and Chrysene at 0.04 ppb. Additionally, the following Metals were detected at Outfall-001 in exceedance of the respective NYSDEC TOGS 1.1.1 criteria for surface water: Total Antimony at 16 ppb, Total Iron at 588 ppb, Total Manganese at 712 ppb, Total Sodium at 81,300 ppb. No other SVOCs or Metals were detected at Outfall-001 in exceedance of the NYSDEC TOGS 1.1.1 for surface water. Figure 9 depicts the surface water concentrations at each location for non-PFAS constituents.

5.6.2 AOC-5; Sediment Analytical Results

Results from the sediment samples identified detections of PFAS at the stormwater outfall locations. Currently there are no NYSDEC regulatory standards or guidance values for PFAS in sediments. Figure 10 depicts the sediment concentrations for PFAS. The PFAS detections are summarized below:

- Outfall-001 sampling results detected two PFAS compounds, including estimated detections ("J" qualified) of PFOS at 0.36 ppb. PFOA was not detected.
- Outfall-002 sampling results detected seven PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.11 ppb and PFOS at 1.1 ppb.
- Outfall-003 sampling results detected six PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.09 ppb. PFOS was detected at 7.57 ppb.
- Outfall-004 sampling results detected twelve PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.46 ppb. PFOS was detected at 7.8 ppb.
- Outfall-005 sampling results detected thirteen PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.64 ppb. PFOS was detected at 1.84 ppb.
- Outfall-006 sampling results detected four PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.14 ppb and PFOS at 0.36 ppb.
- Outfall-007 sampling results had no PFAS detections.

1,4-Dioxane was not detected in any sediment samples collected within AOC-5. At Outfall-001, SVOCs, PCBs, Pesticides, and Metals did not exceed their respective sediment guidance values (SGV). Acetone was detected in the sediment sample at a concentration of 0.058 ppb, however, acetone is commonly identified as a laboratory artifact and is not believed to be related to site operations. No other VOCs exceeded SGVs. Figure 11 depicts the sediment concentrations for non-PFAS constituents.

5.7 AOC-6; AAG Hangars – Analytical Results

Groundwater samples were collected from seven pre-existing monitoring wells which were installed during previous remedial investigation work. Additionally, a drinking water well sample was collected from the AAG potable well at the former IBM Hangar.

The groundwater samples were analyzed for PFAS, 1,4-Dioxane. The drinking water well sample was analyzed for PFAS, 1,4-Dioxane, SVOCs, PCBs and Metals. Sample results are presented below, and the reported laboratory results are presented in Tables 19 through 23.

5.7.1 AOC-6; Groundwater Analytical Results

Results from the groundwater samples identified detections of PFAS at the sampled location. PFOA and PFOS were detected in exceedance of the former USEPA health advisory level of 70 ppt for each respective compound in drinking water for the following monitoring wells: A-21G, A-21R, A-21S, and ME-18. At MW-4 and MW-6, PFOS was detected in exceedance of the former USEPA health advisory level of 70 ppt in drinking water. Figure 6 depicts the groundwater concentrations at each well for PFAS. The PFAS detections are summarized below:

- A-21G sampling results detected twelve PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 500 ppt and PFOS was detected at 3,240 ppt.
- A-21R sampling results detected twelve PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 371 ppt and PFOS was detected at 3,010 ppt.
- A-21S sampling results detected twelve PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 184 ppt and PFOS was detected at 2,200 ppt.
- ME-18 sampling results detected thirteen PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 77.5 ppt and PFOS was detected at 2,030 ppt.
- MW-3 sampling results detected eight PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.78 ppt. PFOS was detected at 12.3 ppt.
- MW-4 sampling results detected eleven PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 28.5 ppt and PFOS was detected at 1,420 ppt.
- MW-6 sampling results detected fourteen PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 47.7 ppt and PFOS was detected at 1,320 ppt.

1,4-Dioxane was not detected in any groundwater sample collected within AOC-6.

5.7.2 AOC-6; Drinking Water Analytical Results

Results from the drinking water samples identified detections of PFAS at the sampled location. PFOA and PFOS were both detected in exceedance of former USEPA health advisory level of 70 ppt for each respective compound in drinking water for the AAG potable well. Figures 6 and 12 depict the groundwater concentrations for PFAS.

1,4-Dioxane was not detected in any of the drinking water well samples collected within AOC-6. SVOCs and PCBs were not detected in exceedance of the NYSDEC TOGS 1.1.1 for drinking water at the sampling location. Total Sodium was detected at 157,000 ppb, in exceedance of the NYSDEC TOGS 1.1.1 for drinking water of 20,000 ppb. No other metals were detected in exceedance of the applicable drinking water criteria. Figure 7 depicts the groundwater concentrations at for non-PFAS constituents.

5.8 AOC-7; ARFF / Maintenance Building – Analytical Results

Near-surface soil and subsurface soil samples were collected at a soil boring location within AOC-7. One test boring was completed and converted into a permanent monitoring well. A groundwater sample was collected from the monitoring well after well development. Surface soil samples were collected from 2 to 12 inches below grade (below the pavement). Subsurface soil samples were collected based on subjective field screening of soils, or otherwise directly above the water table. A drinking water sample was also collected from the potable drinking water well associated with the maintenance building.

The soil and groundwater samples were analyzed for PFAS, 1,4-Dioxane, TAL Metals plus Cyanide, TCL VOCs, SVOCs, PCBs and Pesticides. The drinking water sample was analyzed for PFAS, 1,4-Dioxane, Metals, SVOCs and PCBs. Sample results are presented below, and the reported laboratory results are presented in Tables 24 through 33.

5.8.1 AOC-7; Near-Surface Soils Analytical Results

Results from the near-surface soil sample (6 to 12 inches below grade) identified detections of PFAS at the soil boring location. Currently there are no NYSDEC regulatory standards or guidance values for PFAS in soils. Figure 4 depicts the soil concentrations at MW100 for PFAS The PFAS detections are summarized below:

- MW100 sampling results detected nineteen PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.44 ppb. PFOS was detected at 369 ppb.

1,4-Dioxane was not detected in the surface soil sample collected within AOC-7. Metals, VOCs, SVOCs, PCBs and Pesticides did not exceed their respective NYSDEC concentrations for Unrestricted SCO in the surface soil sample.

5.8.2 AOC-7; Subsurface Soils Analytical Results

Results from the subsurface soil sample identified detections of PFAS at the soil boring location. Currently there are no NYSDEC regulatory standards or guidance values for PFAS in soils. Figure 4 depicts the soil concentrations for PFAS. The PFAS detections are summarized below:

- MW100 sampling results detected fourteen PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.29 ppb. PFOS was detected at 36.8 ppb.

1,4-Dioxane was not detected in the subsurface soil sample collected within AOC-7. VOCs, SVOCs, PCBs and Pesticides did not exceed their respective NYSDEC concentrations for Unrestricted SCO in the surface soil sample. Total Copper, Total Lead, and Total Zinc were detected at 66.8 ppm, 70 ppm, and 138 ppm respectively, in exceedance of their respective NYSDEC concentrations for Unrestricted SCO of 50 ppm, 63 ppm and 109 ppm. No other metals were detected in exceedance of their applicable criteria. Figure 5 depicts the soil concentrations at MW100 for non-PFAS constituents.

5.8.3 AOC-7; Groundwater Analytical Results

Results from the groundwater sample identified detections of PFAS at the sampled location. At MW100, PFOS was detected in exceedance of the former USEPA health advisory level of 70 ppt in drinking water. Figure 6 depicts the groundwater concentrations at MW100 for PFAS. The PFAS detections are summarized below:

- MW100 sampling results detected eighteen PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 47.1 ppt and PFOS was detected at 595 ppt.

1,4-Dioxane was not detected in the groundwater sample collected within AOC-7. VOCs, SVOCs, PCBs and Pesticides did not exceed their respective concentrations for NYSDEC TOGS 1.1.1. Total Sodium was detected at 135,000 ppb, in exceedance of the NYSDEC TOGS 1.1.1 for drinking water of 20,000 ppb. No other metals were detected in exceedance of the applicable groundwater criteria. Figure 7 depicts the groundwater concentrations for non-PFAS constituents.

5.8.4 AOC-7; Drinking Water Analytical Results

Results from the drinking water sample identified detections of PFAS at the sampled location. However, PFOA and PFOS were not detected in exceedance of the former USEPA health advisory level of 70 ppt in drinking water. The PFAS detections are summarized below:

- The maintenance building potable well sampling results detected four PFAS compounds, including estimated detections ("J" qualified). PFOA and PFOS were both ND in the drinking water sample.

1,4-Dioxane was detected at 0.254 ppb in the drinking water sample. There are currently no NYSDEC regulatory standards for 1,4-Dioxane in water. NYSDEC has proposed guidance values of 0.35 ppb for 1,4-Dioxane in raw water sources for the protection of human health. SVOCs and PCBs were not detected. Total Iron, Total Magnesium, and Total Sodium were detected at 434 ppb, 42,700 ppb, and 86,900 ppb respectively, in exceedance of their respective NYSDEC TOGS 1.1.1 standards of 300 ppb, 35,000 ppb and 20,000 ppb. No other metals were detected in exceedance of the applicable drinking water criteria. Figure 7 depicts the groundwater concentrations for non-PFAS constituents.

5.9 AOC-8; Fire Pond – Analytical Results

Two surface water samples were collected from the fire pond on the Site. A sediment sample was also collected from each location in association with the surface water samples.

The surface water and sediment samples collected from the fire pond were analyzed for PFAS and 1,4-Dioxane. Sample results are presented below, and the reported laboratory results are presented in Table 34.

5.9.1 AOC-8; Surface Water Analytical Results

Results from the surface water samples identified detections of PFAS at the sampled locations. At both sampling locations, PFOS was detected in exceedance of the former

USEPA health advisory level of 70 ppt in drinking water. Figure 8 depicts the surface water concentrations at each well for Total PFAS. The PFAS detections are summarized below:

- Fire Pond-01 sampling results detected thirteen PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 26.1 ppt and PFOS was detected at 214 ppt.
- Fire Pond-02 sampling results detected thirteen PFAS compounds, including estimated detections ("J" qualified). PFOA was detected at 23.8 ppt and PFOS was detected at 195 ppt.

1,4-Dioxane was not detected in any surface water samples collected within AOC-8.

5.9.2 AOC-8; Sediment Analytical Results

Results from the sediment samples identified detections of PFAS at the stormwater outfall locations. Currently there are no NYSDEC regulatory standards or guidance values for PFAS in sediments. Figure 10 depicts the sediment concentrations for PFAS. The PFAS detections are summarized below:

- Fire Pond-01 sampling results detected twelve PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.21 ppb. PFOS was detected at 11.6 ppb.
- Fire Pond-02 sampling results detected ten PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.21 ppb. PFOS was detected at 7.83 ppb.

1,4-Dioxane was not detected in any sediment samples collected within AOC-8.

5.10 AOC-9; North / South Runway – Analytical Results

Surface soil and subsurface soil samples were collected at soil boring locations within AOC-9. Two test borings were completed and converted into permanent monitoring wells. Groundwater samples were collected from the monitoring wells after well development. Surface and near-surface soil samples were collected from 0 to 6 inches (including the root zone) and 6 to 24 inches below grade. Subsurface soil samples were collected based on subjective field screening of soils, or otherwise directly above the water table.

The soil and groundwater samples were analyzed for PFAS, 1,4-Dioxane, TAL Metals, TCL VOCs, SVOCs, PCBs and Pesticides. Sample results are presented below, and the reported laboratory results are presented in Tables 35 through 40.

5.10.1 AOC-9; Surface and Near-Surface Soils Analytical Results

Results from the surface and near-surface soil samples (collected from 0 to 6 inches and 6 to 24 inches below grade) identified detections of PFAS at both soil boring locations. Currently there are no NYSDEC regulatory standards or guidance values for PFAS in soils. Figure 4 depicts the soil concentrations at each boring for PFAS. The PFAS detections are summarized below:

- MW102 sampling results detected ten PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.42 ppb. PFOS was detected at 1.29 ppb. The near-surface soil sample detected six PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.13 ppb and PFOS at 0.21 ppb.

- MW103 sampling results detected nine PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.85 ppb and PFOS at 0.96 ppb. The near-surface soil sample detected nine PFAS compounds, including estimated detections ("J" qualified) of PFOA at 0.57 ppb and PFOS at 0.55 ppb.

1,4-Dioxane was not detected in any surface and near-surface soil samples collected within AOC-9. Additionally, Metals, VOCs, SVOCs, PCBs, and Pesticides were not detected in the surface soil samples in exceedance of their respective NYSDEC concentrations for Unrestricted SCO.

5.10.2 AOC-9; Subsurface Soils Analytical Results

Results from the subsurface soil samples identified detections of PFAS at the MW103 soil boring locations. Currently there are no NYSDEC regulatory standards or guidance values for PFAS in soils. Figure 4 depicts the soil concentrations at each boring for PFAS. The PFAS detections are summarized below:

- MW102 sampling results were ND for PFAS.
- MW103 sampling results detected one PFAS compound. PFOA and PFOS were ND.

1,4-Dioxane was not detected in any subsurface soil sample collected within AOC-9. Additionally, Metals, VOCs, SVOCs, PCBs, and Pesticides were not detected in the surface soil samples in exceedance of their respective NYSDEC concentrations for Unrestricted SCO.

5.10.3 AOC-9; Groundwater Analytical Results

Results from the groundwater samples identified detections of PFAS at the sampled location. However, PFOA and PFOS were not detected in exceedance of the former USEPA health advisory level of 70 ppt in drinking water. Figure 6 depicts the groundwater concentrations at each well for PFAS. The PFAS detections are summarized below:

- MW102 sampling results detected seven PFAS compounds, including estimated detections ("J" qualified) of PFOA at 1.26 ppt and PFOS at 1.17 ppt.
- MW103 sampling results detected eight PFAS compounds, including estimated detections ("J" qualified) of PFOS at 1.32 ppt. PFOA was detected at 2.1 ppt.

1,4-Dioxane was not detected in any groundwater sample collected within AOC-9.

At MW102, VOCs, PCBs and Pesticides were not detected in the groundwater sample. The following SVOCs were detected at MW102 in exceedance of the respective NYSDEC TOGS 1.1.1 criteria for groundwater: Benzo(a)anthracene at 0.04 ppb, Benzo(a)pyrene at 0.03 ppb, Benzo(b)fluoranthene at 0.03 ppb, Benzo(k)fluoranthene at 0.03 ppb, Chrysene at 0.02 ppb, and Indeno(1,2,3-cd)pyrene at 0.03 ppb. Additionally, the following Metals were detected at MW102 in exceedance of the respective NYSDEC TOGS 1.1.1 criteria for groundwater: Total Iron at 2,000 ppb, Total Magnesium at 66,800 ppb, and Total Manganese at 9,436 ppb. No other SVOCs or Metals were detected at MW102 in exceedance of the NYSDEC TOGS 1.1.1 for groundwater. Figure 7 depicts the groundwater concentrations at each well for non-PFAS constituents.

At MW103, VOCs, PCBs and Pesticides were not detected in the groundwater sample. The following SVOCs were detected at MW103 in exceedance of the respective NYSDEC TOGS 1.1.1 criteria for groundwater: Benzo(a)anthracene at 0.02 ppb, Benzo(a)pyrene at 0.02 ppb, Benzo(b)fluoranthene at 0.06 ppb, Benzo(k)fluoranthene at 0.02 ppb, and Indeno(1,2,3-cd)pyrene at 0.05 ppb. Additionally, the following Metals were detected at MW103 in exceedance of the respective NYSDEC TOGS 1.1.1 criteria for groundwater:

Total Iron at 7,800 ppb, Total Manganese at 3,741 ppb, and Total Sodium at 68,500 ppb. No other SVOCs or Metals were detected at MW103 exceeding the NYSDEC TOGS 1.1.1 standards for groundwater.

5.11 Off-Site Locations – Analytical Results

Forty-two (42) off-Site, drinking water well samples were collected from the area surrounding the Site. The locations of the drinking water wells are shown on Figure 12. The drinking water samples were analyzed for PFAS and 1,4-Dioxane. Sample results are discussed below, and the reported laboratory results are presented in Table 41.

Six (6) surface water samples were collected from along the Wappinger Creek and a tributary of the Wappinger Creek situated immediately adjacent to and downgradient of the Site. Approximate sample locations and results are shown on Figure 8.

Additionally, New York State Department of Health (NYSDOH) and the Department of Environmental Conservation (NYSDEC) collected drinking water samples from the area surrounding the site and continues to collect water samples from homes where PFOA and PFOS exceed the NYS MCL of 10 ppt. NYSDEC sampling data is not included in this report but can be requested from the NYSDEC and will also be available in the document repository.

5.11.1 Analytical Results – Off-Site Locations; Drinking Water

Analytical test results were compared to the former USEPA health advisory level (HAL) of 70 ppt and the New York State (NYS) promulgated Maximum Contaminant Level (MCL) of 10 ppt each for PFOA and PFOS. There are currently no NYSDEC regulatory standards for 1,4-Dioxane in water. NYSDEC has proposed guidance values of 0.35 ppb for 1,4-Dioxane in raw water sources for the protection of human health. Figure 12 depicts the drinking water concentrations of PFOA, PFOS, and 1,4-Dioxane (off-Site locations only for 1,4-Dioxane) at each well.

Of the forty-two (42) offsite drinking water wells that were sampled, three (3) locations, Map IDs: A14, A15 and Location A (also designated as A1), had results that were reported above the former USEPA HAL of 70ppt. Location A is situated immediately adjacent to and southeast of the Site while Map IDs A14 & A15 are situated east of Route 376 and north of Hackensack Heights Road.

Analytical test results for Map IDs A4, A18, A21, A34, Location E, and Location D had reported concentrations of either PFOA or PFOS above the NYS MCL of 10ppt but below the former USEPA HAL of 70ppt. Map ID A4 is situated immediately adjacent to the southeastern site boundary. A18, A21, A34, Location E, and Location D are located east and upgradient of the subject Site.

Analytical test results for Map ID Location A had a reported concentration of 1,4-Dioxane of 0.216 ppb. Analytical test results for Map ID A34 had a reported concentration of 1,4-Dioxane of 0.214 ppb. These results are below the NYSDEC proposed guidance value of 0.35 ppb for 1,4-Dioxane in raw water sources. 1,4-Dioxane was not detected in other off-Site drinking water samples.

Analytical test results for all the wells sampled south of New Hackensack Road and west of Route 376 had reported concentrations of PFOA and PFOS below the former USEPA HAL and NYSDEC MCL.

5.11.2 Analytical Results – Off-Site Locations; Surface Water

Six (6) off-Site surface water samples were collected as follows:

- One (1) background sample, designated B-1, was collected from a location situated approximately 800 feet upstream of the Site from the Wappingers Creek;
- Sample SW-1 was collected from the Wappingers Creek near the northern perimeter of the Site and upstream of the landfill/balefill;
- Sample SW-2 was collected from the Wappingers Creek downstream of the landfill/balefill;
- Sample SW-3 was collected from the Wappingers Creek just south of Jackson Road;
- Sample SW-4 was collected from an unnamed tributary of the Wappingers Creek that trends northeast/southwest along the Site's eastern perimeter before making an approximate ninety degree turn to trend northwest/southeast along the Site's southern perimeter before draining into the Wappinger's Creek; and
- Sample SW-5 was collected approximately 400 feet downstream of the Site.

The analytical test results indicate that background concentrations of PFOA were 0.761 ppt and PFOS was 0.92 ppt (PFOA/PFOS Total 1.68 ppt). In the Wappingers Creek, the highest reported total concentration of PFOA/PFOS (3.34 ng/L) was from the surface water sample collected west of the landfill/balefill area. The highest concentrations of PFOA/PFOS were detected at the unnamed tributary (total 21.5 ng/L) of the Wappingers Creek located immediately south and downgradient of the Site. The sample collected downgradient from the tributary and within the Wappingers Creek had concentrations of PFOA reported at 1.08 ng/L and PFOS reported at 1.78 ng/L.

6.0 DISCUSSION OF FINDINGS

This SC investigation was conducted to determine whether regulated substances are present at the Site at levels above NYSDEC unrestricted use SCGs values, groundwater standards, or other applicable SCGs for unrestricted use of the Site (DER-10, Section 3.2.1), pursuant to the Order and "P" Site designation. Nine AOCs were identified within the Site prior to the development of the SC Work Plan. The SC Investigation focused on evaluating each of these AOCs individually, as well as several off-Site locations to characterize the Site relative to surface and near-surface soils, subsurface soils, groundwater, surface water, sediment, and drinking water. Based on the results of the investigations, several regulated substances were identified above applicable SCGs:

- AOC-1:
  - PFOA and PFOS in groundwater
- AOC-2:
  - PFOA and PFOS in groundwater
- AOC-3
  - PFOA and PFOS in groundwater
- AOC-4
  - Total Iron and Total Manganese in groundwater
- AOC-5
  - SVOCs, Total Antimony, Total Iron, Total Manganese, Total Sodium in surface water
  - Acetone in sediment
- AOC-6
  - PFOA and PFOS in groundwater
  - PFOA, PFOS, and Total Sodium in drinking water
- AOC-7
  - Total Copper, Total Lead, and Total Zinc in subsurface soil
  - PFOS and Total Sodium in groundwater

  - Total Iron, Total Magnesium and Total Sodium in drinking water
- AOC-8
  - PFOS in surface water
- AOC-9
  - SVOCs, Total Iron, Total Magnesium, Total Manganese and Total Sodium in groundwater
- OFF-SITE LOCATIONS:
  - PFOA and PFOS in surface water
  - PFOA and PFOS in drinking water

Additional PFAS compounds were detected in surface soils, subsurface soils, groundwater, surface water, sediment, and drinking water at concentrations above laboratory reporting limits at each AOC in which those respective media were sampled.

The following sections provide a summary and discussion of the SC investigation.

6.1 VOCs, SVOCs, PCBs, Pesticides and Metals in Soils and Sediment

The were no exceedances of NYSDEC Unrestricted Use SCOs for SVOCs, PCBs or Pesticides within the surface soils, subsurface soils or sediments analyzed.

Total Copper (66.8 ppm), Total Lead (70 ppm), and Total Zinc (138 ppm) exceeded their respective NYSDEC Unrestricted SCOs in subsurface soils at MW100. The location of this sample adjacent to the maintenance building septic tank could be indicative of Site activity related impacts. However, the detected metals were not found to have impacted shallow groundwater at this location.

There was a detection of acetone (0.058 ppb) at Outfall-001. This detection exceeds the NYSDEC Unrestricted Use SCO for acetone of 0.05 ppb. However, acetone is known to be a common laboratory artifact and is not considered to be associated with Site operations.

6.2 VOCs, SVOCs, PCBs, Pesticides and Metals in Water

The were no exceedances of NYSDEC Unrestricted Use SCOs for VOCs, PCBs or Pesticides within the surface soils, subsurface soils or sediments analyzed.

Total Iron (7,690 ppb) and Total Manganese (1,657 ppb) exceeded the respective NYSDEC TOGS 1.1.1 criteria in groundwater at MW101, AOC-4. These metals are naturally occurring, but the elevated concentrations may be artifacts of the historic oil spill remedial activities that occurred at this location.

The following detections of metals exceeded their respective NYSDEC TOGS 1.1.1 criteria in water: Total Sodium (157,000 ppb) in the AAG Potable well (AOC-6); Total Sodium (135,000 ppb) in MW100 (AOC-7); Total Iron (434 ppb), Total Magnesium (42,700 ppb) and Total Sodium (86,900 ppb) in the Maintenance Building potable well (AOC-7); Total Iron (2,000 ppb), Total Magnesium (66,800 ppb) and Total Manganese (9,436 ppb) in MW102 (AOC-9); Total Iron (7,800 ppb), Total Manganese (3,741 ppb) and Total Sodium (68,500 ppb) in MW103 (AOC-9). The following SVOCs were also detected in groundwater at AOC-9 in exceedance of their respective TOGS 1.1.1 criteria in surface water, but at very low concentrations, less than the laboratory reporting limit ("J" qualified): Benzo(a)anthracene at 0.04 ppb, Benzo(a)pyrene at 0.03 ppb, Benzo(b)fluoranthene at 0.03 ppb, Benzo(k)fluoranthene at 0.03 ppb, Chrysene at 0.02 ppb, and Indeno(1,2,3-cd)pyrene at 0.03 ppb in MW102; Benzo(a)anthracene at 0.02 ppb, Benzo(a)pyrene at 0.02 ppb, Benzo(b)fluoranthene at 0.06 ppb, Benzo(k)fluoranthene at 0.02 ppb, and Indeno(1,2,3-cd)pyrene at 0.05 ppb in MW103. The detected metals are all naturally occurring and not considered to be related to Site activities. Sodium is commonly associated with the use of de-icing agents, whether used on-Site or on adjacent roadways.

Total Antimony (16 ppb), Total Iron (588 ppb), Total Manganese (712 ppb), and Total Sodium (81,300 ppb) exceededTOGS 1.1.1 criteria in surface water at Outfall-001, AOC-5. The following SVOCs were also detected at this location in exceedance of TOGS in surface water, but at very low concentrations, less than the laboratory reporting limit ("J" qualified): Benzo(a)anthracene at 0.04 ppb, Benzo(a)pyrene at 0.02 ppb, Benzo(b)fluoranthene at 0.04 ppb, Benzo(k)fluoranthene at 0.02 ppb, and Chrysene at 0.04 ppb. The presence of these metals and SVOCs at the detected concentrations are most likely a result of the proximity and susceptibility of road run-off collection at Outfall-001 from the immediately adjacent New Hackensack Road.

6.3 PFAS and 1,4-Dioxane

PFAS were detected in surface soil, subsurface soil, groundwater, surface water, sediment at every sampling location examined during the SC Investigation, excluding the sediment sample from Outfall-007, and the subsurface soil sample collected at MW102, which were non-detect for PFAS. Figure 12 shows concentrations of PFAS detected in the drinking water samples.

1,4-Dioxane was detected in groundwater at AOC-2 and AOC-3, and at low concentrations in drinking water at AOC-7 and off-Site sampling locations at A34 and Location A/A1. There are currently no NYSDEC regulatory standards for 1,4-Dioxane in water. NYSDEC has proposed guidance values of 0.35 ppb for 1,4-Dioxane in raw water sources for the protection of human health. 1,4-Dioxane was not detected in any soil or sediment sample.

6.3.1 PFAS in On-Site Groundwater and Drinking Water

PFAS were detected widely across the Site in groundwater and potable drinking water wells. Exceedances of the former USEPA health advisory level of 70 ppt[2] for PFOS and/or PFOA were detected in the following sampling locations: MW104 (PFOA 122 ppt, PFOS 1,720 ppt) (downgradient AFFF testing area); MW-2S (PFOA 22.5 ppt, PFOS 932 ppt) and MW-3S (PFOA 35.8 ppt, PFOS 21.4 ppt) (downgradient of the Former Balefill Landfill); MW-20 (PFOA 76.6, PFOS 79.2 ppt) (downgradient of the Former Dutchess County Landfill); A-21G (PFOA 28.5 ppt, PFOS 1,420 ppt), A-21R (PFOA 371 ppt, PFOS 3,010 ppt), A-21S (PFOA 184 ppt, PFOS 2,200 ppt), ME-18 (PFOA 77.5 ppt, PFOS 2,030 ppt), MW-4 (PFOA 28.5 ppt, PFOS 1,420 ppt), and MW-6 (PFOA 47.7 ppt, PFOS 1,320 ppt) (AAG Hangars); and MW100 (PFOA 47.1 ppt, PFOS 595 ppt) (ARFF / Maintenance Building area).

PFAS in water was detected in MW-3S (PFOA 35.8 ppt, PFOS 21.4 ppt) at the former Balefill Landfill. Detections in MW-2S (PFOA 22.5, PFOS 932 ppt), which is also at the Balefill were also identified. Other monitoring wells on the Site (i.e. MW102 (PFOA 1.26 ppt, PFOS 1.17 ppt)), did not display exceedances of applicable criteria for PFOS or PFOA, or otherwise display concentrations of PFAS that could be considered elevated with respect to most sampling locations on the Site. Upgradient to the Balefill Landfill,

[2] The former USEPA health advisory level of 70 ppt for drinking water was used for comparison purposes.

sampling location MW104 (PFOA 122 ppt, PFOS 1,720 ppt) within the AFFF testing area displayed elevated concentrations of PFAS. Additionally, upgradient location MW103 (PFOA 2.1 ppt, PFOS 1.32 ppt) displayed some of the lowest PFAS detections of water sampling locations across the Site. In addition, downgradient monitoring wells at the Former Dutchess County Landfill exhibited concentrations and exceedances of PFAS that were relatively low with respect to the Site as a whole.

Elevated concentrations of PFAS in groundwater, including several exceedances of the former USEPA health advisory level of 70 ppt for PFOA and PFOS were found in pre-existing wells with the AAG Hangars area. Additionally, PFOA (233 ppt) and PFOS (1,090 ppt) were also detected in excess of the USEPA criteria in the AAG potable drinking water well. Though substantial investigative work and remedial efforts have occurred to address historical SVOC contamination in this area, remedies selected and put into effect following prior environmental investigations in this area were not designed to target and treat PFAS contamination.

The Firefighting AFFF Testing Area and ARFF / Maintenance Building areas both exhibited elevated concentrations of PFAS in groundwater and surface water. These two AOCs are each associated with AFFF application, storage, or ARFF operation in some manner. As such, AFFF and ARFF storage and operation may have contributed to localized PFAS contamination. Associated stormwater runoff from historic AFFF applications and ARFF also may have contributed to the elevated PFAS detections within these areas.

6.3.2 PFAS in Surface Water, Soils and Sediment

PFAS were detected in the surface water, surface soil, subsurface soil and sediment samples at each AOC in which these media were sampled.

PFAS concentrations in surface water samples were detected in every sample. Six (6) surface water samples were collected from the Wappingers Creek: B-1 (PFOA 0.761 ppt, PFOS 0.92 ppt), SW-1 (PFOA 0.765 ppt, PFOS 0.964 ppt), SW-2 (PFOA 0.808 ppt, PFOS 2.53 ppt), SW-3 (PFOA 0.819 ppt, PFOS 1.36 ppt), SW-4 (PFOA 4.33 ppt, PFOS 17.2 ppt) and SW-5 (PFOA 1.09 ppt, PFOS 1.78 ppt). Surface water samples were collected from seven (7) stormwater outfalls on-Site: Outfall-001 (PFOA 21.4 ppt, PFOS 140 ppt), Outfall-002 (PFOA 2.39 ppt, PFOS 13.4 ppt), Outfall-003 (PFOA 8.3 ppt, PFOS 339 ppt), Outfall-

004 (PFOA 2.75 ppt, PFOS 12.7 ppt), Outfall-005 (PFOA 14.9 ppt, PFOS 9.24 ppt), Outfall-006 (PFOA 6.16 ppt, PFOS 2.68 ppt) and Outfall-007 (PFOA 10.5 ppt, PFOS 4.23 ppt). Two (2) surface water samples were collected from the fire pond: FIREPOND 01 (PFOA 26.1 ppt, PFOS 214 ppt) and FIREPOND 02 (PFOA 23.8 ppt, PFOS 195 ppt).

Relatively low concentrations of PFAS were detected in sediment samples found on-Site. Seven (7) sediment samples were collected from the stormwater outfalls on-Site: Outfall-001 (PFOA ND, PFOS 0.356 ppb), Outfall-002 (PFOA 0.109 ppb, PFOS 1.09 ppb), Outfall-003 (PFOA 0.085 ppb, PFOS 7.57 ppb), Outfall-004 (PFOA 0.462 ppb, PFOS 7.8 ppb), Outfall-005 (PFOA 0.637 ppb, PFOS 1.84 ppb), Outfall-006 (PFOA 0.137 ppb, PFOS 0.36 ppb), Outfall-007 (PFOA ND, PFOS ND), FIREPOND-01 (PFOA 26.1 ppb, PFOS 214 ppb) and FIREPOND-02 (PFOA 23.8 ppb, PFOS 195 ppb).

Soil samples were collected from MW-100, MW-101, MW-102, MW-103, MW-104 and MW-105. In MW-100, 0.438 ppb of PFOA and 369 ppb of PFAS one (1) ft below ground surface (bgs) and 0.287 ppb of PFOA and 36.8 ppb of PFOS six (6) ft bgs were detected. In MW-101, 0.132 ppb of PFOA and 2.27 ppb of PFOS half (0.5) a foot bgs, 0.451 ppb of PFOA and 11.3 ppb of PFOS two (2) ft bgs, and 0.057 ppb of PFOA and 1.12 ppb of PFOS eight (8) ft bgs were detected. In MW-102, 0.415 ppb of PFOA and 1.29 ppb of PFOS half (0.5) a foot bgs, 0.127 ppb of PFOA and 0.213 ppb of PFOS two (2) ft bgs, and ND concentrations of PFOA and PFOS four and a half (4.5) ft bgs were detected. In MW-103, 0.85 ppb of PFOA and 0.958 ppb of PFOS half (0.5) a foot bgs, ND concentrations of PFOA and PFOS two (2) ft bgs, and 0.55 ppb of PFOA and 0.57 ppb of PFOS ten (10) ft bgs were detected. In MW-104, 2.42 ppb of PFOA and 129 ppb of PFOS half (0.5) a foot bgs, 0.688 ppb of PFOA and 109 ppb of PFOS two (2) ft bgs, and 0.142 ppb of PFOA and 43.8 ppb of PFOS nine and a half (9.5) ft bgs were detected. In MW-105, 1.1 ppb of PFOA and 89.5 ppb of PFOS half (0.5) a foot bgs, 0.648 ppb of PFOA and 113 ppb of PFOS two (2) ft bgs, and 0.164 ppb of PFOA and 56.9 ppb of PFOS four (4) ft bgs were detected.

6.3.3 Additional Discussions of PFAS Results

PFAS detections were exhibited in samples collected from the three off-Site drinking water wells above the former HAL of 70 ppt. Each of these sampling locations exists northeast and upgradient of the Site hydraulically.

The County installed Point-of-Entry Treatment Systems (POETS) in the three (3) off-Site drinking water well locations where sampling results exceeded the HAL of 70ppt. It has been reported to C.T. Male that additional POETS were installed by others at locations A4, Location E/A18, A21, Location D, A34, A40, and A43 where sampling results exceeded the NYSDEC MCL of 10 ppt for PFOA and/or PFOS, but did not exceed the HAL of 70 ppt. The County was not responsible for the installation or monitoring of these additional POETS installed by others, and does not maintain records for the installation or monitoring of these systems. Results from initial sampling of the potable wells at these locations can be found in Appendix H.

PFAS are widely used in consumer products. According to ITRC (2017) the following commercial and consumer products have been found to contain PFAS:

- paper and packaging
- clothing and carpets
- outdoor textiles and sporting equipment
- ski and snowboard waxes
- non-stick cookware
- cleaning agents and fabric softeners
- polishes and waxes, and latex paints
- pesticides and herbicides
- hydraulic fluids
- windshield wipers
- paints, varnishes, dyes, and inks
- adhesives
- medical products
- personal care products (for example, shampoo, hair conditioners, sunscreen, cosmetics, toothpaste, dental floss)

As described within the ITRC Fact Sheet on Environmental Fate and Transport (March 2018), landfills are demonstrated sources of PFAS due to the prevalence of PFAS usage in materials and the wide range of materials deposited within landfills. It is further noted within the Fact Sheet that landfills containing PFAS sources are expected to release PFAS at a "slow but relatively steady rate for decades following initial placement" of the waste.

As described within the ITRC Fact Sheet on Environmental Fate and Transport (March 2018), PFAS could be concentrated in sewage sludge through the treatment process and, depending on waste management and disposal practices, could contaminate groundwater, surface water, or both.

A national study for perfluoroalkyl substances in soils conducted in 2016[3] determined that PFAS are ubiquitous in background soils. The study had a range of detected PFAS concentrations in North America of 145-6,080 ppt within the soil samples collected.

In addition, a background study of shallow soil samples was conducted statewide in Vermont[4] and the report was issued in May 2019. This study found that PFAS were widespread in shallow Vermont soils. In particular, PFOS detections ranged from 0.106 to 9.7 ppb and PFOA detections ranged from 0.052 to 4.9 ppb.

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FIGURES

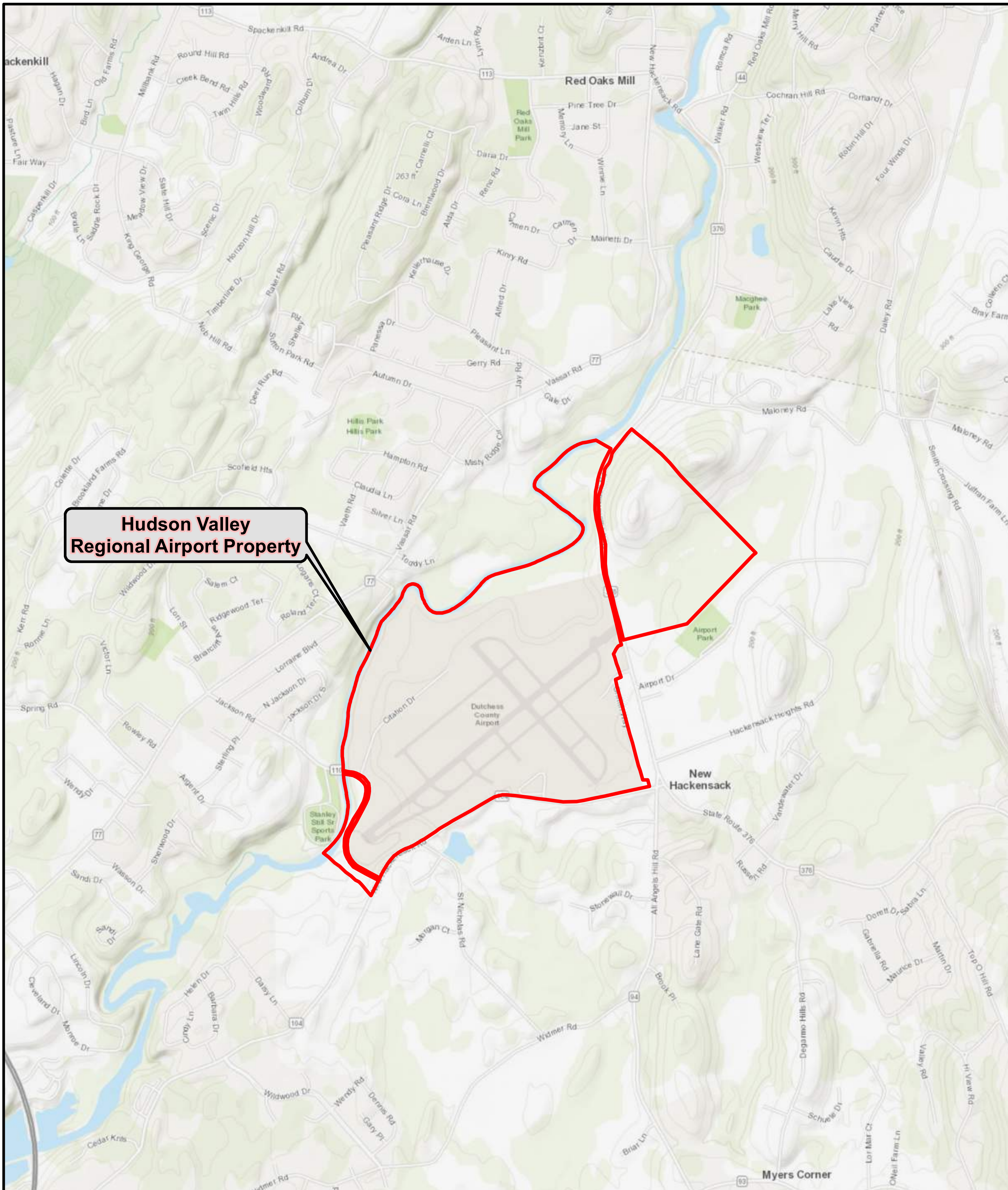

Figure 1: Site & Surrounding Area Map
Hudson Valley Regional Airport

Town of Wappinger | Dutchess County, NY

0 | 1,000 | 2,000 | 4,000 FT

1 inch = 2,000 feet

Legend

Dutchess County Property

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (feet)
Date: May 10, 2018
File: Fig1_HVRA_SiteLocationMap8x11.mxd
GIS: C Secor

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

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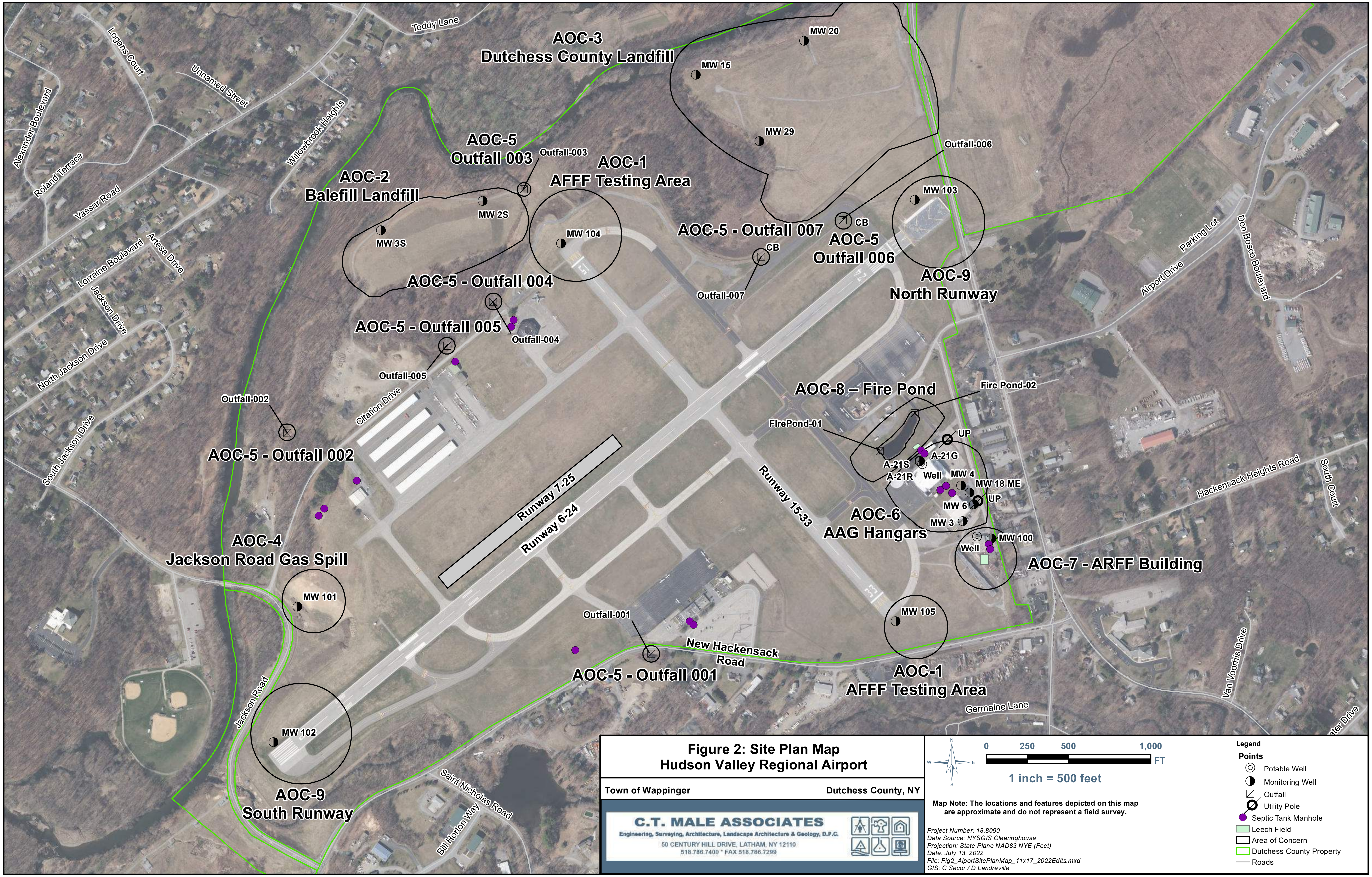

Figure 2: Site Plan Map
Hudson Valley Regional Airport

Figure 3: Groundwater Flow Map, Shallow Overburden Wells
Hudson Valley Regional Airport

Town of Wappinger | **Dutchess County, NY**

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0 300 600 1,200 FT

1 inch = 600 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: 2021_AiportSamplingMap_BlankTemplate_11x17_2022Edits.mxd
GIS: D Landreville
PDF Edits: A Malamet

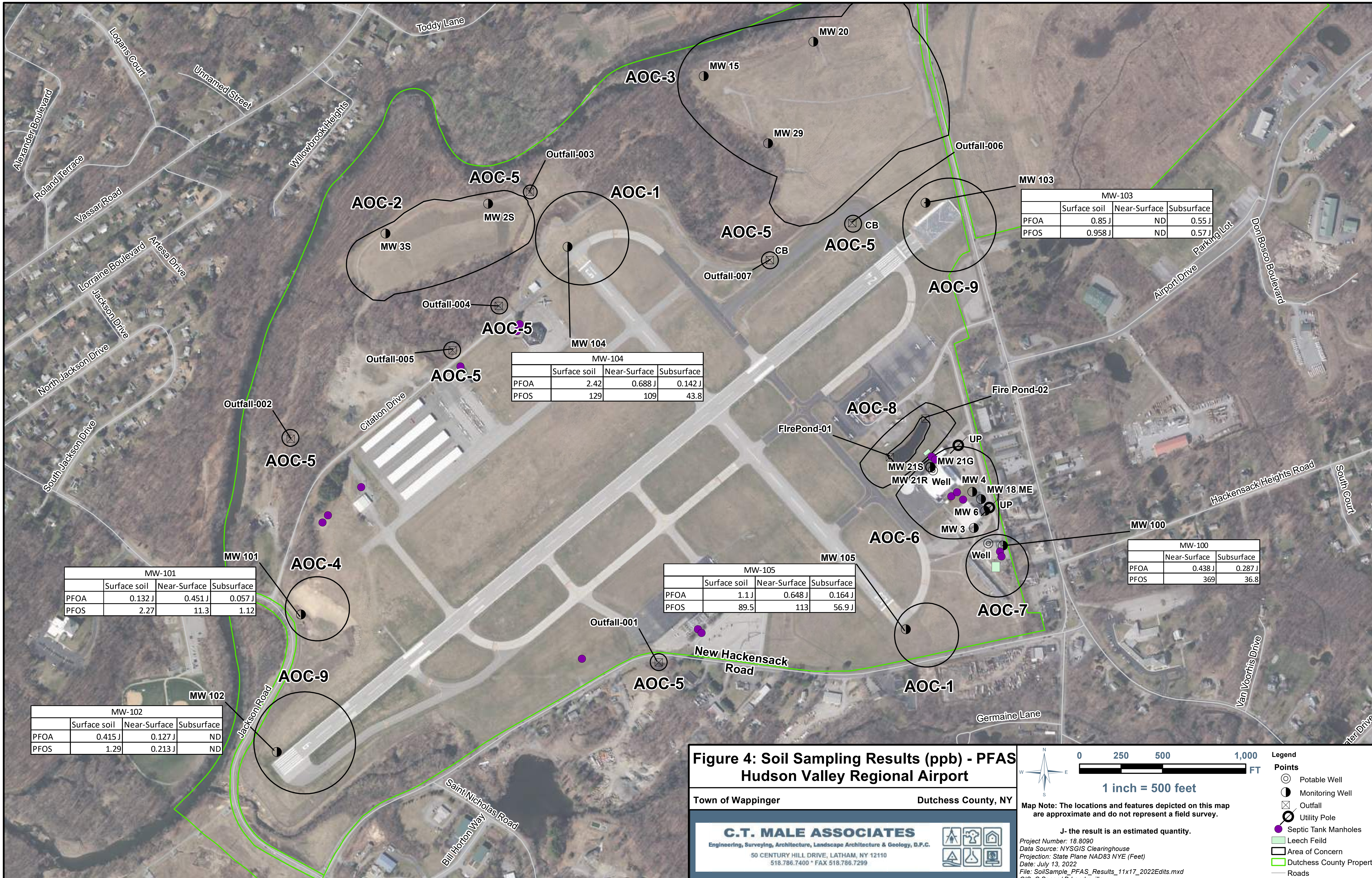
LEGEND

- Inferred Groundwater Flow Direction

150 - Inferred Ground Water Level Contour (ft)

Figure 4: Soil Sampling Results (ppb) - PFAS
Hudson Valley Regional Airport

Town of Wappinger | **Dutchess County, NY**



MW-103	Surface soil	Near-Surface	Subsurface
PFOA	0.85 J	ND	0.55 J
PFOS	0.958 J	ND	0.57 J

MW-104	Surface soil	Near-Surface	Subsurface
PFOA	2.42	0.688 J	0.142 J
PFOS	129	109	43.8

MW-101	Surface soil	Near-Surface	Subsurface
PFOA	0.132 J	0.451 J	0.057 J
PFOS	2.27	11.3	1.12

MW-105	Surface soil	Near-Surface	Subsurface
PFOA	1.1 J	0.648 J	0.164 J
PFOS	89.5	113	56.9 J

MW-100	Near-Surface	Subsurface
PFOA	0.438 J	0.287 J
PFOS	369	36.8

MW-102	Surface soil	Near-Surface	Subsurface
PFOA	0.415 J	0.127 J	ND
PFOS	1.29	0.213 J	ND

N S E W

0 250 500 1,000 FT

1 inch = 500 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

J- the result is an estimated quantity.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: SoilSample_PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend

Points
- Potable Well
- Monitoring Well
- Outfall
- Utility Pole
- Septic Tank Manholes
- Leech Feild
- Area of Concern
- Dutchess County Property
- Roads

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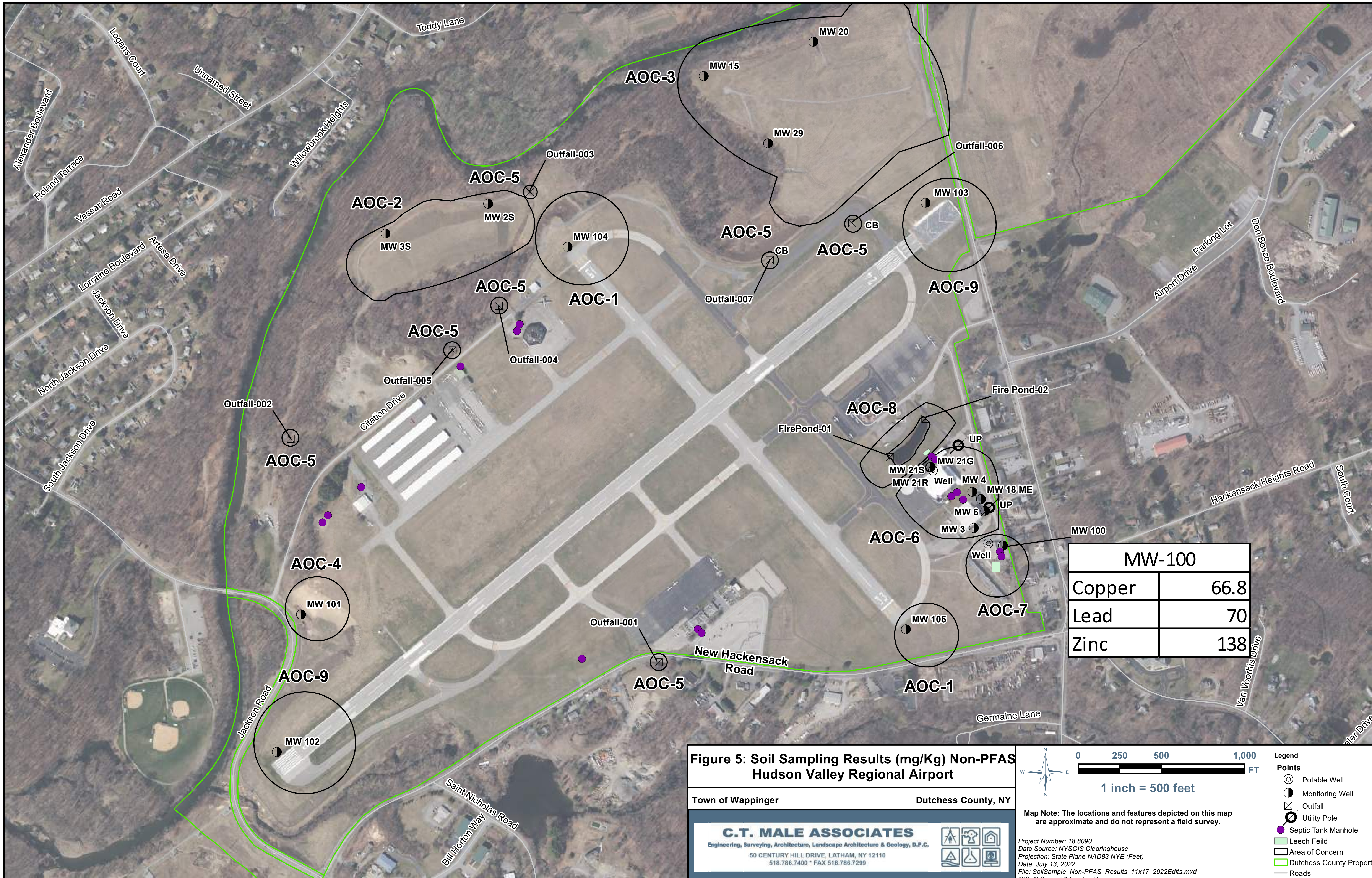

MW-100	
Copper	66.8
Lead	70
Zinc	138

Figure 5: Soil Sampling Results (mg/Kg) Non-PFAS
Hudson Valley Regional Airport

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N / S / E / W

0 250 500 1,000 FT

1 inch = 500 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: SoilSample_Non-PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend

Points
- Potable Well
- Monitoring Well
- Outfall
- Utility Pole
- Septic Tank Manhole
- Leech Feild
- Area of Concern
- Dutchess County Property
- Roads

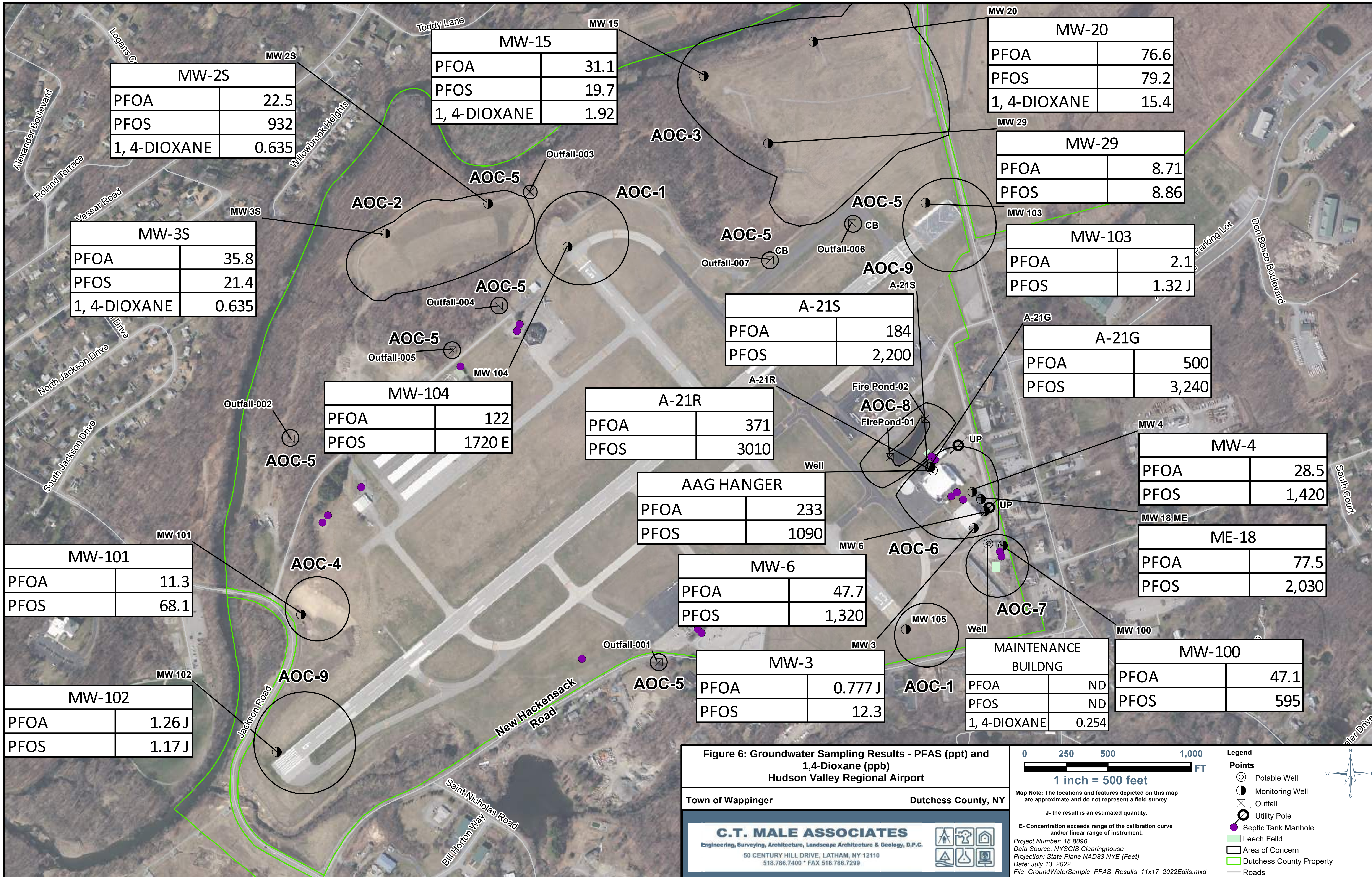
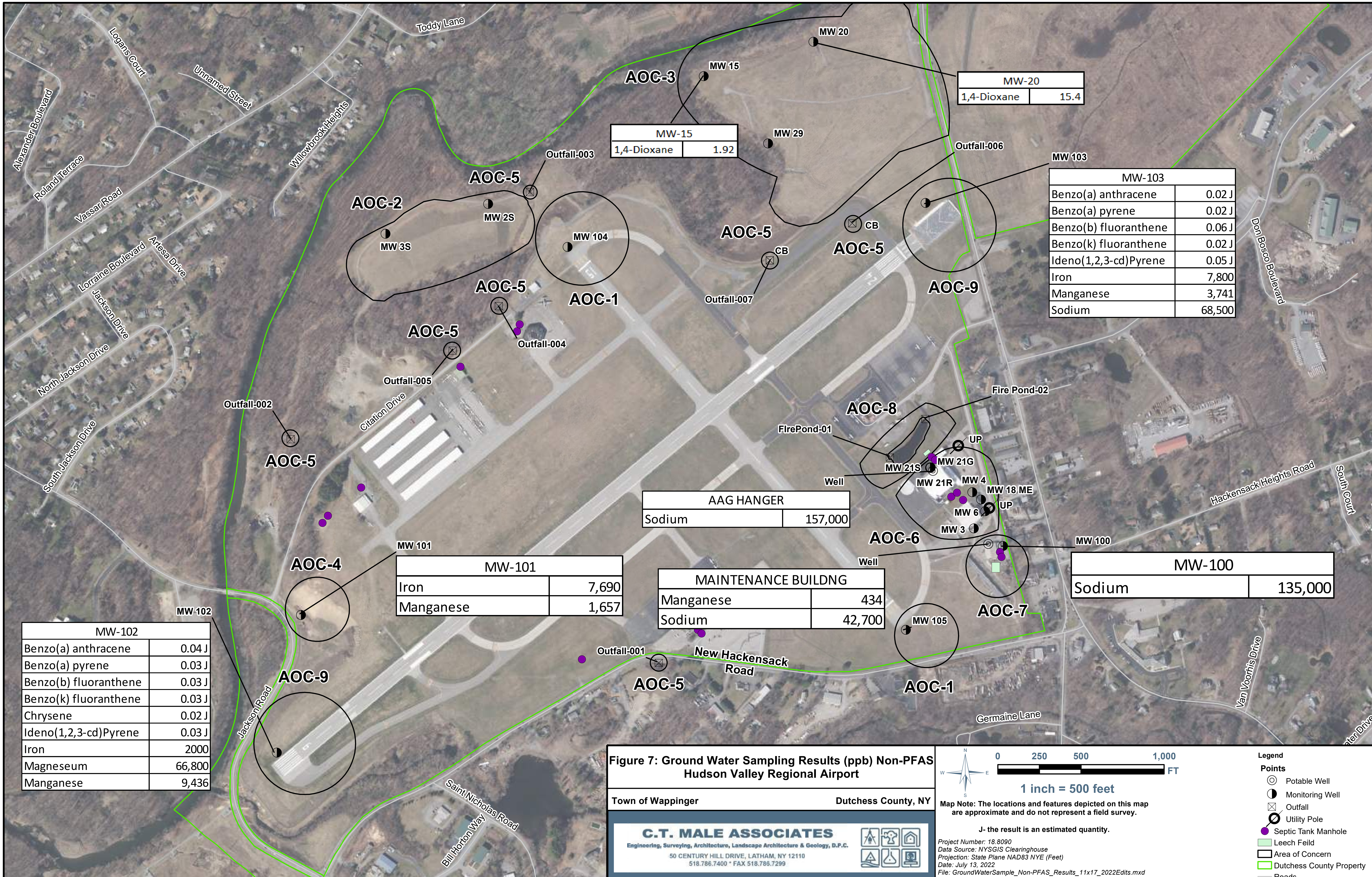


Figure 6: Groundwater Sampling Results - PFAS (ppt) and 1,4-Dioxane (ppb)
Hudson Valley Regional Airport
Town of Wappinger
Dutchess County, NY



MW-20	
1,4-Dioxane	15.4

MW-15	
1,4-Dioxane	1.92

MW-103	
Benzo(a) anthracene	0.02 J
Benzo(a) pyrene	0.02 J
Benzo(b) fluoranthene	0.06 J
Benzo(k) fluoranthene	0.02 J
Ideno(1,2,3-cd)Pyrene	0.05 J
Iron	7,800
Manganese	3,741
Sodium	68,500

AAG HANGER	
Sodium	157,000

MW-101	
Iron	7,690
Manganese	1,657

MAINTENANCE BUILDNG	
Manganese	434
Sodium	42,700

MW-100	
Sodium	135,000

MW-102	
Benzo(a) anthracene	0.04 J
Benzo(a) pyrene	0.03 J
Benzo(b) fluoranthene	0.03 J
Benzo(k) fluoranthene	0.03 J
Chrysene	0.02 J
Ideno(1,2,3-cd)Pyrene	0.03 J
Iron	2000
Magneseum	66,800
Manganese	9,436

Figure 7: Ground Water Sampling Results (ppb) Non-PFAS
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

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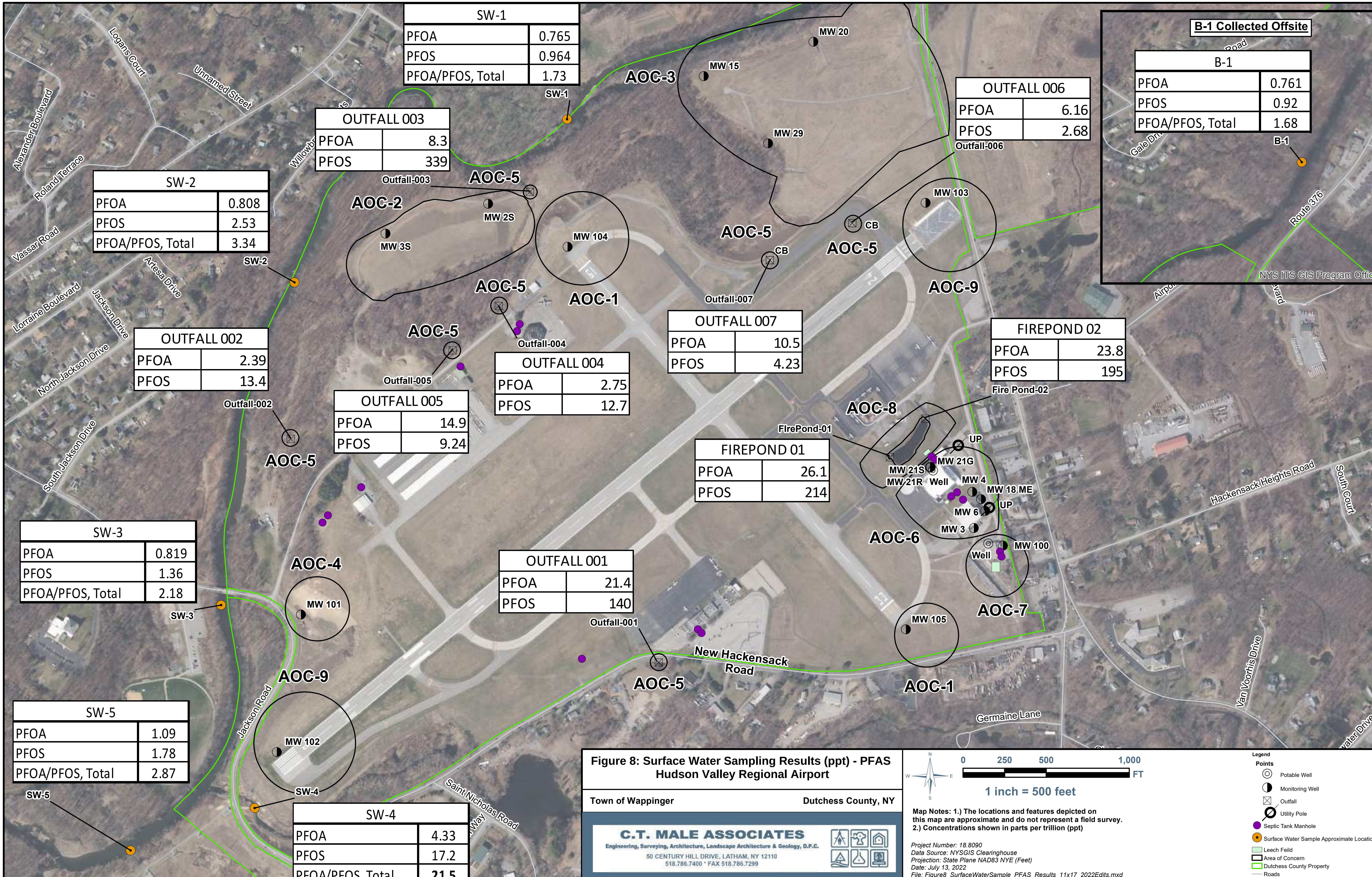
Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

J- the result is an estimated quantity.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: GroundWaterSample_Non-PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville


SW-1
PFOA 0.765
PFOS 0.964
PFOA/PFOS, Total 1.73
OUTFALL 003
PFOA 8.3
PFOS 339
SW-2
PFOA 0.808
PFOS 2.53
PFOA/PFOS, Total 3.34
OUTFALL 002
PFOA 2.39
PFOS 13.4
OUTFALL 005
PFOA 14.9
PFOS 9.24
OUTFALL 004
PFOA 2.75
PFOS 12.7
OUTFALL 007
PFOA 10.5
PFOS 4.23
OUTFALL 006
PFOA 6.16
PFOS 2.68
B-1 Collected Offsite
B-1
PFOA 0.761
PFOS 0.92
PFOA/PFOS, Total 1.68
FIREPOND 02
PFOA 23.8
PFOS 195
FIREPOND 01
PFOA 26.1
PFOS 214
OUTFALL 001
PFOA 21.4
PFOS 140
SW-3
PFOA 0.819
PFOS 1.36
PFOA/PFOS, Total 2.18
SW-5
PFOA 1.09
PFOS 1.78
PFOA/PFOS, Total 2.87
SW-4
PFOA 4.33
PFOS 17.2
PFOA/PFOS, Total 21.5
AOC-1
AOC-2
AOC-3
AOC-4
AOC-5
AOC-6
AOC-7
AOC-8
AOC-9
MW 20
MW 15
MW 29
MW 2S
MW 3S
MW 104
MW 103
MW 101
MW 102
MW 105
MW 100
MW 21G
MW 21S
MW 21R
MW 4
MW 18 ME
MW 6
MW 3
Well
UP
CB
Outfall-001
Outfall-002
Outfall-003
Outfall-004
Outfall-005
Outfall-006
Outfall-007
FirePond-01
Fire Pond-02
New Hackensack Road
Hackensack Heights Road
Jackson Road
Saint Nicholas Road
Germaine Lane
Van Voorhis Drive
South Court
Logans Court
Unnamed Street
Alexander Boulevard
Roland Terrace
Vassar Road
Artesa Drive
Lorraine Boulevard
Jackson Drive
North Jackson Drive
South Jackson Drive
Route 376
Gale Dr
NYS ITS GIS Program Office
Figure 8: Surface Water Sampling Results (ppt) - PFAS
Hudson Valley Regional Airport
Town of Wappinger
Dutchess County, NY
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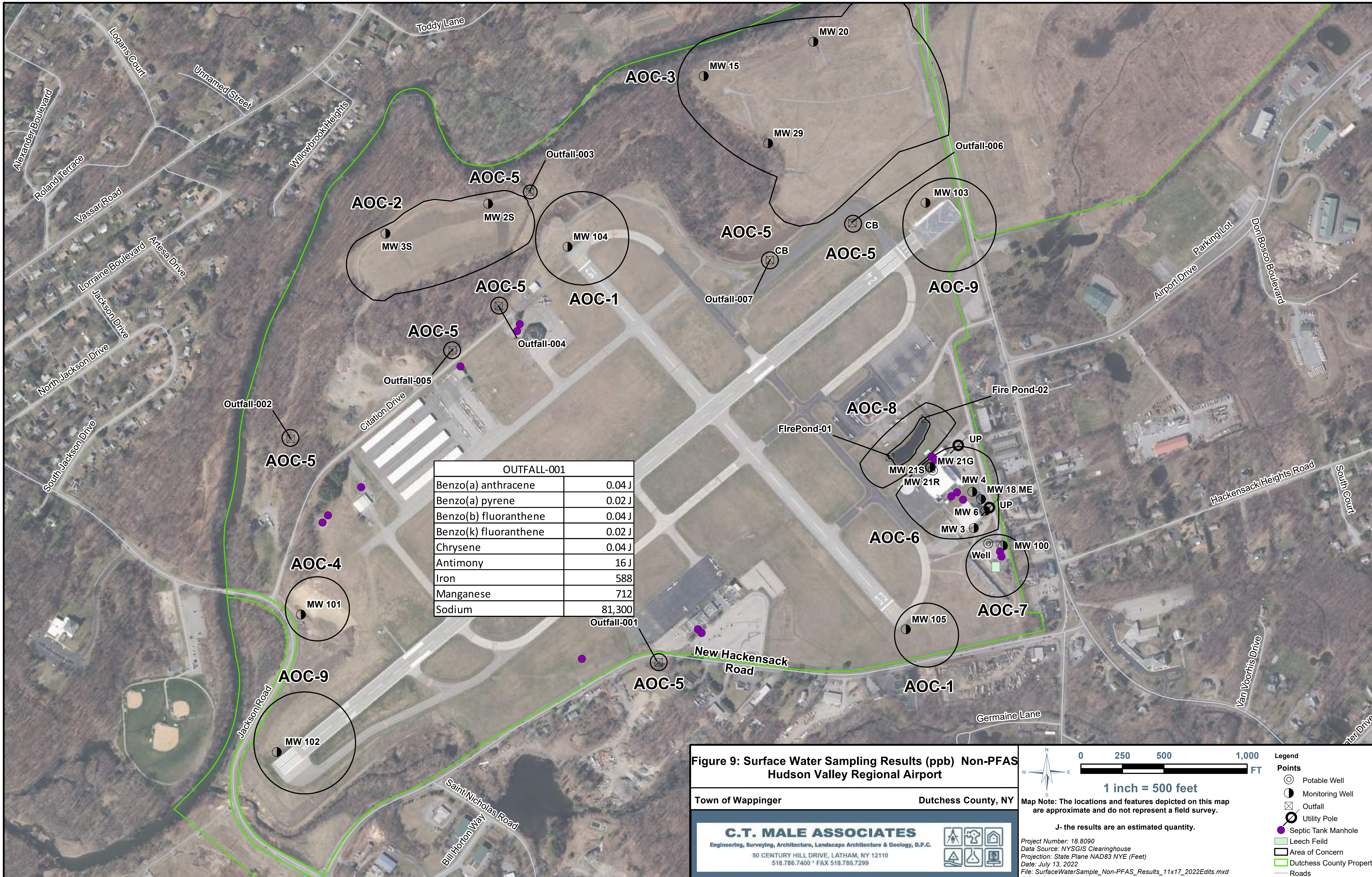
518.786.7400 * FAX 518.786.7299
0 250 500 1,000 FT
1 inch = 500 feet
Map Notes: 1.) The locations and features depicted on this map are approximate and do not represent a field survey.
2.) Concentrations shown in parts per trillion (ppt)
Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: Figure8_SurfaceWaterSample_PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville
Legend
Points
Potable Well
Monitoring Well
Outfall
Utility Pole
Septic Tank Manhole
Surface Water Sample Approximate Location
Leech Feild
Area of Concern
Dutchess County Property
Roads



OUTFALL-001	
Benzo(a) anthracene	0.04 J
Benzo(a) pyrene	0.02 J
Benzo(b) fluoranthene	0.04 J
Benzo(k) fluoranthene	0.02 J
Chrysene	0.04 J
Antimony	16 J
Iron	588
Manganese	712
Sodium	81,300

Figure 9: Surface Water Sampling Results (ppb) Non-PFAS
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

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N S W E

0 250 500 1,000 FT

1 inch = 500 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

J- the results are an estimated quantity.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: SurfaceWaterSample_Non-PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend

Points
- Potable Well
- Monitoring Well
- Outfall
- Utility Pole
- Septic Tank Manhole
- Leech Feild
- Area of Concern
- Dutchess County Property
- Roads

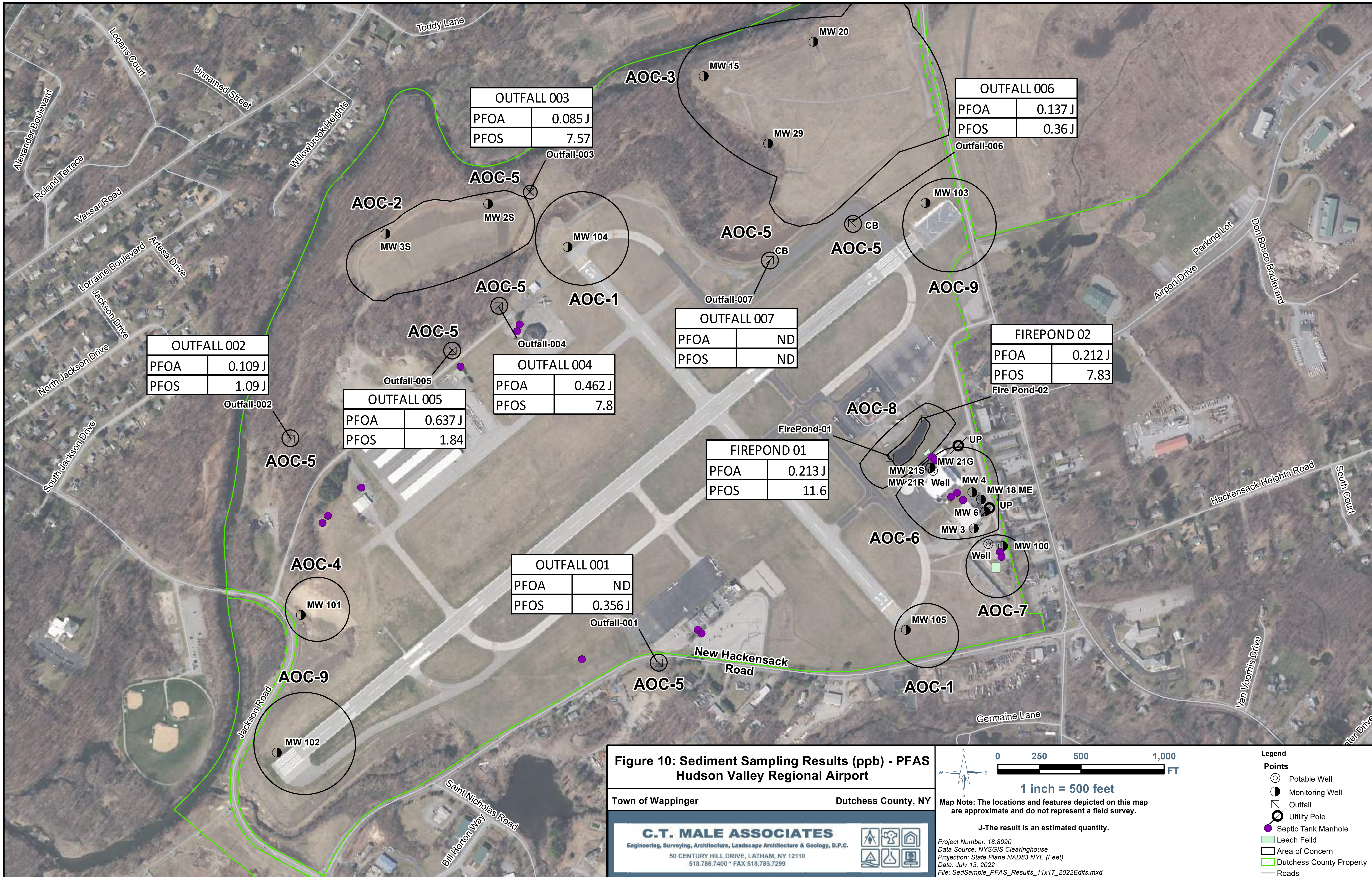
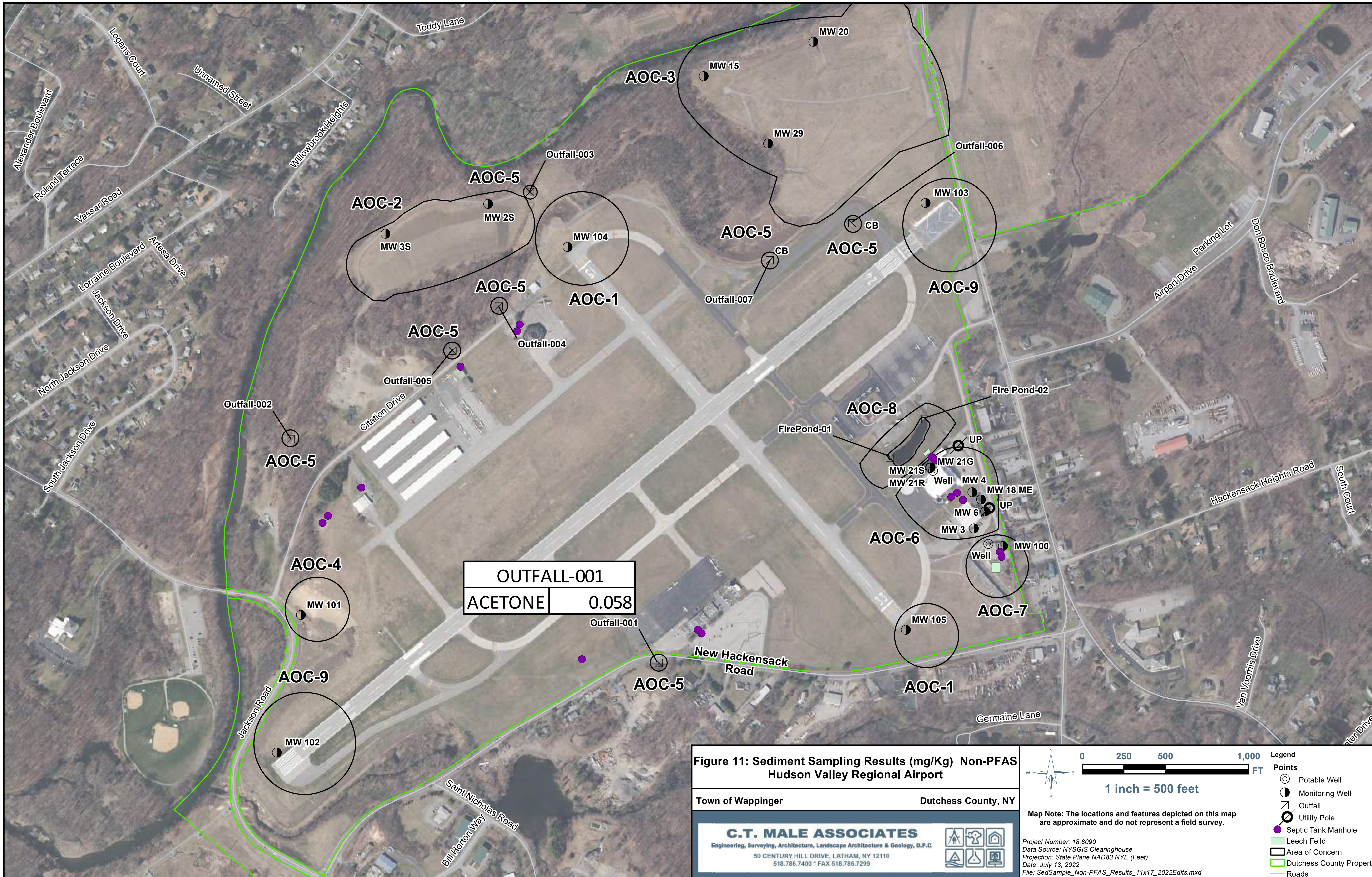


Figure 10: Sediment Sampling Results (ppb) - PFAS
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY



OUTFALL-001	
ACETONE	0.058

Figure 11: Sediment Sampling Results (mg/Kg) Non-PFAS
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

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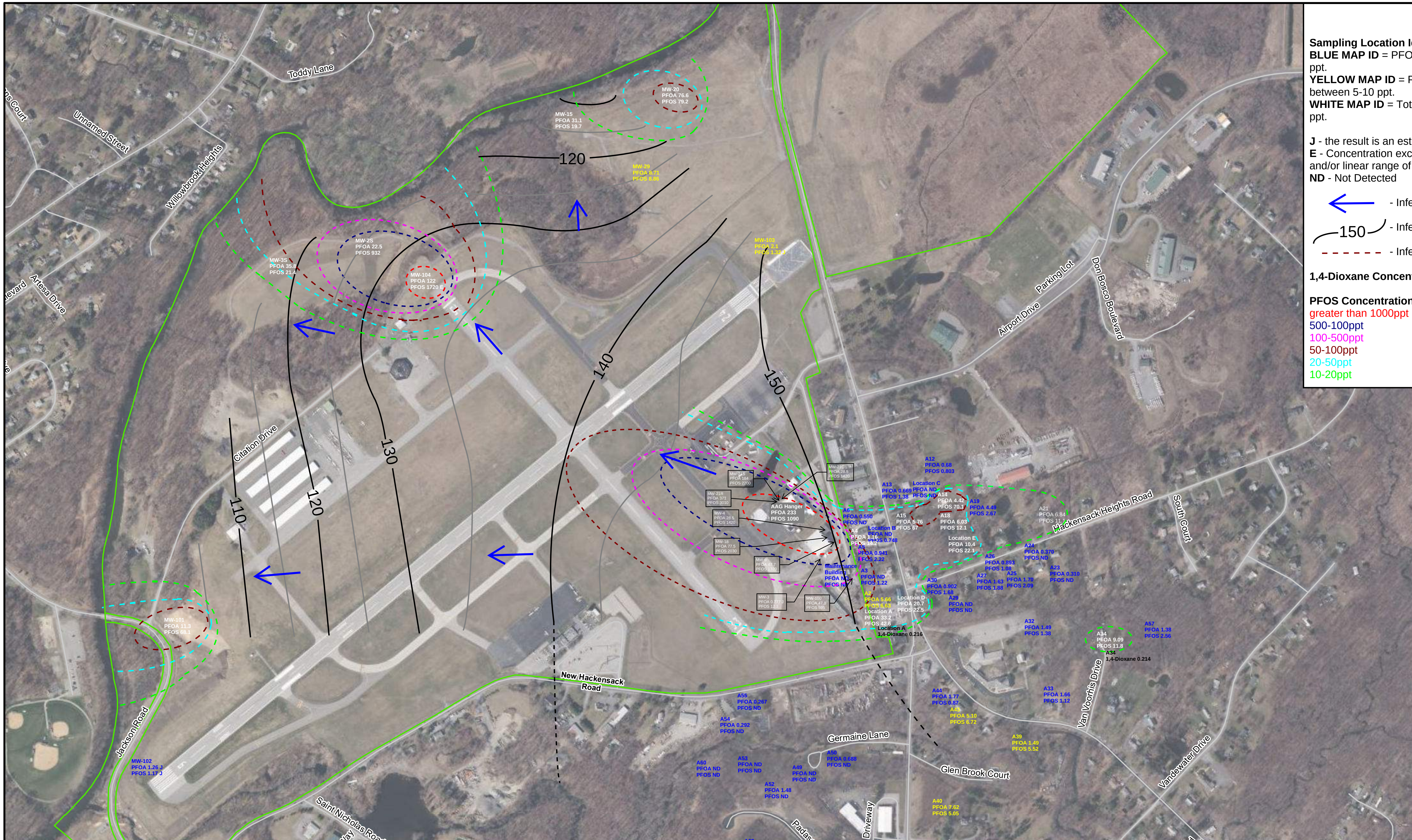
0 250 500 1,000 FT
1 inch = 500 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: SedSample_Non-PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend
Points
- Potable Well
- Monitoring Well
- Outfall
- Utility Pole
- Septic Tank Manhole
- Leech Feild
- Area of Concern
- Dutchess County Property
- Roads



LEGEND

Sampling Location Identification:
BLUE MAP ID = PFOA and/or PFOS results are below 5 ppt.
YELLOW MAP ID = PFOA and/or PFOS results are between 5-10 ppt.
WHITE MAP ID = Total PFOA/PFOS results are above 10 ppt.

J - the result is an estimated quantity.
E - Concentration exceeds range of the calibration curve and/or linear range of instrument.
ND - Not Detected

- Inferred Groundwater Flow Direction

150 - Inferred Groundwater Level Contour (ft)

- Inferred PFOS Concentration Contour

1,4-Dioxane Concentration in ppb

PFOS Concentration Contour Intervals (ppt)
greater than 1000ppt
500-100ppt
100-500ppt
50-100ppt
20-50ppt
10-20ppt

Location #	Well ID	PFOA (ppt)	PFOS (ppt)
1	A2	5.56	6.63
2	A3	ND	1.22
3	A4	1.16	14.2
4	A6	0.55	ND
5	A12	0.68	0.803
6	A14	4.42	70.1
7	A15	5.76	67
8	A19	4.49	2.67
9	A21	6.84	11.1
10	A23	0.31	ND
11	A24	0.37	ND
12	A25	1.7	2.09
13	A26	0.893	1.08
14	A27	1.63	1.88
15	A29	ND	ND
16	A30	0.902	1.68
17	A32	1.49	1.38
18	A33	1.66	1.12
19	A34	9.09	11.8
20	A39	1.49	5.52
21	A40	7.62	5.05
22	A43	5.1	6.72
23	A44	1.77	0.87
24	A49	ND	ND
25	A50	0.688	ND
26	A52	1.48	ND
27	A53	ND	ND
28	A54	0.292	ND
29	A55	0.267	ND
30	A57	1.38	2.56
31	A60	ND	ND
32	A61	6.02	1.36
33	A63	0.474	0.598
34	A64	0.344	ND
35	A66	6.84	1.45
36	A68	3.15	1.94
37	A70	7.15	0.74
38	Location A	33.2	42.6
39	Location B	ND	0.748
	A5	0.941	2.22
40	Location C	ND	ND
	A13	0.669	1.38
41	Location D	20.7	22.5
42	Location E	10.4	22.1
	A18	6.03	12.1

Location B and A5, Location C and A13, and Location E and A18 are grouped to show both samples were collected from the same well, once in 2019 and once in 2021, respectively.

Figure 12: Groundwater Flow and PFOS Concentration Map
Hudson Valley Regional Airport

Town of Wappinger | Dutchess County, NY

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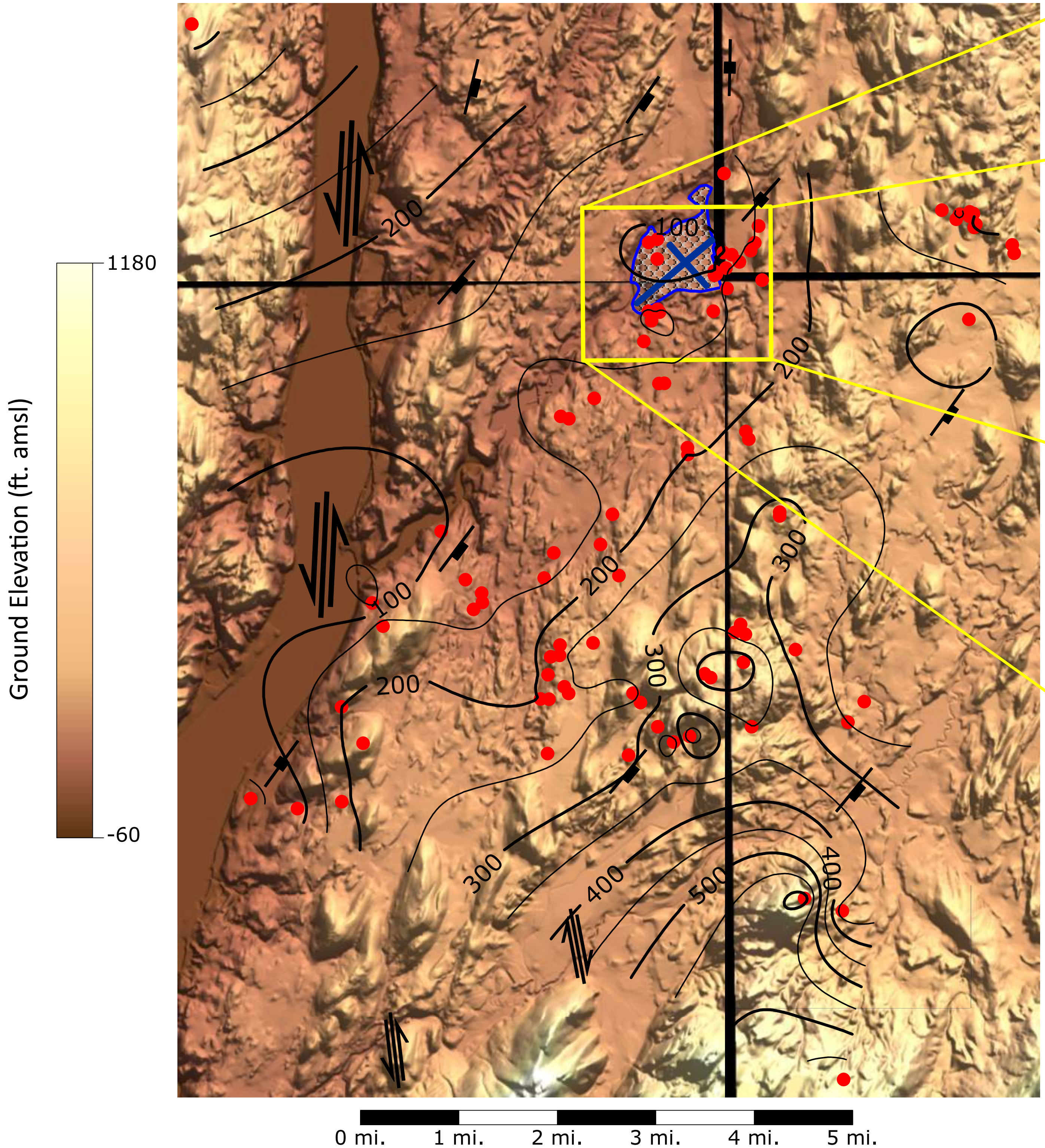
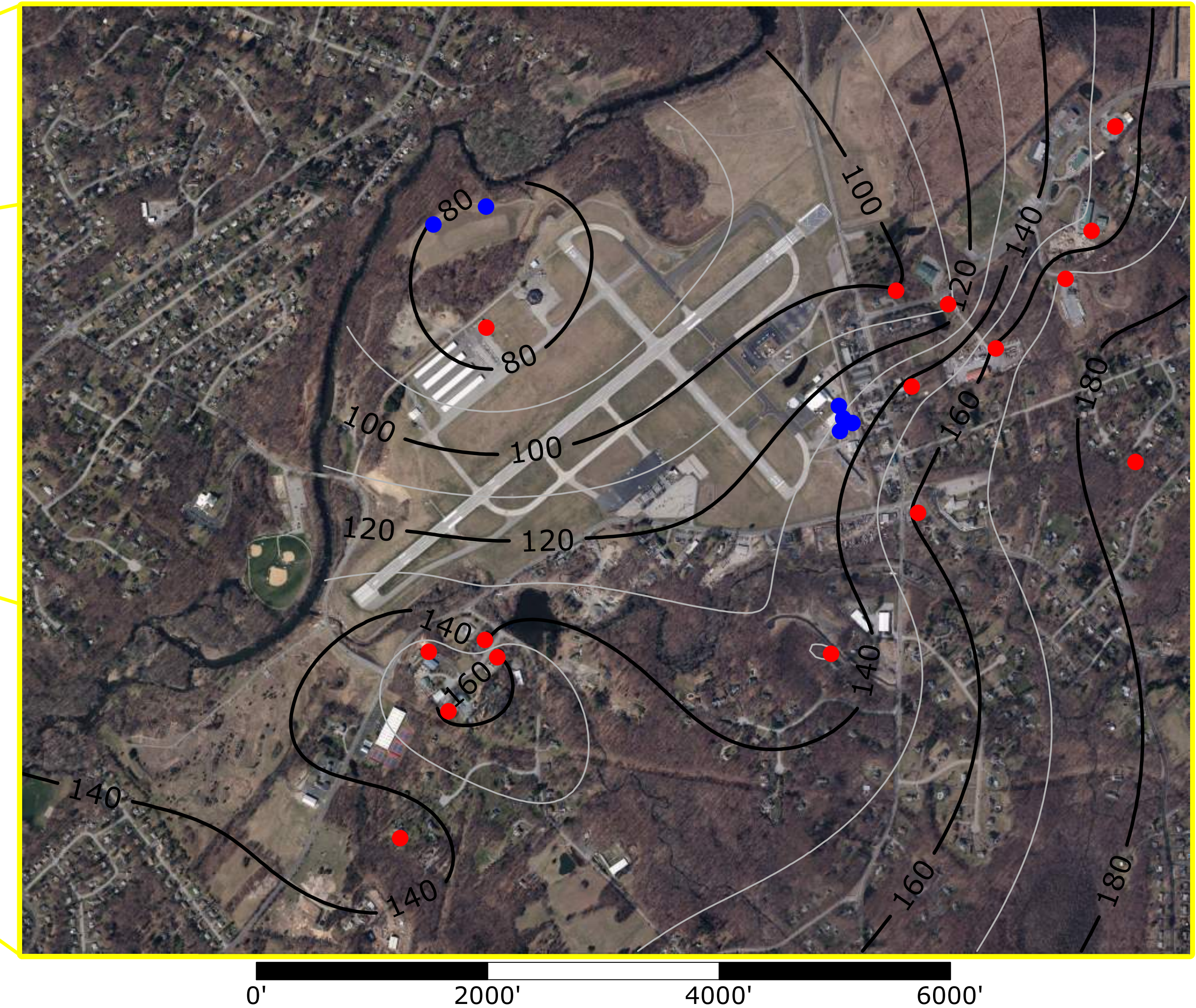
0 300 600 1,200 FT

1 inch = 600 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: 2021_AiportSamplingMap_BlankTemplate_11x17_2022Edits.mxd
GIS: D Landreville
PDF Edits: A Malamet





- Water Supply well, monitoring wel or boring location.
- Monitoring well or boring location (only differentiated on Site pop-out).
- Dipping fracture/brittle structure trend indicator. inferred from the Preliminary Brittle Structure Map of New York (Isachsen, 1977).
- Vertical or near vertical fracture/brittle structure trend indicator, inferred from the Preliminary Brittle Structure Map of New York (Isachsen, 1977).
- Transform fault line with direction of movement as depicted on the Preliminary Brittle Structure Map of New York (Isachsen, 1977).
- 140 Contour lines on the Site pop-up represent the approximate bedrock surface in ft. amsl using onsite monitoring well data and offsite supply well information (NYSDEC Division of Water Resource Management).

1. Shaded relief depicts ground surface, generated from Digital Elevation Models with pixel resolutions of approximately 10 meters (Cornell University Geospatial Information Repository, 1995).

2. Orthoimagery loaded from NYS GIS Clearinghouse (2016).

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

DATE	REVISIONS RECORD/DESCRIPTION	DRAFTED	CHECK	APPR.
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			

APPROVED:
DRAFTED : D. KING
CHECKED :
PROJ. NO : 18.8090
SCALE : AS NOTED
DATE :

Figure 13: Regional Bedrock Map

HUDSON VALLEY REGIONAL AIRPORT
18 GRIFFITH WAY

TOWN OF WAPPINGER DUTCHESS COUNTY, NEW YORK

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COBLESKILL, NY · GLENS FALLS, NY · POUGHKEEPSIE, NY
JOHNSTOWN, NY · RED HOOK, NY · SYRACUSE, NY
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SHEET OF
DWG. NO:

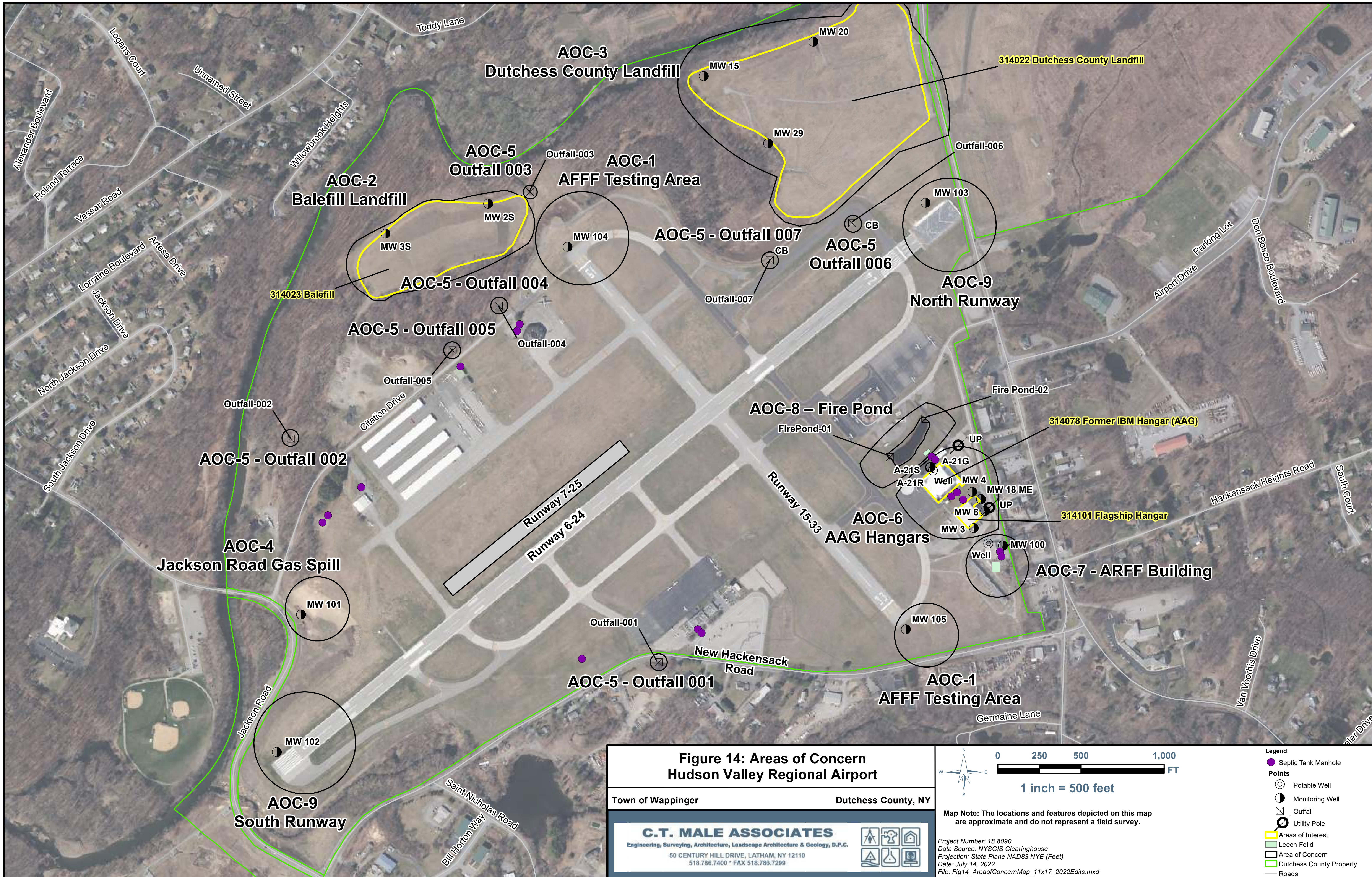

Figure 14: Areas of Concern
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

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0 250 500 1,000 FT
1 inch = 500 feet

Map Note: The locations and features depicted on this map are approximate and do not represent a field survey.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 14, 2022
File: Fig14_AreaofConcernMap_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend
Septic Tank Manhole
Points
Potable Well
Monitoring Well
Outfall
Utility Pole
Areas of Interest
Leech Feild
Area of Concern
Dutchess County Property
Roads

TABLES

Table 1 - AOC-1, Firefighting AFFF Testing Area - PFAS and 1,4-D

		SAMPLE ID:	HVRA-MW104-190809				HVRA-MW104-190809			
		LAB ID:	L1935927-11				L1935927-11 R1			
		COLLECTION DATE:	8/9/2019				8/9/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS(1)								
ANALYTE	**CAS**	**(ug/l)**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**
1,4 DIOXANE BY 8270D-SIM										
1,4-Dioxane	123-91-1	NS	ND		0.15	0.0339	-		-	-
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		**(ng/l)**								
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.89	1.15	-		-	-
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	5.68		1.89	1.26	-		-	-
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.89	0.761	-		-	-
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.89	0.614	-		-	-
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	151	J	1.89	0.225	-		-	-
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	113		1.89	0.386	-		-	-
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.89	0.928	-		-	-
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	0.53	J	1.89	0.288	-		-	-
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.89	0.352	-		-	-
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	47.7		1.89	0.652	-		-	-
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	92.6		1.89	0.213	-		-	-
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	3030	E	1.89	0.356	5420		20	3.76
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	710		1.89	0.311	-		-	-
Perfluorononanoic Acid (PFNA)	375-95-1	NS	22.6		1.89	0.295	-		-	-
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	16.8		1.89	0.549	-		-	-
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	**1720**	E	1.89	0.477	**2280**		20	5.04
Perfluorooctanoic Acid (PFOA)	335-67-1	70	**122**		1.89	0.223	-		-	-
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	205		1.89	0.375	-		-	-
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND	J	1.89	0.235	-		-	-
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND	J	1.89	0.31	-		-	-
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.89	0.246	-		-	-
PFOA/PFOS, Total			1840		1.89	0.223	-		-	-

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

R - Analytical results are from sample re-analysis.

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 1A - AOC-1, Firefighting AFFF Testing Area - PFAS and 1,4-D

		SAMPLE ID:	HVRA-MW104-0.5				HVRA-MW104-2.0				HVRA-MW104-9.5				HVRA-MW105-0.5				HVRA-MW105-2.0				HVRA-MW105-4.0			
		LAB ID:	L1936143-15				L1936143-16				L1935085-09				L1936143-18				L1936143-19				L1935085-12			
		COLLECTION DATE:	8/12/2019				8/12/2019				8/6/2019				8/12/2019				8/12/2019				8/6/2019			
		SAMPLE DEPTH:	0.5' - 2.0'				2.0' - 3.0'				9.5' - 10.5'				0.5' - 2.0'				2.0' - 3.0'				4.0' - 5.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
		NY-UNRES(1)																								
ANALYTE	**CAS**	**(mg/kg)**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**
1,4 DIOXANE BY 8270D-SIM																										
1,4-Dioxane	123-91-1	0.1	ND		0.00756	0.00193	ND		0.00743	0.00189	-		-	-	ND		0.0108	0.00276	ND		0.00824	0.0021	-	-	-	-
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		**(ug/kg)**																								
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.04	0.3	ND		1.06	0.303	ND		1.02	0.294	ND		1.45	0.416	ND		0.953	0.274	ND		1.02	0.294
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	0.441	J	1.04	0.187	ND		1.06	0.19	5.36		1.02	0.184	ND		1.45	0.26	ND		0.953	0.171	4.03	J	1.02	0.184
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.04	0.088	ND	J	1.06	0.089	ND	J	1.02	0.087	0.262	J	1.45	0.122	ND		0.953	0.081	ND	J	1.02	0.087
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND	J	1.04	0.21	ND	J	1.06	0.213	ND	J	1.02	0.206	ND	J	1.45	0.292	ND		0.953	0.192	ND	J	1.02	0.206
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	ND		1.04	0.041	0.111	J	1.06	0.041	ND		1.02	0.04	ND		1.45	0.057	ND		0.953	0.037	0.075	J	1.02	0.04
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	0.934	J	1.04	0.024	0.268	J	1.06	0.024	ND		1.02	0.023	1.46		1.45	0.033	0.807	J	0.953	0.022	0.082	J	1.02	0.023
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	2.89		1.04	0.16	0.73	J	1.06	0.162	ND		1.02	0.157	2.47		1.45	0.222	0.796	J	0.953	0.146	ND		1.02	0.157
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	0.174	J	1.04	0.07	ND		1.06	0.071	ND	J	1.02	0.069	0.953	J	1.45	0.097	0.529	J	0.953	0.064	ND	J	1.02	0.069
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	0.128	J	1.04	0.073	ND		1.06	0.074	ND	J	1.02	0.072	0.492	J	1.45	0.102	0.279	J	0.953	0.067	ND	J	1.02	0.072
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	0.428	J	1.04	0.142	0.516	J	1.06	0.144	ND		1.02	0.14	ND		1.45	0.198	0.223	J	0.953	0.13	ND		1.02	0.14
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	0.431	J	1.04	0.047	0.143	J	1.06	0.048	ND		1.02	0.046	0.304	J	1.45	0.065	0.185	J	0.953	0.043	ND	J	1.02	0.046
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	16.6	J	1.04	0.063	12.1		1.06	0.064	3.65		1.02	0.062	6.16		1.45	0.088	5.57		0.953	0.058	4.77		1.02	0.062
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	1.91		1.04	0.055	0.795	J	1.06	0.056	0.138	J	1.02	0.054	0.964	J	1.45	0.076	0.723	J	0.953	0.05	0.342	J	1.02	0.054
Perfluorononanoic Acid (PFNA)	375-95-1	NS	1.43		1.04	0.078	0.398	J	1.06	0.079	ND		1.02	0.077	0.878	J	1.45	0.109	0.838	J	0.953	0.072	0.128	J	1.02	0.077
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	6.47		1.04	0.102	ND		1.06	0.104	ND		1.02	0.1	ND		1.45	0.142	ND		0.953	0.093	0.142	J	1.02	0.1
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	NS	129		1.04	0.136	109		1.06	0.137	43.8		1.02	0.133	89.5		1.45	0.188	113		0.953	0.124	56.9	J	1.02	0.133
Perfluorooctanoic Acid (PFOA)	335-67-1	NS	2.42		1.04	0.044	0.688	J	1.06	0.044	0.142	J	1.02	0.043	1.1	J	1.45	0.061	0.648	J	0.953	0.04	0.164	J	1.02	0.043
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	0.954	J	1.04	0.048	0.335	J	1.06	0.049	ND		1.02	0.047	2		1.45	0.067	1.34	J	0.953	0.044	0.219	J	1.02	0.047
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.04	0.056	ND		1.06	0.057	ND		1.02	0.055	0.137	J	1.45	0.078	0.071	J	0.953	0.052	ND		1.02	0.055
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.04	0.214	ND		1.06	0.216	ND		1.02	0.21	ND		1.45	0.297	ND		0.953	0.195	ND		1.02	0.209
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	0.318	J	1.04	0.049	0.081	J	1.06	0.049	ND	J	1.02	0.048	0.648	J	1.45	0.068	0.519	J	0.953	0.045	ND	J	1.02	0.048
PFOA/PFOS, Total			131		1.04	0.044	110	J	1.06	0.044	43.9	J	1.02	0.043	90.6	J	1.45	0.061	114	J	0.953	0.04	57.1	J	1.02	0.043
GENERAL CHEMISTRY		**(mg/kg)**																								
Solids, Total	NONE		93.2		0.1	NA	93.7		0.1	NA	94.7		0.1	NA	68.6		0.1	NA	94.3		0.1	NA	93.9		0.1	NA

Notes:
PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 2 - AOC-2, Former Balefill Landfill - PFAS and 1,4-D

		SAMPLE ID:	HVRA-BFL-2S-190801				HVRA-BFL-3S-190801			
		LAB ID:	L1934623-02				L1934623-01			
		COLLECTION DATE:	8/1/2019				8/1/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS(1)								
ANALYTE	CAS		Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM		(ug/l)								
1,4-Dioxane	123-91-1	NS	0.635		0.15	0.0339	0.635		0.139	0.0314
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ng/l)								
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.97	1.19	ND		1.99	1.21
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.97	1.31	ND		1.99	1.33
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.97	0.791	1620	J	1.99	0.801
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.97	0.638	793	J	1.99	0.645
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	7.11		1.97	0.234	2310		1.99	0.237
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	9.43		1.97	0.402	13600		1.99	0.406
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.97	0.964	ND		1.99	0.976
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		1.97	0.299	307	J	1.99	0.303
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.97	0.366	ND		1.99	0.37
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	16.8		1.97	0.677	ND		1.99	0.685
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	5.37		1.97	0.222	8990		1.99	0.224
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	663		1.97	0.37	7760		1.99	0.374
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	58.2		1.97	0.323	13200		1.99	0.327
Perfluorononanoic Acid (PFNA)	375-95-1	NS	0.547	J	1.97	0.307	916	J	1.99	0.311
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.97	0.571	741	J	1.99	0.578
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	**932**		1.97	0.496	**21400**		1.99	0.502
Perfluorooctanoic Acid (PFOA)	335-67-1	70	22.5		1.97	0.232	**35800**		1.99	0.235
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	10.8		1.97	0.39	11200		1.99	0.394
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.97	0.244	ND		1.99	0.247
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.97	0.322	ND		1.99	0.326
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.97	0.256	ND		1.99	0.259
PFOA/PFOS, Total			955		1.97	0.232	57200		1.99	0.235

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

Table 3 - AOC-2, Former Balefill Landfill - SVOCs

		SAMPLE ID:	HVRA-BFL-2S-190801				HVRA-BFL-2S-190801				HVRA-BFL-3S-190801			
		LAB ID:	L1934623-02				L1934623-02 R1				L1934623-01			
		COLLECTION DATE:	8/1/2019				8/1/2019				8/1/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER			
		NY-AWQS(1)												
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS														
1,2,4,5-Tetrachlorobenzene	95-94-3	5	ND		10	0.44	-		-	-	ND		10	0.44
2,4-Dichlorophenol	120-83-2	1	ND		5	0.41	-		-	-	ND		5	0.41
2,4-Dinitrophenol	51-28-5	10	ND		20	6.6	-		-	-	ND		20	6.6
2,4-Dinitrotoluene	121-14-2	5	ND		5	1.2	-		-	-	ND		5	1.2
2,6-Dinitrotoluene	606-20-2	5	ND		5	0.93	-		-	-	ND		5	0.93
2-Nitroaniline	88-74-4	5	ND		5	0.5	-		-	-	ND		5	0.5
3,3'-Dichlorobenzidine	91-94-1	5	ND		5	1.6	-		-	-	ND		5	1.6
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	NS	0.72	J	5	0.48	-		-	-	ND		5	0.48
3-Nitroaniline	99-09-2	5	ND		5	0.81	-		-	-	ND		5	0.81
4-Chloroaniline	106-47-8	5	ND		5	1.1	-		-	-	ND		5	1.1
4-Nitroaniline	100-01-6	5	ND		5	0.8	-		-	-	ND		5	0.8
Atrazine	1912-24-9	7.5	ND		10	0.76	-		-	-	ND		10	0.76
Bis(2-chloroethoxy)methane	111-91-1	5	ND		5	0.5	-		-	-	ND		5	0.5
Bis(2-chloroethyl)ether	111-44-4	1	ND		2	0.5	-		-	-	ND		2	0.5
Hexachlorocyclopentadiene	77-47-4	5	ND		20	0.69	-		-	-	ND		20	0.69
Nitrobenzene	98-95-3	0.4	ND		2	0.77	-		-	-	ND		2	0.77
Phenol	108-95-2	1	ND		5	0.57	-		-	-	ND		5	0.57
Total SVOCs			0.72	-	-	-	-	-	-	-	-	-	-	-
SEMIVOLATILE ORGANICS BY GC/MS-SIM														
2-Methylnaphthalene	91-57-6	NS	0.17	B	0.1	0.02	0.04	J	0.1	0.02	0.02	JB	0.1	0.02
Benzo(a)anthracene	56-55-3	0.002	ND		0.1	0.02	ND		0.1	0.02	ND		0.1	0.02
Benzo(a)pyrene	50-32-8	ND	ND		0.1	0.02	ND		0.1	0.02	ND		0.1	0.02
Benzo(b)fluoranthene	205-99-2	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Benzo(k)fluoranthene	207-08-9	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Chrysene	218-01-9	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Hexachlorobenzene	118-74-1	0.04	ND		0.8	0.01	ND		0.8	0.01	ND		0.8	0.01
Hexachlorobutadiene	87-68-3	0.5	ND		0.5	0.05	ND		0.5	0.05	ND		0.5	0.05
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Naphthalene	91-20-3	10	0.05	J	0.1	0.05	0.13		0.1	0.05	0.06	J	0.1	0.05
Phenanthrene	85-01-8	50	0.04	J	0.1	0.02	ND		0.1	0.02	ND		0.1	0.02
Total SVOCs			0.26	-	-	-	0.17	-	-	-	0.08	-	-	-

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

B - The analyte was detected above the reporting limit in the associated method blank.

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

R - Analytical results are from sample re-analysis.

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 4 - AOC-2, Former Balefill Landfill - PCBs

		SAMPLE ID:	HVRA-BFL2S-190801				HVRA-BFL-3S-190801			
		LAB ID:	L1934623-02				L1934623-01			
		COLLECTION DATE:	8/1/2019				8/1/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS[1]								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
POLYCHLORINATED BIPHENYLS BY GC										
Aroclor 1254	11097-69-1	0.09*	ND		0.083	0.039	0.042	J	0.083	0.039
PCBs, Total	1336-36-3	0.09*	ND		0.083	0.032	0.042	J	0.083	0.032

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

* - Applies to the sum of these substances.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 5 - AOC-2, Former Balefill Landfill - Pesticides

		SAMPLE ID:	HVRA-BFL2S-190801				HVRA-BFL-3S-190801			
		LAB ID:	L1934623-02				L1934623-01			
		COLLECTION DATE:	8/1/2019				8/1/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS(1)								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
ORGANOCHLORINE PESTICIDES BY GC										
Aldrin	309-00-2	ND	ND		0.014	0.002	ND		0.014	0.002
Alpha-BHC	319-84-6	0.01	ND		0.014	0.003	ND		0.014	0.003
Chlordane	57-74-9	0.05	ND		0.143	0.033	ND		0.143	0.033
Dieldrin	60-57-1	0.004	ND		0.029	0.003	ND		0.029	0.003
Endrin	72-20-8	ND	ND		0.029	0.003	ND		0.029	0.003
Toxaphene	8001-35-2	0.06	ND		0.143	0.045	ND		0.143	0.045

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 6 - AOC-3, Former Dutchess County Landfill - PFAS and 1,4-D

		SAMPLE ID:	HVRA-DL-MW-15-190802				HVRA-DLMW-20-190802				HVRA-DLMW-29-190802				HVRA-FTB01-190802				HVRA-LTB01-190802			
		LAB ID:	L1934623-04				L1934623-03				L1934623-05				L1934623-06				L1934623-07			
		COLLECTION DATE:	8/2/2019				8/2/2019				8/2/2019				8/2/2019				8/2/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER				WATER				WATER			
		NY-AWQS(1)																				
ANALYTE	**CAS**		**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**
1,4 DIOXANE BY 8270D-SIM		**(ug/l)**																				
1,4-Dioxane	123-91-1	NS	1.92		0.139	0.0314	15.4		0.139	0.0314	ND		0.15	0.0339	-		-	-	-		-	-
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		**(ng/l)**																				
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.82	1.1	ND		2.05	1.24	ND		1.86	1.13	ND		1.84	1.12	ND		1.89	1.14
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.82	1.21	ND		2.05	1.36	ND		1.86	1.24	ND		1.84	1.23	ND		1.89	1.26
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	0.847	J	1.82	0.731	7.32		2.05	0.824	1.01	J	1.86	0.747	ND		1.84	0.742	ND		1.89	0.758
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.82	0.589	13.5		2.05	0.664	ND		1.86	0.602	ND		1.84	0.598	ND		1.89	0.611
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	2.33		1.82	0.216	6.74		2.05	0.244	1.53	J	1.86	0.221	ND		1.84	0.22	ND		1.89	0.224
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	10.1		1.82	0.371	20.4		2.05	0.418	7.01		1.86	0.379	ND		1.84	0.376	ND		1.89	0.385
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.82	0.891	ND		2.05	1	ND		1.86	0.911	ND		1.84	0.904	ND		1.89	0.924
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		1.82	0.276	ND		2.05	0.311	ND		1.86	0.282	ND		1.84	0.28	ND		1.89	0.287
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.82	0.338	ND		2.05	0.381	ND		1.86	0.346	ND		1.84	0.343	ND		1.89	0.351
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	1.12	J	1.82	0.625	2.41		2.05	0.705	ND		1.86	0.639	ND		1.84	0.635	ND		1.89	0.649
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	5.79		1.82	0.205	19.8		2.05	0.231	2.49		1.86	0.209	ND		1.84	0.208	ND		1.89	0.212
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	6.01		1.82	0.342	20.1		2.05	0.385	1.54	J	1.86	0.349	ND		1.84	0.347	ND		1.89	0.355
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	10.8		1.82	0.298	46.5		2.05	0.336	5.75		1.86	0.305	0.376	J	1.84	0.302	0.389	J	1.89	0.309
Perfluorononanoic Acid (PFNA)	375-95-1	NS	0.818	J	1.82	0.284	0.524	J	2.05	0.32	0.409	J	1.86	0.29	ND		1.84	0.288	ND		1.89	0.294
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.82	0.527	ND		2.05	0.594	ND		1.86	0.539	ND		1.84	0.535	ND		1.89	0.547
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	19.7		1.82	0.458	**79.2**		2.05	0.516	8.86		1.86	0.468	ND		1.84	0.465	ND		1.89	0.475
Perfluorooctanoic Acid (PFOA)	335-67-1	70	31.1		1.82	0.214	**76.6**		2.05	0.242	8.71		1.86	0.219	ND		1.84	0.218	ND		1.89	0.223
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	4.84		1.82	0.36	12.4		2.05	0.406	3.81		1.86	0.368	ND		1.84	0.365	ND		1.89	0.374
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.82	0.225	ND		2.05	0.254	ND		1.86	0.23	ND		1.84	0.229	ND		1.89	0.234
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.82	0.297	ND		2.05	0.335	ND		1.86	0.304	ND		1.84	0.302	ND		1.89	0.309
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.82	0.236	0.557	J	2.05	0.266	ND		1.86	0.242	ND		1.84	0.24	ND		1.89	0.245
PFOA/PFOS, Total			50.8		1.82	0.214	156		2.05	0.242	17.6		1.86	0.219	ND		1.84	0.218	ND		1.89	0.223

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 7 - AOC-3, Former Dutchess County Landfill - SVOCs

		SAMPLE ID:	HVRA-DL-MW-15-190802				HVRA-DLMW-20-190802				HVRA-DLMW-29-190802			
		LAB ID:	L1934623-04				L1934623-03				L1934623-05			
		COLLECTION DATE:	8/2/2019				8/2/2019				8/2/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER			
		NY-AWQS(1)												
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS														
1,2,4,5-Tetrachlorobenzene	95-94-3	5	ND		10	0.44	ND		10	0.44	ND		10	0.44
2,4-Dichlorophenol	120-83-2	1	ND		5	0.41	ND		5	0.41	ND		5	0.41
2,4-Dinitrophenol	51-28-5	10	ND		20	6.6	ND		20	6.6	ND		20	6.6
2,4-Dinitrotoluene	121-14-2	5	ND		5	1.2	ND		5	1.2	ND		5	1.2
2,6-Dinitrotoluene	606-20-2	5	ND		5	0.93	ND		5	0.93	ND		5	0.93
2-Nitroaniline	88-74-4	5	ND		5	0.5	ND		5	0.5	ND		5	0.5
3,3'-Dichlorobenzidine	91-94-1	5	ND		5	1.6	ND		5	1.6	ND		5	1.6
3-Nitroaniline	99-09-2	5	ND		5	0.81	ND		5	0.81	ND		5	0.81
4-Chloroaniline	106-47-8	5	ND		5	1.1	ND		5	1.1	ND		5	1.1
4-Nitroaniline	100-01-6	5	ND		5	0.8	ND		5	0.8	ND		5	0.8
Atrazine	1912-24-9	7.5	ND		10	0.76	ND		10	0.76	ND		10	0.76
Bis(2-chloroethoxy)methane	111-91-1	5	ND		5	0.5	ND		5	0.5	ND		5	0.5
Bis(2-chloroethyl)ether	111-44-4	1	ND		2	0.5	ND		2	0.5	ND		2	0.5
Hexachlorocyclopentadiene	77-47-4	5	ND		20	0.69	ND		20	0.69	ND		20	0.69
Nitrobenzene	98-95-3	0.4	ND		2	0.77	ND		2	0.77	ND		2	0.77
Phenol	108-95-2	1	ND		5	0.57	ND		5	0.57	ND		5	0.57
Total SVOCs			-	-	-	-	-	-	-	-	-	-	-	-
SEMIVOLATILE ORGANICS BY GC/MS-SIM														
2-Methylnaphthalene	91-57-6	NS	ND		0.1	0.02	0.04	JB	0.1	0.02	ND		0.1	0.02
Acenaphthene	83-32-9	20	0.04	J	0.1	0.01	0.24		0.1	0.01	ND		0.1	0.01
Acenaphthylene	208-96-8	NS	ND		0.1	0.01	0.02	J	0.1	0.01	ND		0.1	0.01
Benzo(a)anthracene	56-55-3	0.002	ND		0.1	0.02	ND		0.1	0.02	ND		0.1	0.02
Benzo(a)pyrene	50-32-8	ND	ND		0.1	0.02	ND		0.1	0.02	ND		0.1	0.02
Benzo(b)fluoranthene	205-99-2	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Benzo(k)fluoranthene	207-08-9	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Chrysene	218-01-9	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Hexachlorobenzene	118-74-1	0.04	ND		0.8	0.01	ND		0.8	0.01	ND		0.8	0.01
Hexachlorobutadiene	87-68-3	0.5	ND		0.5	0.05	ND		0.5	0.05	ND		0.5	0.05
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Naphthalene	91-20-3	10	ND		0.1	0.05	0.35		0.1	0.05	ND		0.1	0.05
Total SVOCs			0.04	-	-	-	0.65	-	-	-	-	-	-	-

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

B - The analyte was detected above the reporting limit in the associated method blank.

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 8 - AOC-3, Former Dutchess County Landfill - PCBs

		SAMPLE ID:	HVRA-DL-MW-15-190802				HVRA-DLMW-20-190802				HVRA-DLMW-29-190802			
		LAB ID:	L1934623-04				L1934623-03				L1934623-05			
		COLLECTION DATE:	8/2/2019				8/2/2019				8/2/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER			
		NY-AWQS(1)												
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
POLYCHLORINATED BIPHENYLS BY GC														
PCBs, Total	1336-36-3	0.09*	ND		0.083	0.032	ND		0.083	0.032	ND		0.083	0.032

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

* - Applies to the sum of these substances.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 9 - AOC-3, Former Dutchess County Landfill - Pesticides

		SAMPLE ID:	HVRA-DL-MW-15-190802				HVRA-DLMW-20-190802				HVRA-DLMW-29-190802			
		LAB ID:	L1934623-04				L1934623-03				L1934623-05			
		COLLECTION DATE:	8/2/2019				8/2/2019				8/2/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER			
		NY-AWQS(1)												
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
ORGANOCHLORINE PESTICIDES BY GC														
Aldrin	309-00-2	ND	ND		0.014	0.002	ND		0.014	0.002	ND		0.014	0.002
Alpha-BHC	319-84-6	0.01	ND		0.014	0.003	ND		0.014	0.003	ND		0.014	0.003
Chlordane	57-74-9	0.05	ND		0.143	0.033	ND		0.143	0.033	ND		0.143	0.033
Dieldrin	60-57-1	0.004	ND		0.029	0.003	ND		0.029	0.003	ND		0.029	0.003
Endrin	72-20-8	ND	ND		0.029	0.003	ND		0.029	0.003	ND		0.029	0.003
Toxaphene	8001-35-2	0.06	ND		0.143	0.045	ND		0.143	0.045	ND		0.143	0.045

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 10 - AOC-4, Jackson Road - PFAS and 1,4-D

		SAMPLE ID:	HVRA-MW101-190809			
		LAB ID:	L1935927-13			
		COLLECTION DATE:	8/9/2019			
		SAMPLE MATRIX:	WATER			
		NY-AWQS(1)				
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM						
1,4-Dioxane	123-91-1	NS	ND		0.15	0.0339
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ng/l)				
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	2.72		1.81	1.1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	24.1		1.81	1.21
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.81	0.728
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.81	0.587
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	11.1		1.81	0.216
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	71.1		1.81	0.37
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.81	0.888
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	0.536	J	1.81	0.275
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.81	0.337
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	1.9		1.81	0.623
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	16		1.81	0.204
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	99.8		1.81	0.34
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	74.8		1.81	0.297
Perfluorononanoic Acid (PFNA)	375-95-1	NS	3.05		1.81	0.283
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.81	0.525
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	68.1		1.81	0.456
Perfluorooctanoic Acid (PFOA)	335-67-1	70	11.3		1.81	0.214
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	130		1.81	0.359
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.81	0.225
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.81	0.296
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.81	0.236
PFOA/PFOS, Total			79.4		1.81	0.214

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 10A - AOC-4, Jackson Road - PFAS and 1,4-D

		SAMPLE ID:	HVRA-MW101-1.5				HVRA-MW101-2.0				HVRA-MW101-8.0			
		LAB ID:	L1936143-04				L1936143-05				L1934860-05			
		COLLECTION DATE:	8/12/2019				8/12/2019				8/5/2019			
		SAMPLE DEPTH:	1.5' - 2.0'				2.0' - 3.0'				8.0' - 9.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL			
		NY-UNRES[1]												
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM														
1,4-Dioxane	123-91-1	0.1	ND		0.00724	0.00185	ND		0.009	0.0023	-		-	-
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ug/kg)												
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.02	0.294	ND		1.01	0.291	ND		0.977	0.28
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.02	0.184	ND		1.01	0.182	ND		0.977	0.175
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.02	0.087	ND		1.01	0.086	ND		0.977	0.083
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.02	0.206	ND	J	1.01	0.204	ND	J	0.977	0.197
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	ND		1.02	0.04	ND		1.01	0.04	ND		0.977	0.038
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	0.072	J	1.02	0.023	0.192	J	1.01	0.023	ND		0.977	0.022
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.02	0.157	ND		1.01	0.155	ND		0.977	0.149
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	0.132	J	1.02	0.069	0.156	J	1.01	0.068	ND		0.977	0.065
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.02	0.072	ND		1.01	0.071	ND	J	0.977	0.068
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	ND		1.02	0.14	ND		1.01	0.138	ND		0.977	0.133
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	0.105	J	1.02	0.046	0.26	J	1.01	0.046	ND		0.977	0.044
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	0.288	J	1.02	0.062	0.239	J	1.01	0.061	0.1	J	0.977	0.059
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	0.164	J	1.02	0.054	0.263	J	1.01	0.053	0.07	J	0.977	0.051
Perfluorononanoic Acid (PFNA)	375-95-1	NS	ND		1.02	0.077	0.746	J	1.01	0.076	ND		0.977	0.073
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.02	0.1	ND		1.01	0.099	ND		0.977	0.096
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	NS	2.27		1.02	0.133	11.3		1.01	0.132	1.12		0.977	0.127
Perfluorooctanoic Acid (PFOA)	335-67-1	NS	0.132	J	1.02	0.043	0.451	J	1.01	0.042	0.057	J	0.977	0.041
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	0.117	J	1.02	0.047	0.509	J	1.01	0.047	0.047	J	0.977	0.045
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.02	0.055	ND	J	1.01	0.055	ND	J	0.977	0.053
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.02	0.209	ND		1.01	0.207	ND	J	0.977	0.2
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	0.201	J	1.02	0.048	0.071	J	1.01	0.047	ND	J	0.977	0.046
PFOA/PFOS, Total			2.4	J	1.02	0.043	11.8	J	1.01	0.042	1.18	J	0.977	0.041

Notes:
PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 11 - AOC-4, Jackson Road - PCBs

		SAMPLE ID:	HVRA-MW101-190809			
		LAB ID:	L1935927-13			
		COLLECTION DATE:	8/9/2019			
		SAMPLE MATRIX:	WATER			
		NY-AWQS[(1)]				
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL
POLYCHLORINATED BIPHENYLS BY GC						
PCBs, Total	1336-36-3	0.09*	ND		0.083	0.032

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

* - Applies to the sum of these substances.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 11A - AOC-4, Jackson Road - PCBs

		SAMPLE ID:	HVRA-MW101-1.5				HVRA-MW101-2.0				HVRA-MW101-8.0			
		LAB ID:	L1936143-04				L1936143-05				L1934860-05			
		COLLECTION DATE:	8/12/2019				8/12/2019				8/5/2019			
		SAMPLE DEPTH:	1.5' - 2.0'				2.0' - 3.0'				8.0' - 9.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL			
		NY-UNRES[(1)]												
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
POLYCHLORINATED BIPHENYLS BY GC														
PCBs, Total	1336-36-3		ND		0.0339	0.00301	ND		0.0362	0.00321	ND		0.0332	0.00294

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 12 - AOC-4, Jackson Road - Pesticides

		SAMPLE ID:	HVRA-MW101-190809			
		LAB ID:	L1935927-13			
		COLLECTION DATE:	8/9/2019			
		SAMPLE MATRIX:	WATER			
		NY-AWQS[1]				
ANALYTE	**CAS**	**(ug/l)**	**Conc**	**Q**	**RL**	**MDL**
ORGANOCHLORINE PESTICIDES BY GC						
Aldrin	309-00-2	ND	ND		0.014	0.002
Alpha-BHC	319-84-6	0.01	ND		0.014	0.003
Chlordane	57-74-9	0.05	ND		0.143	0.033
Dieldrin	60-57-1	0.004	ND		0.029	0.003
Endrin	72-20-8	ND	ND		0.029	0.003
Toxaphene	8001-35-2	0.06	ND		0.143	0.045

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 12A - AOC-4, Jackson Road - Pesticides

		SAMPLE ID:	HVRA-MW101-1.5				HVRA-MW101-2.0				HVRA-MW101-8.0			
		LAB ID:	L1936143-04				L1936143-05				L1934860-05			
		COLLECTION DATE:	8/12/2019				8/12/2019				8/5/2019			
		SAMPLE DEPTH:	1.5' - 2.0'				2.0' - 3.0'				8.0' - 9.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL			
		NY-UNRES[(1)]												
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
ORGANOCHLORINE PESTICIDES BY GC														
4,4'-DDE	72-55-9	0.0033	ND		0.00164	0.000379	ND		0.00181	0.000419	ND		0.00166	0.000384
4,4'-DDT	50-29-3	0.0033	ND		0.00308	0.00132	ND		0.0034	0.00146	ND		0.00311	0.00133

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 13 - AOC-4, Jackson Road - Metals

		SAMPLE ID:	HVRA-MW101-190809			
		LAB ID:	L1935927-13			
		COLLECTION DATE:	8/9/2019			
		SAMPLE MATRIX:	WATER			
		NY-AWQS(1)				
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL
TOTAL METALS						
Aluminum, Total	7429-90-5	NS	3050		10	3.27
Antimony, Total	7440-36-0	3	0.62	J	4	0.42
Arsenic, Total	7440-38-2	25	4.28		0.5	0.16
Barium, Total	7440-39-3	1000	78.28		0.5	0.17
Beryllium, Total	7440-41-7	3	0.19	J	0.5	0.1
Cadmium, Total	7440-43-9	5	0.09	J	0.2	0.05
Calcium, Total	7440-70-2	NS	74900		100	39.4
Chromium, Total	7440-47-3	50	6.42		1	0.17
Cobalt, Total	7440-48-4	NS	3.95		0.5	0.16
Copper, Total	7440-50-8	200	13.37		1	0.38
Iron, Total	7439-89-6	300	**7690**		50	19.1
Lead, Total	7439-92-1	25	5.42		1	0.34
Magnesium, Total	7439-95-4	35000	24300		70	24.2
Manganese, Total	7439-96-5	300	**1657**		1	0.44
Nickel, Total	7440-02-0	100	7.55		2	0.55
Potassium, Total	7440-09-7	NS	1700		100	30.9
Sodium, Total	7440-23-5	20000	10400		100	29.3
Thallium, Total	7440-28-0	0.5	ND		0.5	0.14
Vanadium, Total	7440-62-2	NS	4.55	J	5	1.57
Zinc, Total	7440-66-6	2000	30.04		10	3.41
GENERAL CHEMISTRY						
Cyanide, Total	57-12-5	200	ND		5	1

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 13A - AOC-4, Jackson Road - Metals

		SAMPLE ID:	**HVRA-MW101-1.5**				**HVRA-MW101-2.0**				**HVRA-MW101-8.0**			
		LAB ID:	**L1936143-04**				**L1936143-05**				**L1934860-05**			
		COLLECTION DATE:	**8/12/2019**				**8/12/2019**				**8/5/2019**			
		SAMPLE DEPTH:	**1.5' - 2.0'**				**2.0' - 3.0'**				**8.0' - 9.0'**			
		SAMPLE MATRIX:	**SOIL**				**SOIL**				**SOIL**			
		NY-UNRES(1)												
ANALYTE	**CAS**	**(mg/kg)**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**
TOTAL METALS														
Aluminum, Total	7429-90-5	NS	2130		7.89	2.13	11800		8.91	2.4	12500		8.32	2.25
Antimony, Total	7440-36-0	NS	0.363	J	3.94	0.3	1.04	J	4.46	0.339	ND		4.16	0.316
Arsenic, Total	7440-38-2	13	4.27		0.789	0.164	2.55		0.891	0.185	1.46		0.832	0.173
Barium, Total	7440-39-3	350	10.8		0.789	0.137	55.9		0.891	0.155	33.7		0.832	0.145
Beryllium, Total	7440-41-7	7.2	0.126	J	0.394	0.026	0.401	J	0.446	0.029	0.416		0.416	0.028
Cadmium, Total	7440-43-9	2.5	ND		0.789	0.077	ND		0.891	0.087	0.791	J	0.832	0.082
Calcium, Total	7440-70-2	NS	122000		78.9	27.6	8050		8.91	3.12	7480		8.32	2.91
Chromium, Total	7440-47-3	30	3.72		0.789	0.076	12.3		0.891	0.086	16.1		0.832	0.08
Cobalt, Total	7440-48-4	NS	2.8		1.58	0.131	7.6		1.78	0.148	8.44		1.66	0.138
Copper, Total	7440-50-8	50	8.36		0.789	0.204	13.9		0.891	0.23	15.2		0.832	0.215
Iron, Total	7439-89-6	NS	7120		3.94	0.712	20000		4.46	0.805	24100		4.16	0.752
Lead, Total	7439-92-1	63	4.71		3.94	0.211	11.5		4.46	0.239	11.9		4.16	0.223
Magnesium, Total	7439-95-4	NS	55500		7.89	1.21	7550		8.91	1.37	9340		8.32	1.28
Manganese, Total	7439-96-5	1600	185		0.789	0.125	568		0.891	0.142	479		0.832	0.132
Mercury, Total	7439-97-6	0.18	ND		0.065	0.042	ND		0.073	0.048	ND		0.066	0.043
Nickel, Total	7440-02-0	30	4.84		1.97	0.191	14.7		2.23	0.216	18.3		2.08	0.201
Potassium, Total	7440-09-7	NS	228		197	11.4	330		223	12.8	362		208	12
Selenium, Total	7782-49-2	3.9	0.497	J	1.58	0.204	ND		1.78	0.23	0.716	J	1.66	0.215
Sodium, Total	7440-23-5	NS	110	J	158	2.48	32.6	J	178	2.81	30.8	J	166	2.62
Thallium, Total	7440-28-0	NS	ND		1.58	0.248	ND		1.78	0.281	ND		1.66	0.262
Vanadium, Total	7440-62-2	NS	6.92		0.789	0.16	12.8		0.891	0.181	13.9		0.832	0.169
Zinc, Total	7440-66-6	109	12.7		3.94	0.231	47.7		4.46	0.261	55.3		4.16	0.244
GENERAL CHEMISTRY		**(mg/kg)**												
Moisture	NONE		-		-	-	-		-	-	-		-	-
Solids, Total	NONE	NS	96.7		0.1	NA	87.2		0.1	NA	94.8		0.1	NA

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 14 - AOC-5, Stormwater Outfall - PFAS and 1,4-D

		SAMPLE ID:	FIELD BLANK				OUTFALL-001-W			
		LAB ID:	L1932869-04				L1932869-08			
		COLLECTION DATE:	7/23/2019				7/23/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS(1)								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM										
1,4-Dioxane	123-91-1		-		-	-	ND		0.15	0.0339
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ng/l)								
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.8	1.09	1.93	J	2.02	1.23
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.8	1.2	214		2.02	1.35
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.8	0.726	ND		2.02	0.814
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.8	0.585	ND		2.02	0.656
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	ND		1.8	0.215	4.19		2.02	0.241
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	ND		1.8	0.368	29		2.02	0.413
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.8	0.884	ND		2.02	0.992
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		1.8	0.274	1.29	J	2.02	0.308
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.8	0.336	ND		2.02	0.376
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	ND		1.8	0.621	1.64	J	2.02	0.696
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	ND		1.8	0.203	22.6		2.02	0.228
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	ND		1.8	0.339	69.9		2.02	0.38
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	ND		1.8	0.296	57.4		2.02	0.332
Perfluorononanoic Acid (PFNA)	375-95-1	NS	ND		1.8	0.282	5.65		2.02	0.316
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.8	0.523	ND		2.02	0.587
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	ND		1.8	0.455	140		2.02	0.51
Perfluorooctanoic Acid (PFOA)	335-67-1	70	ND		1.8	0.213	21.4		2.02	0.239
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	ND		1.8	0.357	87.2		2.02	0.401
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.8	0.224	ND		2.02	0.251
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.8	0.295	ND		2.02	0.331
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.8	0.235	0.729	J	2.02	0.263
PFOA/PFOS, Total			ND		1.8	0.213	161		2.02	0.239

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 14A - AOC-5, Stormwater Outfall - PFAS and 1,4-D

			SAMPLE ID:	HVRA-OF1-190808				HVRA-FD02-190808			
			LAB ID:	L1935927-08				L1935927-09			
			COLLECTION DATE:	8/8/2019				8/8/2019			
			SAMPLE MATRIX:	SEDIMENT				SEDIMENT			
		SACS-A,B,C SGVs(2)	NY-UNRES(1)								
ANALYTE	CAS	(mg/kg)	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY EPA 5035 Low											
1,4-Dioxane	123-91-1	NS	0.1	ND		0.087	0.038	ND		0.083	0.036
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ug/kg)	(ug/kg)								
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	NS	ND		1.03	0.296	ND		1.05	0.301
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	NS	ND		1.03	0.185	ND		1.05	0.188
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	NS	ND		1.03	0.087	ND		1.05	0.089
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	NS	ND		1.03	0.208	ND		1.05	0.211
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	NS	ND		1.03	0.4	ND		1.05	0.041
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	NS	ND		1.03	0.023	ND		1.05	0.024
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	NS	ND		1.03	0.158	ND		1.05	0.16
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	NS	ND		1.03	0.069	ND		1.05	0.07
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	NS	ND		1.03	0.072	ND		1.05	0.073
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	NS	ND		1.03	0.141	ND		1.05	0.143
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	NS	ND		1.03	0.047	ND		1.05	0.047
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	NS	ND		1.03	0.062	ND		1.05	0.064
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	NS	0.069	J	1.03	0.054	0.061	J	1.05	0.055
Perfluorononanoic Acid (PFNA)	375-95-1	NS	NS	ND		1.03	0.077	ND		1.05	0.079
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	NS	ND		1.03	0.101	ND		1.05	0.103
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	NS	NS	0.356	J	1.03	0.134	0.32	J	1.05	0.136
Perfluorooctanoic Acid (PFOA)	335-67-1	NS	NS	ND		1.03	0.043	ND		1.05	0.044
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	NS	ND		1.03	0.047	ND		1.05	0.048
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	NS	ND		1.03	0.056	ND		1.05	0.057
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	NS	ND		1.03	0.211	ND		1.05	0.214
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	NS	ND		1.03	0.048	ND		1.05	0.049
PFOA/PFOS, Total		NS	NS	0.356	J	1.03	0.043	0.32	J	1.05	0.044
GENERAL CHEMISTRY		(mg/kg)	(mg/kg)								
Solids, Total	NONE	NS	NS	84.3		0.1	NA	85.5		0.1	NA

Notes:
The regulator guidance values applied herein, are those that were in effect as of the date of data collection and the Department approved work plan.
PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
(2) New York State Department of Environmental Conservation Screening and Assessment of Contaminated Sediment, June 24, 2014, Class A-C Sediment Guidance Values.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
NS denotes No Standard
ND denotes Non Detect
ug/kg = ppb or parts per billion

Table 15 - AOC-5, Stormwater Outfalls - VOCs

		SAMPLE ID:	OUTFALL-001-W				TRIP BLANK			
		LAB ID:	L1932869-08				L1932869-09			
		COLLECTION DATE:	7/23/2019				7/23/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS(1)								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
VOLATILE ORGANICS BY GC/MS										
1,1,2-Trichloroethane	79-00-5	1	ND		1.5	0.5	ND		1.5	0.5
1,2-Dibromo-3-chloropropane	96-12-8	0.04	ND		2.5	0.7	ND		2.5	0.7
1,2-Dibromoethane	106-93-4	0.0006	ND		2	0.65	ND		2	0.65
1,2-Dichloropropane	78-87-5	1	ND		1	0.14	ND		1	0.14
Acetone	67-64-1	50	7.5		5	1.5	5.7		5	1.5
Chloromethane	74-87-3	5	ND		2.5	0.7	0.92	J	2.5	0.7
cis-1,3-Dichloropropene	10061-01-5	0.4	ND		0.5	0.14	ND		0.5	0.14
Dichlorodifluoromethane	75-71-8	5	ND		5	1	ND		5	1
trans-1,3-Dichloropropene	10061-02-6	0.4	ND		0.5	0.16	ND		0.5	0.16
Total VOCs			7.5	-	-	-	6.62	-	-	-

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 15A - AOC-5, Stormwater Outfall - VOCs

			SAMPLE ID:	HVRA-FD02-190808				HVRA-OF1-190808			
			LAB ID:	L1935927-09				L1935927-08			
			COLLECTION DATE:	8/8/2019				8/8/2019			
			SAMPLE MATRIX:	SEDIMENT				SEDIMENT			
		SACS-A,B,C SGVs(2)	NY-UNRES(1)								
ANALYTE	CAS	(mg/kg)	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
VOLATILE ORGANICS BY EPA 5035											
Acetone	67-64-1	NS	0.05	**0.058**		0.01	0.005	0.031		0.011	0.0052
Tetrachloroethene	127-18-4	<16, 16-57, >57	1.3	0.0013		0.00052	0.0002	0.00066		0.00054	0.00021
trans-1,2-Dichloroethene	156-60-5	<1.2, 1.2-11, >11	0.19	0.0002	J	0.0016	0.00014	ND		0.0016	0.00015
Total VOCs				0.0595	-	-	-	0.03166	-	-	-

Notes:
The regulator guidance values applied herein, are those that were in effect as of the date of data collection and the Department approved work plan.
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
(2) New York State Department of Environmental Conservation Screening and Assessment of Contaminated Sediment, June 24, 2014, Class A-C Sediment Guidance Values.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
Results that are shaded yellow and in bold indicate a concentration above the Guidance Value.

Table 16 - AOC-5, Stormwater Outfalls - SVOCs

		SAMPLE ID:	OUTFALL-001-W			
		LAB ID:	L1932869-08			
		COLLECTION DATE:	7/23/2019			
		SAMPLE MATRIX:	WATER			
		NY-AWQS(1)				
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS						
1,2,4,5-Tetrachlorobenzene	95-94-3	5	ND		10	0.44
2,4-Dichlorophenol	120-83-2	1	ND		5	0.41
2,4-Dinitrophenol	51-28-5	10	ND		20	6.6
2,4-Dinitrotoluene	121-14-2	5	ND		5	1.2
2,6-Dinitrotoluene	606-20-2	5	ND		5	0.93
2-Nitroaniline	88-74-4	5	ND		5	0.5
3,3'-Dichlorobenzidine	91-94-1	5	ND		5	1.6
3-Nitroaniline	99-09-2	5	ND		5	0.81
4-Chloroaniline	106-47-8	5	ND		5	1.1
4-Nitroaniline	100-01-6	5	ND		5	0.8
Atrazine	1912-24-9	7.5	ND		10	0.76
Bis(2-chloroethoxy)methane	111-91-1	5	ND		5	0.5
Bis(2-chloroethyl)ether	111-44-4	1	ND		2	0.5
Bis(2-ethylhexyl)phthalate	117-81-7	5	4.1		3	1.5
Hexachlorocyclopentadiene	77-47-4	5	ND		20	0.69
Nitrobenzene	98-95-3	0.4	ND		2	0.77
Phenol	108-95-2	1	ND		5	0.57
Total SVOCs			4.1	-	-	-
SEMIVOLATILE ORGANICS BY GC/MS-SIM						
Benzo(a)anthracene	56-55-3	0.002	**0.04**	J	0.1	0.02
Benzo(a)pyrene	50-32-8	0	**0.02**	J	0.1	0.02
Benzo(b)fluoranthene	205-99-2	0.002	**0.04**	J	0.1	0.01
Benzo(k)fluoranthene	207-08-9	0.002	**0.02**	J	0.1	0.01
Chrysene	218-01-9	0.002	**0.04**	J	0.1	0.01
Fluoranthene	206-44-0	50	0.06	J	0.1	0.02
Hexachlorobenzene	118-74-1	0.04	ND		0.8	0.01
Hexachlorobutadiene	87-68-3	0.5	ND		0.5	0.05
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	ND		0.1	0.01
Naphthalene	91-20-3	10	0.11		0.1	0.05
Pyrene	129-00-0	50	0.04	J	0.1	0.02
Total SVOCs			0.37	-	-	-

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 16A - AOC-5, Stormwater Outfall - SVOCs

			SAMPLE ID:	HVRA-FD02-190808				HVRA-OF1-190808			
			LAB ID:	L1935927-09				L1935927-08			
			COLLECTION DATE:	8/8/2019				8/8/2019			
			SAMPLE MATRIX:	SEDIMENT				SEDIMENT			
		SACS-A,B,C SGVs[(2)]	NY-UNRES[(1)]								
ANALYTE	CAS	(mg/kg)	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS											
Anthracene	120-12-7	NS	100	0.069	J	0.12	0.037	ND		0.12	0.038
Benzo(a)anthracene	56-55-3	NS	1	0.31		0.12	0.022	0.2		0.12	0.022
Benzo(a)pyrene	50-32-8	NS	1	0.3		0.15	0.047	0.2		0.16	0.048
Benzo(b)fluoranthene	205-99-2	NS	1	0.44		0.12	0.032	0.32		0.12	0.033
Benzo(ghi)perylene	191-24-2	NS	100	0.23		0.15	0.022	0.16		0.16	0.023
Benzo(k)fluoranthene	207-08-9	NS	0.8	0.16		0.12	0.031	0.083	J	0.12	0.031
Carbazole	86-74-8	NS	NS	0.067	J	0.19	0.019	0.049	J	0.2	0.019
Chrysene	218-01-9	NS	1	0.38		0.12	0.02	0.24		0.12	0.02
Dibenzo(a,h)anthracene	53-70-3	NS	0.33	0.046	J	0.12	0.022	0.029	J	0.12	0.023
Fluoranthene	206-44-0	NS	100	0.9		0.12	0.022	0.55		0.12	0.022
Fluorene	86-73-7	NS	30	0.028	J	0.19	0.019	ND		0.2	0.019
Indeno(1,2,3-cd)pyrene	193-39-5	NS	0.5	0.24		0.15	0.027	0.17		0.16	0.027
Phenanthrene	85-01-8	NS	100	0.47		0.12	0.023	0.26		0.12	0.024
Pyrene	129-00-0	NS	100	0.69		0.12	0.019	0.43		0.12	0.02
Total SVOCs				4.33	-	-	-	2.691	-	-	-

Notes:

The regulator guidance values applied herein, are those that were in effect as of the date of data collection and the Department approved work plan.

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

(2) New York State Department of Environmental Conservation Screening and Assessment of Contaminated Sediment, June 24, 2014, Class A-C Sediment Guidance Values.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

NS denotes No Standard

ND denotes Non Detect

mg/kg = ppm or parts per million

Table 17 - AOC-5, AAG Hangars - Pesticides and PCBs

		SAMPLE ID:	OUTFALL-001-W			
		LAB ID:	L1932869-08			
		COLLECTION DATE:	7/23/2019			
		SAMPLE MATRIX:	WATER			
		NY-AWQS(1)				
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL
ORGANOCHLORINE PESTICIDES BY GC						
Aldrin	309-00-2	0	ND		0.014	0.002
Alpha-BHC	319-84-6	0.01	ND		0.014	0.003
Chlordane	57-74-9	0.05	ND		0.143	0.033
Dieldrin	60-57-1	0.004	ND		0.029	0.003
Endrin	72-20-8	0	ND		0.029	0.003
Toxaphene	8001-35-2	0.06	ND		0.143	0.045
POLYCHLORINATED BIPHENYLS BY GC						
PCBs, Total	1336-36-3	0.09*	ND		0.083	0.032

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

* - Applies to the sum of these substances.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 17A - AOC-5, Stormwater Outfall - Pesticides

			SAMPLE ID:	HVRA-FD02-190808				HVRA-OF1-190808				HVRA-OF1-190808			
			LAB ID:	L1935927-09				L1935927-08				L1935927-08 R1			
			COLLECTION DATE:	8/8/2019				8/8/2019				8/8/2019			
			SAMPLE MATRIX:	SEDIMENT				SEDIMENT				SEDIMENT			
		SACS-A,B,C SGVs(2)	NY-UNRES												
ANALYTE	CAS	(mg/kg)	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
ORGANOCHLORINE PESTICIDES BY GC															
4,4'-DDE	72-55-9	NS	0.0033	0.00186		0.00181	0.000419	0.00165	J	0.00185	0.000428	-	-	-	-
4,4'-DDT	50-29-3	<0.044, 0.044-48, >48	0.0033	ND		0.0034	0.00146	ND		0.00347	0.00149	-	-	-	-
Endrin aldehyde	7421-93-4	NS	NS	ND		0.00226	0.000793	0.207	E	0.00231	0.000809	0.206		0.00462	0.00162

Notes:

The regulator guidance values applied herein, are those that were in effect as of the date of data collection and the Department approved work plan.

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

(2) New York State Department of Environmental Conservation Screening and Assessment of Contaminated Sediment, June 24, 2014, Class A-C Sediment Guidance Values.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

B - The analyte was detected above the reporting limit in the associated method blank.

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

R - Analytical results are from sample re-analysis.

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

mg/kg = ppm or parts per million

Results that are shaded blue indicate a RL or MDL above the Guidance Value.

Table 18 - AOC-5, AAG Hangars - Metals

		SAMPLE ID:	OUTFALL-001-W			
		LAB ID:	L1932869-08			
		COLLECTION DATE:	7/23/2019			
		SAMPLE MATRIX:	WATER			
		NY-AWQS(1)				
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL
TOTAL METALS						
Aluminum, Total	7429-90-5	NS	ND		100	32
Antimony, Total	7440-36-0	3	**16**	J	50	7
Arsenic, Total	7440-38-2	25	3	J	5	2
Barium, Total	7440-39-3	1000	29		10	2
Beryllium, Total	7440-41-7	3	ND		5	1
Cadmium, Total	7440-43-9	5	ND		5	1
Calcium, Total	7440-70-2	NS	44100		100	35
Chromium, Total	7440-47-3	50	ND		10	2
Cobalt, Total	7440-48-4	NS	ND		20	2
Copper, Total	7440-50-8	200	ND		10	2
Iron, Total	7439-89-6	300	**588**		50	9
Lead, Total	7439-92-1	25	ND		10	3
Magnesium, Total	7439-95-4	35000	10300		100	15
Manganese, Total	7439-96-5	300	**712**		10	2
Mercury, Total	7439-97-6	0.7	ND		0.2	0.09
Nickel, Total	7440-02-0	100	ND		25	2
Potassium, Total	7440-09-7	NS	2400	J	2500	237
Selenium, Total	7782-49-2	10	ND		10	4
Silver, Total	7440-22-4	50	ND		7	3
Sodium, Total	7440-23-5	20000	**81300**		2000	120
Thallium, Total	7440-28-0	0.5	ND		20	3
Vanadium, Total	7440-62-2	NS	ND		10	2
Zinc, Total	7440-66-6	2000	2	J	50	2
GENERAL CHEMISTRY						
Cyanide, Total	57-12-5	200	3	J	5	1

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 18A - AOC-5, Stormwater Outfall - Metals

			SAMPLE ID:	HVRA-FD02-190808				HVRA-OF1-190808			
			LAB ID:	L1935927-09				L1935927-08			
			COLLECTION DATE:	8/8/2019				8/8/2019			
			SAMPLE MATRIX:	SEDIMENT				SEDIMENT			
		SACS-A,B,C SGVs(2)	NY-UNRES								
ANALYTE	CAS	(mg/kg)	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
TOTAL METALS											
Aluminum, Total	7429-90-5	NS	NS	7020		8.97	2.42	8980		9.03	2.44
Antimony, Total	7440-36-0	NS	NS	0.789	J	4.48	0.341	0.777	J	4.52	0.343
Arsenic, Total	7440-38-2	<10, 10-33, >33	13	6.4		0.897	0.186	5.14		0.903	0.188
Barium, Total	7440-39-3	NS	350	48.1		0.897	0.156	64.5		0.903	0.157
Beryllium, Total	7440-41-7	NS	7.2	0.224	J	0.448	0.03	0.253	J	0.452	0.03
Cadmium, Total	7440-43-9	<1, 1-5, >5	2.5	0.735	J	0.897	0.088	0.641	J	0.903	0.089
Calcium, Total	7440-70-2	NS	NS	55100	J	8.97	3.14	19600	J	9.03	3.16
Chromium, Total	7440-47-3	<43, 43-110, >110	NS	7.5		0.897	0.086	9.22		0.903	0.087
Cobalt, Total	7440-48-4	NS	NS	5.05		1.79	0.149	6.5		1.81	0.15
Copper, Total	7440-50-8	<32, 32-150, >150	50	25.2	J	0.897	0.231	16.4	J	0.903	0.233
Iron, Total	7439-89-6	NS	NS	21100		4.48	0.81	18600		4.52	0.816
Lead, Total	7439-92-1	<36, 36-130, >130	63	20		4.48	0.24	21.9		4.52	0.242
Magnesium, Total	7439-95-4	NS	NS	15100	J	8.97	1.38	13000	J	9.03	1.39
Manganese, Total	7439-96-5	NS	1600	1250		0.897	0.143	891		0.903	0.144
Nickel, Total	7440-02-0	<23, 23-49, >49	30	10.8		2.24	0.217	13.9		2.26	0.219
Potassium, Total	7440-09-7	NS	NS	186	J	224	12.9	283		226	13
Silver, Total	7440-22-4	<1, 1-2.2, >2.2	2	0.287	J	0.897	0.254	ND		0.903	0.256
Sodium, Total	7440-23-5	NS	NS	73.9	J	179	2.82	87.5	J	181	2.84
Vanadium, Total	7440-62-2	NS	NS	9.82		0.897	0.182	10.4		0.903	0.183
Zinc, Total	7440-66-6	<120, 120-460, >460	109	88.2		4.48	0.263	77.6		4.52	0.265

Notes:

The regulator guidance values applied herein, are those that were in effect as of the date of data collection and the Department approved work plan.

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

(2) New York State Department of Environmental Conservation Screening and Assessment of Contaminated Sediment, June 24, 2014, Class A-C Sediment Guidance Values.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

NS denotes No Standard

ND denotes Non Detect

mg/kg = ppm or parts per million

Table 19 - AOC-6, AAG Hangars - PFAS and 1,4-D

		SAMPLE ID:	FIELD BLANK				HVRA-AAG-PW01				TRIP BLANK				HVRA-AAG-PW01			
		LAB ID:	L1931312-06				L1931312-04				L1931312-05				L1931312-01			
		COLLECTION DATE:	7/17/2019				7/17/2019				7/17/2019				7/17/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER				WATER			
		NY-AWQS(1)																
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM																		
1,4-Dioxane	123-91-1	NS	-		-	-	-	-	-	-	-	-	-	-	ND		144	32.6
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ng/l)																
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.8	1.09	42.4		20	12.1	ND		1.8	1.14	-		-	-
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.8	1.2	2180		20	13.3	ND		1.8	1.25	-		-	-
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.8	0.726	ND		20	8.04	ND		1.8	0.756	-		-	-
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.8	0.585	ND		20	6.48	ND		1.8	0.609	-		-	-
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	ND		1.8	0.215	23.6		20	2.38	ND		1.8	0.224	-		-	-
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	ND		1.8	0.368	191		20	4.08	ND		1.8	0.383	-		-	-
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.8	0.884	ND		20	9.8	ND		1.8	0.921	-		-	-
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		1.8	0.274	ND		20	3.04	ND		1.8	0.286	-		-	-
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.8	0.336	ND		20	3.72	ND		1.8	0.35	-		-	-
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	ND		1.8	0.621	37.6		20	6.88	ND		1.8	0.647	-		-	-
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	ND		1.8	0.203	191		20	2.25	ND		1.8	0.212	-		-	-
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	ND		1.8	0.339	553		20	3.76	ND		1.8	0.353	-		-	-
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	ND		1.8	0.296	621		20	3.28	ND		1.8	0.308	-		-	-
Perfluorononanoic Acid (PFNA)	375-95-1	NS	ND		1.8	0.282	21.4		20	3.12	ND		1.8	0.293	-		-	-
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.8	0.523	ND		20	5.8	ND		1.8	0.545	-		-	-
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	ND		1.8	0.455	1090		20	5.04	ND		1.8	0.474	-		-	-
Perfluorooctanoic Acid (PFOA)	335-67-1	70	ND		1.8	0.213	233		20	2.36	ND		1.8	0.222	-		-	-
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	ND		1.8	0.357	838		20	3.96	ND		1.8	0.372	-		-	-
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.8	0.224	ND		20	2.48	ND		1.8	0.233	-		-	-
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.8	0.295	ND		20	3.27	ND		1.8	0.308	-		-	-
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.8	0.235	ND		20	2.6	ND		1.8	0.244	-		-	-
PFOA/PFOS, Total			ND		1.8	0.213	1320		20	2.36	ND		1.8	0.222	-		-	-

Notes:
PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required
(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
ug/l = ppb or parts per billion
ng/l = ppt or parts per trillion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 20 - AOC-6, AAG Hangars - SVOCs

		SAMPLE ID:	HVRA-AAG-PW01			
		LAB ID:	L1931312-01			
		COLLECTION DATE:	7/16/2019			
		SAMPLE MATRIX:	WATER			
		NY-AWQS(1)				
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS						
1,2,4,5-Tetrachlorobenzene	95-94-3	5	ND		10	0.44
2,4-Dichlorophenol	120-83-2	1	ND		5	0.41
2,4-Dinitrophenol	51-28-5	10	ND		20	6.6
2,4-Dinitrotoluene	121-14-2	5	ND		5	1.2
2,6-Dinitrotoluene	606-20-2	5	ND		5	0.93
2-Nitroaniline	88-74-4	5	ND		5	0.5
3,3'-Dichlorobenzidine	91-94-1	5	ND		5	1.6
3-Nitroaniline	99-09-2	5	ND		5	0.81
4-Chloroaniline	106-47-8	5	ND		5	1.1
4-Nitroaniline	100-01-6	5	ND		5	0.8
Atrazine	1912-24-9	7.5	ND		10	0.76
Bis(2-chloroethoxy)methane	111-91-1	5	ND		5	0.5
Bis(2-chloroethyl)ether	111-44-4	1	ND		2	0.5
Bis(2-ethylhexyl)phthalate	117-81-7	5	1.7	J	3	1.5
Hexachlorocyclopentadiene	77-47-4	5	ND		20	0.69
Nitrobenzene	98-95-3	0.4	ND		2	0.77
Phenol	108-95-2	1	ND		5	0.57
Total SVOCs			1.7	-	-	-
SEMIVOLATILE ORGANICS BY GC/MS-SIM						
Benzo(a)anthracene	56-55-3	0.002	ND		0.1	0.02
Benzo(a)pyrene	50-32-8	0	ND		0.1	0.02
Benzo(b)fluoranthene	205-99-2	0.002	ND		0.1	0.01
Benzo(k)fluoranthene	207-08-9	0.002	ND		0.1	0.01
Chrysene	218-01-9	0.002	ND		0.1	0.01
Hexachlorobenzene	118-74-1	0.04	ND		0.8	0.01
Hexachlorobutadiene	87-68-3	0.5	ND		0.5	0.05
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	ND		0.1	0.01
Phenanthrene	85-01-8	50	0.04	J	0.1	0.02
Total SVOCs			0.04	-	-	-

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 21 - AOC-6, AAG Hangars - PCBs

		SAMPLE ID:	HVRA-AAG-PW01			
		LAB ID:	L1931312-01			
		COLLECTION DATE:	7/16/2019			
		SAMPLE MATRIX:	WATER			
		NY-AWQS[(1)]				
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL
POLYCHLORINATED BIPHENYLS BY GC						
PCBs, Total	1336-36-3	0.09*	ND		0.083	0.032

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

* - Applies to the sum of these substances.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 22 - AOC-6, AAG Hangars - Metals

		SAMPLE ID:	HVRA-AAG-PW01			
		LAB ID:	L1931312-01			
		COLLECTION DATE:	7/16/2019			
		SAMPLE MATRIX:	WATER			
		NY-AWQS[(1)]				
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL
TOTAL METALS						
Antimony, Total	7440-36-0	3	0.97	J	4	0.42
Arsenic, Total	7440-38-2	25	0.22	J	0.5	0.16
Barium, Total	7440-39-3	1000	58.78		0.5	0.17
Calcium, Total	7440-70-2	NS	102000		100	39.4
Chromium, Total	7440-47-3	50	0.24	J	1	0.17
Cobalt, Total	7440-48-4	NS	0.39	J	0.5	0.16
Copper, Total	7440-50-8	200	22.39		1	0.38
Iron, Total	7439-89-6	300	29.9	J	70	19.1
Lead, Total	7439-92-1	25	2.38		1	0.34
Magnesium, Total	7439-95-4	35000	18600		70	24.2
Manganese, Total	7439-96-5	300	180.5		1	0.44
Nickel, Total	7440-02-0	100	0.71	J	2	0.55
Potassium, Total	7440-09-7	NS	2440		100	30.9
Sodium, Total	7440-23-5	20000	**157000**		100	29.3
Thallium, Total	7440-28-0	0.5	ND		0.5	0.14
Zinc, Total	7440-66-6	2000	7.74	J	10	3.41
GENERAL CHEMISTRY						
Cyanide, Total	57-12-5	200	ND		5	1

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 23 - AOC-6, AAG Hangars - PFAS and 1,4-D

		SAMPLE ID:	HVRA-A-21G-190731				HVRA-A-21R-190731				HVRA-A-21S-190731				HVRA-FTB01-190731				HVRA-LTB01-190731				HVRA-ME-18-190801				HVRA-MW-3-190801				HVRA-MW-4-190801				HVRA-MW-6-190801			
		LAB ID:	L1934423-05				L1934423-02				L1934423-01				L1934423-04				L1934423-03				L1934423-06				L1934423-09				L1934423-08				L1934423-07			
		COLLECTION DATE:	7/31/2019				7/31/2019				7/31/2019				7/31/2019				7/31/2019				8/1/2019				8/1/2019				8/1/2019				8/1/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER				WATER				WATER				WATER				WATER				WATER				WATER			
		NY-AWQS(1)																																				
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM																																						
1,4-Dioxane	123-91-1	NS	ND		0.15	0.0339	ND		0.15	0.0339	ND		0.144	0.0326	-		-	-	-		-	-	ND		0.144	0.0326	ND		0.144	0.0326	ND		0.144	0.0326	ND		0.144	0.0326
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ng/l)																																				
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	152		50	30.3	117		50	30.3	91.3		50	30.3	ND		1.86	1.13	ND		1.84	1.11	8.76	J	10	6.06	ND		1.82	1.1	ND		10	6.06	63.9		10	6.06
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	8150		50	33.3	4980		50	33.3	6870		50	33.3	ND		1.86	1.24	ND		1.84	1.22	89.4		10	6.66	ND		1.82	1.22	147		10	6.66	61.4		10	6.66
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		50	20.1	ND		50	20.1	ND		50	20.1	ND		1.86	0.747	ND		1.84	0.739	ND		10	4.02	ND		1.82	0.734	ND		10	4.02	ND		10	4.02
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		50	16.2	ND		50	16.2	ND		50	16.2	ND		1.86	0.602	ND		1.84	0.596	ND		10	3.24	ND		1.82	0.591	ND		10	3.24	ND		10	3.24
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	40.9	J	50	5.95	24.2	J	50	5.95	56.1		50	5.95	ND		1.86	0.221	ND		1.84	0.219	39.7		10	1.19	0.912	J	1.82	0.217	20.8		10	1.19	18.7		10	1.19
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	387		50	10.2	235		50	10.2	298		50	10.2	ND		1.86	0.379	ND		1.84	0.375	59.7		10	2.04	3.67		1.82	0.372	20.2		10	2.04	35.5		10	2.04
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		50	24.5	ND		50	24.5	ND		50	24.5	ND		1.86	0.911	ND		1.84	0.901	ND		10	4.9	ND		1.82	0.894	ND		10	4.9	ND		10	4.9
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		50	7.6	ND		50	7.6	ND		50	7.6	ND		1.86	0.282	ND		1.84	0.279	2.82	J	10	1.52	ND		1.82	0.277	ND		10	1.52	4.14	J	10	1.52
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		50	9.3	ND		50	9.3	ND		50	9.3	ND		1.86	0.346	ND		1.84	0.342	ND		10	1.86	ND		1.82	0.339	ND		10	1.86	ND		10	1.86
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	102		50	17.2	83.7		50	17.2	23.5	J	50	17.2	ND		1.86	0.639	ND		1.84	0.632	43		10	3.44	ND		1.82	0.628	21.7		10	3.44	17.3		10	3.44
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	405		50	5.63	276		50	5.63	282		50	5.63	ND		1.86	0.209	ND		1.84	0.207	84.9		10	1.13	0.555	J	1.82	0.205	22.1		10	1.13	45.9		10	1.13
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	1440		50	9.4	1410		50	9.4	814		50	9.4	ND		1.86	0.349	ND		1.84	0.346	959		10	1.88	9.75		1.82	0.343	318		10	1.88	511		10	1.88
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	1360		50	8.2	870		50	8.2	777		50	8.2	ND		1.86	0.305	0.423	J	1.84	0.301	184		10	1.64	2.19		1.82	0.299	98		10	1.64	93.1		10	1.64
Perfluorononanoic Acid (PFNA)	375-95-1	NS	61.9		50	7.8	39.7	J	50	7.8	34.5	J	50	7.8	ND		1.86	0.29	ND		1.84	0.287	7.4	J	10	1.56	ND		1.82	0.285	3.6	J	10	1.56	11.5		10	1.56
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		50	14.5	ND		50	14.5	ND		50	14.5	ND		1.86	0.539	ND		1.84	0.533	ND		10	2.9	ND		1.82	0.529	ND		10	2.9	8.62	J	10	2.9
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	**3240**		50	12.6	**3010**		50	12.6	**2200**		50	12.6	ND		1.86	0.468	ND		1.84	0.463	**2030**		10	2.52	12.3		1.82	0.46	**1420**		10	2.52	**1320**		10	2.52
Perfluorooctanoic Acid (PFOA)	335-67-1	70	**500**		50	5.9	**371**		50	5.9	**184**		50	5.9	ND		1.86	0.219	ND		1.84	0.217	**77.5**		10	1.18	0.777	J	1.82	0.215	**28.5**		10	1.18	47.7		10	1.18
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	1970		50	9.9	1190		50	9.9	1350		50	9.9	ND		1.86	0.368	ND		1.84	0.364	197		10	1.98	1.37	J	1.82	0.361	58.2		10	1.98	93.7		10	1.98
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		50	6.2	ND		50	6.2	ND		50	6.2	ND		1.86	0.23	ND		1.84	0.228	ND		10	1.24	ND		1.82	0.226	ND		10	1.24	ND		10	1.24
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		50	8.18	ND		50	8.18	ND		50	8.18	ND		1.86	0.304	ND		1.84	0.301	ND		10	1.64	ND		1.82	0.298	ND		10	1.64	ND		10	1.64
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		50	6.5	ND		50	6.5	ND		50	6.5	ND		1.86	0.242	ND		1.84	0.239	ND		10	1.3	ND		1.82	0.237	ND		10	1.3	ND		10	1.3
PFOA/PFOS, Total			3740		50	5.9	3380		50	5.9	2380		50	5.9	ND		1.86	0.219	ND		1.84	0.217	2110		10	1.18	13.1	J	1.82	0.215	1450		10	1.18	1370		10	1.18

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.

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NS denotes No Standard

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ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 24 - AOC-7, ARFF/Maintenance Bldg - PFAS and 1,4-D

		SAMPLE ID:	HVRA-MW100-190808				HVRA-FD01-190808			
		LAB ID:	L1935927-05				L1935927-06			
		COLLECTION DATE:	8/8/2019				8/8/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS[(1)]								
ANALYTE	CAS		Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM		(ug/l)								
1,4-Dioxane	123-91-1	NS	ND		0.15	0.0339	ND		0.15	0.0339
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ng/l)								
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	331		10	6.06	344		1.92	1.16
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	39		1.8	1.2	48.2		1.92	1.28
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.8	0.726	ND		1.92	0.77
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	0.628	J	1.8	0.585	ND		1.92	0.621
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	15.2		1.8	0.215	15.5		1.92	0.228
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	75.9		1.8	0.368	77		1.92	0.391
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	2.64		1.8	0.884	3.97		1.92	0.939
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	28.9		1.8	0.274	32.9		1.92	0.291
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	0.487	J	1.8	0.336	0.456	J	1.92	0.356
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	7.56		1.8	0.621	9.04		1.92	0.659
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	102		1.8	0.203	101		1.92	0.216
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	368		1.8	0.339	370		1.92	0.36
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	222		1.8	0.296	229		1.92	0.314
Perfluorononanoic Acid (PFNA)	375-95-1	NS	8.67		1.8	0.282	8.28		1.92	0.299
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	23.8		1.8	0.523	20.8		1.92	0.556
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	**595**		1.8	0.455	**699**		1.92	0.483
Perfluorooctanoic Acid (PFOA)	335-67-1	70	47.1		1.8	0.213	48.1		1.92	0.226
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	258		1.8	0.357	260		1.92	0.379
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.8	0.224	ND		1.92	0.238
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.8	0.295	ND		1.92	0.313
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	2.09		1.8	0.235	2.73		1.92	0.249
PFOA/PFOS, Total			642		1.8	0.213	747		1.92	0.226

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.

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J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 24A - AOC-7, ARFF/Maintenance Bldg - PFAS and 1,4-D

		SAMPLE ID:	HVRA-MW100-1.0				HVRA-MW100-1.0				HVRA-MW100-6.0			
		LAB ID:	L1936143-02				L1936143-02 R1				L1934860-01			
		COLLECTION DATE:	8/12/2019				8/12/2019				8/5/2019			
		SAMPLE DEPTH:	1.0' - 2.0'				1.0' - 2.0'				6.0' - 7.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL			
		NY-UNRES(1)												
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM														
1,4-Dioxane	123-91-1	0.1	ND		0.00858	0.00219	-		-	-	-		-	-
Semivolatile Organics by GC/MS														
1,4-Dioxane	123-91-1	0.1	-		-	-	-		-	-	ND		0.078	0.034
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ug/kg)												
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	42.6	J	1.04	0.298	-		-	-	ND		0.956	0.274
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	4.13	J	1.04	0.186	-		-	-	ND		0.956	0.172
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	0.279	J	1.04	0.088	-		-	-	ND		0.956	0.081
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.04	0.209	-		-	-	ND	J	0.956	0.193
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	0.103	J	1.04	0.04	-		-	-	ND		0.956	0.037
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	0.282	J	1.04	0.024	-		-	-	0.138	J	0.956	0.022
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	1.04		1.04	0.159	-		-	-	0.19	J	0.956	0.146
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	1.37		1.04	0.07	-		-	-	0.164	J	0.956	0.064
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	0.238	J	1.04	0.073	-		-	-	0.124	J	0.956	0.067
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	1.82		1.04	0.142	-		-	-	0.143	J	0.956	0.13
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	0.243	J	1.04	0.047	-		-	-	0.275	J	0.956	0.043
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	4.38	J	1.04	0.063	-		-	-	1.64		0.956	0.058
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	0.823	J	1.04	0.054	-		-	-	0.442	J	0.956	0.05
Perfluorononanoic Acid (PFNA)	375-95-1	NS	0.152	J	1.04	0.078	-		-	-	0.182	J	0.956	0.072
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	4.71		1.04	0.102	-		-	-	ND		0.956	0.094
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	NS	369	E	1.04	0.135	363		5.18	0.674	36.8		0.956	0.124
Perfluorooctanoic Acid (PFOA)	335-67-1	NS	0.438	J	1.04	0.043	-		-	-	0.287	J	0.956	0.04
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	0.767	J	1.04	0.048	-		-	-	0.416	J	0.956	0.044
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	0.237	J	1.04	0.056	-		-	-	0.074	J	0.956	0.052
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.04	0.212	-		-	-	ND		0.956	0.196
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	0.254	J	1.04	0.049	-		-	-	0.088	J	0.956	0.045
PFOA/PFOS, Total			363	J	1.04	0.043	-		-	-	37.1	J	0.956	0.04

Notes:
PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
R - Analytical results are from sample re-analysis.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 25 - AOC-7, ARFF/Maintenance Bldg - VOCs

		SAMPLE ID:	HVRA-EB01-190808				HVRA-MW100-190808				HVRA-FD01-190808				HVRA-LTB01-190807			
		LAB ID:	L1935927-07				L1935927-05				L1935927-06				L1935927-01			
		COLLECTION DATE:	8/8/2019				8/8/2019				8/8/2019				8/7/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER				WATER			
		NY-AWQS[1]																
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
VOLATILE ORGANICS BY GC/MS																		
1,1,2-Trichloroethane	79-00-5	1	ND		1.5	0.5	ND		1.5	0.5	ND		1.5	0.5	ND		1.5	0.5
1,2-Dibromo-3-chloropropane	96-12-8	0.04	ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2-Dibromoethane	106-93-4	0.0006	ND		2	0.65	ND		2	0.65	ND		2	0.65	ND		2	0.65
1,2-Dichloropropane	78-87-5	1	ND		1	0.14	ND		1	0.14	ND		1	0.14	ND		1	0.14
Acetone	67-64-1	50	9.1		5	1.5	13		5	1.5	8.6		5	1.5	7.2		5	1.5
Chloromethane	74-87-3	5	0.96	J	2.5	0.7	1.4	J	2.5	0.7	1.2	J	2.5	0.7	1.1	J	2.5	0.7
cis-1,3-Dichloropropene	10061-01-5	0.4	ND		0.5	0.14	ND		0.5	0.14	ND		0.5	0.14	ND		0.5	0.14
Dichlorodifluoromethane	75-71-8	5	ND		5	1	ND		5	1	ND		5	1	ND		5	1
trans-1,3-Dichloropropene	10061-02-6	0.4	ND		0.5	0.16	ND		0.5	0.16	ND		0.5	0.16	ND		0.5	0.16
Total VOCs			10.06	-	-	-	14.4	-	-	-	9.8	-	-	-	8.3	-	-	-

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 25A - AOC-7, ARFF/Maintenance Bldg - VOCs

		SAMPLE ID:	**HVRA-MW100-1.0**				**HVRA-MW100-6.0**			
		LAB ID:	**L1936143-02**				**L1934860-01**			
		COLLECTION DATE:	**8/12/2019**				**8/5/2019**			
		SAMPLE DEPTH:	**1.0' - 2.0'**				**6.0' - 7.0'**			
		SAMPLE MATRIX:	**SOIL**				**SOIL**			
		NY-UNRES(1)								
ANALYTE	**CAS**	**(mg/kg)**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**
VOLATILE ORGANICS BY EPA 5035										
Acetone	67-64-1	0.05	0.019		0.0088	0.0042	0.0082	J	0.0097	0.0047
Methyl Acetate	79-20-9	NS	0.054		0.0035	0.00084	ND		0.0039	0.00092
Tetrachloroethene	127-18-4	1.3	0.00051		0.00044	0.00017	ND		0.00049	0.00019
Total VOCs			0.07351	-	-	-	0.0082	-	-	-

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 26 - AOC-7, ARFF/Maintenance Bldg - SVOCs

		SAMPLE ID:	HVRA-EB01-190808				HVRA-FD01-190808				HVRA-MW100-190808			
		LAB ID:	L1935927-07				L1935927-06				L1935927-05			
		COLLECTION DATE:	8/8/2019				8/8/2019				8/8/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER			
		NY-AWQS(1)												
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS														
1,2,4,5-Tetrachlorobenzene	95-94-3	5	ND		10	0.44	ND		10	0.44	ND		10	0.44
2,4-Dichlorophenol	120-83-2	1	ND		5	0.41	ND		5	0.41	ND		5	0.41
2,4-Dinitrophenol	51-28-5	10	ND		20	6.6	ND		20	6.6	ND		20	6.6
2,4-Dinitrotoluene	121-14-2	5	ND		5	1.2	ND		5	1.2	ND		5	1.2
2,6-Dinitrotoluene	606-20-2	5	ND		5	0.93	ND		5	0.93	ND		5	0.93
2-Nitroaniline	88-74-4	5	ND		5	0.5	ND		5	0.5	ND		5	0.5
3,3'-Dichlorobenzidine	91-94-1	5	ND		5	1.6	ND		5	1.6	ND		5	1.6
3-Nitroaniline	99-09-2	5	ND		5	0.81	ND		5	0.81	ND		5	0.81
4-Chloroaniline	106-47-8	5	ND		5	1.1	ND		5	1.1	ND		5	1.1
4-Nitroaniline	100-01-6	5	ND		5	0.8	ND		5	0.8	ND		5	0.8
Atrazine	1912-24-9	7.5	ND		10	0.76	ND		10	0.76	ND		10	0.76
Bis(2-chloroethoxy)methane	111-91-1	5	ND		5	0.5	ND		5	0.5	ND		5	0.5
Bis(2-chloroethyl)ether	111-44-4	1	ND		2	0.5	ND		2	0.5	ND		2	0.5
Bis(2-ethylhexyl)phthalate	117-81-7	5	1.7	J	3	1.5	ND		3	1.5	ND		3	1.5
Hexachlorocyclopentadiene	77-47-4	5	ND		20	0.69	ND		20	0.69	ND		20	0.69
Nitrobenzene	98-95-3	0.4	ND		2	0.77	ND		2	0.77	ND		2	0.77
Phenol	108-95-2	1	ND		5	0.57	ND		5	0.57	ND		5	0.57
Total SVOCs			1.7	-	-	-	-	-	-	-	-	-	-	-
SEMIVOLATILE ORGANICS BY GC/MS-SIM														
2-Methylnaphthalene	91-57-6	NS	0.03	J	0.1	0.02	ND		0.1	0.02	ND		0.1	0.02
Benzo(a)anthracene	56-55-3	0.002	ND		0.1	0.02	ND		0.1	0.02	ND		0.1	0.02
Benzo(a)pyrene	50-32-8	ND	ND		0.1	0.02	ND		0.1	0.02	ND		0.1	0.02
Benzo(b)fluoranthene	205-99-2	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Benzo(k)fluoranthene	207-08-9	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Chrysene	218-01-9	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Hexachlorobenzene	118-74-1	0.04	ND		0.8	0.01	ND		0.8	0.01	ND		0.8	0.01
Hexachlorobutadiene	87-68-3	0.5	ND		0.5	0.05	ND		0.5	0.05	ND		0.5	0.05
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	ND		0.1	0.01	ND		0.1	0.01	ND		0.1	0.01
Naphthalene	91-20-3	10	0.08	J	0.1	0.05	ND		0.1	0.05	ND		0.1	0.05
Phenanthrene	85-01-8	50	ND		0.1	0.02	ND		0.1	0.02	0.03	J	0.1	0.02
Total SVOCs			0.11	-	-	-	-	-	-	-	0.03	-	-	-

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 26A - AOC-7, ARFF/Maintenance Bldg - SVOCs

		SAMPLE ID:	HVRA-MW100-1.0				HVRA-MW100-6.0			
		LAB ID:	L1936143-02				L1934860-01			
		COLLECTION DATE:	8/12/2019				8/5/2019			
		SAMPLE DEPTH:	1.0' - 2.0'				6.0' - 7.0'			
		SAMPLE MATRIX:	SOIL				SOIL			
		NY-UNRES[1]								
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS										
Benzaldehyde	100-52-7	NS	ND		0.24	0.048	ND		0.23	0.048
Benzo(a)anthracene	56-55-3	1	0.029	J	0.11	0.02	0.069	J	0.1	0.02
Benzo(a)pyrene	50-32-8	1	ND		0.14	0.044	0.053	J	0.14	0.043
Benzo(b)fluoranthene	205-99-2	1	0.042	J	0.11	0.03	0.097	J	0.1	0.03
Benzo(ghi)perylene	191-24-2	100	0.029	J	0.14	0.021	0.056	J	0.14	0.021
Benzo(k)fluoranthene	207-08-9	0.8	ND		0.11	0.029	0.028	J	0.1	0.028
Chrysene	218-01-9	1	0.034	J	0.11	0.019	0.076	J	0.1	0.018
Fluoranthene	206-44-0	100	0.053	J	0.11	0.02	0.13		0.1	0.02
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	0.029	J	0.14	0.025	0.055	J	0.14	0.024
Phenanthrene	85-01-8	100	ND		0.11	0.022	0.046	J	0.1	0.021
Pyrene	129-00-0	100	0.047	J	0.11	0.018	0.12		0.1	0.018
Total SVOCs			0.263	-	-	-	0.73	-	-	-

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 27 - AOC-7, ARFF/Maintenance Bldg - PCBs

		SAMPLE ID:	HVRA-EB01-190808				HVRA-FD01-190808				HVRA-MW100-190808			
		LAB ID:	L1935927-07				L1935927-06				L1935927-05			
		COLLECTION DATE:	8/8/2019				8/8/2019				8/8/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER			
		NY-AWQS[(1)]												
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
POLYCHLORINATED BIPHENYLS BY GC														
PCBs, Total	1336-36-3	0.09*	ND		0.083	0.032	ND		0.083	0.032	ND		0.083	0.032

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

* - Applies to the sum of these substances.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 27A - AOC-7, ARFF/Maintenance Bldg - PCBs

		SAMPLE ID:	HVRA-MW100-1.0				HVRA-MW100-1.0				HVRA-MW100-6.0			
		LAB ID:	L1936143-02				L1936143-02 R1				L1934860-01			
		COLLECTION DATE:	8/12/2019				8/12/2019				8/5/2019			
		SAMPLE DEPTH:	1.0' - 2.0'				1.0' - 2.0'				6.0' - 7.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL			
		NY-UNRES[(1)]												
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
POLYCHLORINATED BIPHENYLS BY GC														
PCBs, Total	1336-36-3		ND		0.0349	0.0031	-		-	-	ND		0.0349	0.0031

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 28 - AOC-7, ARFF/Maintenance Building - Pesticides

		SAMPLE ID:	HVRA-EB01-190808				HVRA-FD01-190808				HVRA-MW100-190808			
		LAB ID:	L1935927-07				L1935927-06				L1935927-05			
		COLLECTION DATE:	8/8/2019				8/8/2019				8/8/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER			
		NY-AWQS(1)												
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
ORGANOCHLORINE PESTICIDES BY GC														
Aldrin	309-00-2	ND	ND		0.014	0.002	ND		0.014	0.002	ND		0.014	0.002
Alpha-BHC	319-84-6	0.01	ND		0.014	0.003	ND		0.014	0.003	ND		0.014	0.003
Chlordane	57-74-9	0.05	ND		0.143	0.033	ND		0.143	0.033	ND		0.143	0.033
Dieldrin	60-57-1	0.004	ND		0.029	0.003	ND		0.029	0.003	ND		0.029	0.003
Endrin	72-20-8	ND	ND		0.029	0.003	ND		0.029	0.003	ND		0.029	0.003
Toxaphene	8001-35-2	0.06	ND		0.143	0.045	ND		0.143	0.045	ND		0.143	0.045

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded gray indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 28A - AOC-7, ARFF/Maintenance Bldg - Pesticides

		SAMPLE ID:	HVRA-MW100-1.0				HVRA-MW100-6.0			
		LAB ID:	L1936143-02				L1934860-01			
		COLLECTION DATE:	8/12/2019				8/5/2019			
		SAMPLE DEPTH:	1.0' - 2.0'				6.0' - 7.0'			
		SAMPLE MATRIX:	SOIL				SOIL			
		NY-UNRES[(1)]								
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
ORGANOCHLORINE PESTICIDES BY GC										
4,4'-DDE	72-55-9	0.0033	0.00132	J	0.00171	0.000396	0.00113	J	0.00161	0.000373
4,4'-DDT	50-29-3	0.0033	0.00146	J	0.00321	0.00138	0.00285	JP	0.00302	0.0013

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
P - The RPD between the results for the two columns exceeds the method-specified criteria.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 29 - AOC-7, ARFF/Maintenance Bldg - Metals

		SAMPLE ID:	HVRA-EB01-190808				HVRA-FD01-190808				HVRA-MW100-190808			
		LAB ID:	L1935927-07				L1935927-06				L1935927-05			
		COLLECTION DATE:	8/8/2019				8/8/2019				8/8/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER			
		NY-AWQS[1]												
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
TOTAL METALS														
Aluminum, Total	7429-90-5	NS	ND		10	3.27	6.18	J	10	3.27	10		10	3.27
Antimony, Total	7440-36-0	3	ND		4	0.42	0.76	J	4	0.42	ND		4	0.42
Arsenic, Total	7440-38-2	25	ND		0.5	0.16	0.39	J	0.5	0.16	0.32	J	0.5	0.16
Barium, Total	7440-39-3	1000	ND		0.5	0.17	15		0.5	0.17	15.62		0.5	0.17
Calcium, Total	7440-70-2	NS	202		100	39.4	36800		100	39.4	37400		100	39.4
Chromium, Total	7440-47-3	50	ND		1	0.17	0.57	J	1	0.17	0.69	J	1	0.17
Copper, Total	7440-50-8	200	ND		1	0.38	0.9	J	1	0.38	0.95	J	1	0.38
Iron, Total	7439-89-6	300	21	J	50	19.1	39.5	J	50	19.1	21.1	J	50	19.1
Magnesium, Total	7439-95-4	35000	ND		70	24.2	7690		70	24.2	7720		70	24.2
Manganese, Total	7439-96-5	300	ND		1	0.44	36.24		1	0.44	39.2		1	0.44
Nickel, Total	7440-02-0	100	ND		2	0.55	0.61	J	2	0.55	0.57	J	2	0.55
Potassium, Total	7440-09-7	NS	ND		100	30.9	3090		100	30.9	3160		100	30.9
Sodium, Total	7440-23-5	20000	ND		100	29.3	**134000**		100	29.3	**135000**		100	29.3
Thallium, Total	7440-28-0	0.5	ND		0.5	0.14	0.45	J	0.5	0.14	ND		0.5	0.14
GENERAL CHEMISTRY														
Cyanide, Total	57-12-5	200	ND		5	1	3	J	5	1	ND		5	1

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 29A - AOC-7, ARFF/Maintenance Bldg - Metals

		SAMPLE ID:	HVRA-MW100-1.0				HVRA-MW100-6.0			
		LAB ID:	L1936143-02				L1934860-01			
		COLLECTION DATE:	8/12/2019				8/5/2019			
		SAMPLE DEPTH:	1.0' - 2.0'				6.0' - 7.0'			
		SAMPLE MATRIX:	SOIL				SOIL			
		NY-UNRES[(1)]								
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
TOTAL METALS										
Aluminum, Total	7429-90-5	NS	11300		8.6	2.32	9240		8.06	2.18
Antimony, Total	7440-36-0	NS	0.946	J	4.3	0.327	1.18	J	4.03	0.306
Arsenic, Total	7440-38-2	13	3.73		0.86	0.179	3.38		0.806	0.168
Barium, Total	7440-39-3	350	59.6		0.86	0.15	39.3		0.806	0.14
Beryllium, Total	7440-41-7	7.2	0.396	J	0.43	0.028	0.346	J	0.403	0.027
Cadmium, Total	7440-43-9	2.5	ND		0.86	0.084	1.73		0.806	0.079
Calcium, Total	7440-70-2	NS	809		8.6	3.01	3720		8.06	2.82
Chromium, Total	7440-47-3	30	10.6		0.86	0.083	17.8		0.806	0.077
Cobalt, Total	7440-48-4	NS	6.79		1.72	0.143	8.24		1.61	0.134
Copper, Total	7440-50-8	50	17.3		0.86	0.222	**66.8**		0.806	0.208
Iron, Total	7439-89-6	NS	19000		4.3	0.777	51300		40.3	7.28
Lead, Total	7439-92-1	63	57.8		4.3	0.231	**70**		4.03	0.216
Magnesium, Total	7439-95-4	NS	3320		8.6	1.32	5480		8.06	1.24
Manganese, Total	7439-96-5	1600	728		0.86	0.137	721		0.806	0.128
Mercury, Total	7439-97-6	0.18	0.094		0.068	0.044	0.178		0.067	0.044
Nickel, Total	7440-02-0	30	13.8		2.15	0.208	19.2		2.01	0.195
Potassium, Total	7440-09-7	NS	305		215	12.4	225		201	11.6
Selenium, Total	7782-49-2	3.9	ND		1.72	0.222	0.806	J	1.61	0.208
Sodium, Total	7440-23-5	NS	79.8	J	172	2.71	76.7	J	161	2.54
Thallium, Total	7440-28-0	NS	ND		1.72	0.271	0.572	J	1.61	0.254
Vanadium, Total	7440-62-2	NS	11.7		0.86	0.175	12.8		0.806	0.164
Zinc, Total	7440-66-6	109	76.6		4.3	0.252	**138**		4.03	0.236
GENERAL CHEMISTRY		(mg/kg)								
Moisture	NONE		-		-	-	-		-	-
Solids, Total	NONE		92.3		0.1	NA	94		0.1	NA

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 30 - AOC-7, ARFF/Maintenance Bldg - PFAS and 1,4-D

		SAMPLE ID:	HVRA-MAINTBLDG-190807				HVRA-FD01-190807				HVRA-FTB01-190807				HVRA-LTB01-190807			
		LAB ID:	L1935927-03				L1935927-04				L1935927-02				L1935927-01			
		COLLECTION DATE:	8/7/2019				8/7/2019				8/7/2019				8/7/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER				WATER			
		NY-AWQS(1)																
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM																		
1,4-Dioxane	123-91-1	NS	0.254		0.15	0.0339	0.284		0.15	0.0339	-		-	-	-		-	-
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ng/l)																
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.8	1.09	ND		1.94	1.18	ND		1.99	1.21	ND		1.97	1.19
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.8	1.2	ND		1.94	1.3	ND		1.99	1.33	ND		1.97	1.31
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.8	0.726	ND		1.94	0.782	ND		1.99	0.801	ND		1.97	0.791
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.8	0.585	ND		1.94	0.63	ND		1.99	0.645	ND		1.97	0.638
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	ND		1.8	0.215	ND		1.94	0.232	ND		1.99	0.237	ND		1.97	0.234
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	2.34		1.8	0.368	2.45		1.94	0.397	ND		1.99	0.406	ND		1.97	0.402
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.8	0.884	ND		1.94	0.953	ND		1.99	0.976	ND		1.97	0.964
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		1.8	0.274	ND		1.94	0.296	ND		1.99	0.303	ND		1.97	0.299
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.8	0.336	ND		1.94	0.362	ND		1.99	0.37	ND		1.97	0.366
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	ND		1.8	0.621	ND		1.94	0.669	ND		1.99	0.685	ND		1.97	0.677
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	ND		1.8	0.203	0.377	J	1.94	0.219	ND		1.99	0.224	ND		1.97	0.222
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	1.18	J	1.8	0.339	1.1	J	1.94	0.366	ND		1.99	0.374	ND		1.97	0.37
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	0.83	J	1.8	0.296	0.895	J	1.94	0.319	ND		1.99	0.327	ND		1.97	0.323
Perfluorononanoic Acid (PFNA)	375-95-1	NS	ND		1.8	0.282	ND		1.94	0.304	ND		1.99	0.311	ND		1.97	0.307
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.8	0.523	ND		1.94	0.564	ND		1.99	0.578	ND		1.97	0.571
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	ND		1.8	0.455	0.521	J	1.94	0.49	ND		1.99	0.502	ND		1.97	0.496
Perfluorooctanoic Acid (PFOA)	335-67-1	70	ND		1.8	0.213	0.506	J	1.94	0.23	ND		1.99	0.235	ND		1.97	0.232
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	1.03	J	1.8	0.357	1.13	J	1.94	0.385	ND		1.99	0.394	ND		1.97	0.39
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.8	0.224	ND		1.94	0.241	ND		1.99	0.247	ND		1.97	0.244
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.8	0.295	ND		1.94	0.318	ND		1.99	0.326	ND		1.97	0.322
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.8	0.235	ND		1.94	0.253	ND		1.99	0.259	ND		1.97	0.256
PFOA/PFOS, Total			ND		1.8	0.213	1.03	J	1.94	0.23	ND		1.99	0.235	ND		1.97	0.232

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 31 - AOC-7, ARFF/Maintenance Bldg - SVOCs

		SAMPLE ID:	HVRA-FD01-190807				HVRA-MAINTBLDG-190807			
		LAB ID:	L1935927-04				L1935927-03			
		COLLECTION DATE:	8/7/2019				8/7/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS(1)								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS										
1,2,4,5-Tetrachlorobenzene	95-94-3	5	ND		10	0.44	ND		10	0.44
2,4-Dichlorophenol	120-83-2	1	ND		5	0.41	ND		5	0.41
2,4-Dinitrophenol	51-28-5	10	ND		20	6.6	ND		20	6.6
2,4-Dinitrotoluene	121-14-2	5	ND		5	1.2	ND		5	1.2
2,6-Dinitrotoluene	606-20-2	5	ND		5	0.93	ND		5	0.93
2-Nitroaniline	88-74-4	5	ND		5	0.5	ND		5	0.5
3,3'-Dichlorobenzidine	91-94-1	5	ND		5	1.6	ND		5	1.6
3-Nitroaniline	99-09-2	5	ND		5	0.81	ND		5	0.81
4-Chloroaniline	106-47-8	5	ND		5	1.1	ND		5	1.1
4-Nitroaniline	100-01-6	5	ND		5	0.8	ND		5	0.8
Atrazine	1912-24-9	7.5	ND		10	0.76	ND		10	0.76
Bis(2-chloroethoxy)methane	111-91-1	5	ND		5	0.5	ND		5	0.5
Bis(2-chloroethyl)ether	111-44-4	1	ND		2	0.5	ND		2	0.5
Bis(2-ethylhexyl)phthalate	117-81-7	5	ND		3	1.5	1.6	JB	3	1.5
Hexachlorocyclopentadiene	77-47-4	5	ND		20	0.69	ND		20	0.69
Nitrobenzene	98-95-3	0.4	ND		2	0.77	ND		2	0.77
Phenol	108-95-2	1	ND		5	0.57	ND		5	0.57
Total SVOCs			-	-	-	-	1.6	-	-	-
SEMIVOLATILE ORGANICS BY GC/MS-SIM										
Benzo(a)anthracene	56-55-3	0.002	ND		0.1	0.02	ND		0.1	0.02
Benzo(a)pyrene	50-32-8	ND	ND		0.1	0.02	ND		0.1	0.02
Benzo(b)fluoranthene	205-99-2	0.002	ND		0.1	0.01	ND		0.1	0.01
Benzo(k)fluoranthene	207-08-9	0.002	ND		0.1	0.01	ND		0.1	0.01
Chrysene	218-01-9	0.002	ND		0.1	0.01	ND		0.1	0.01
Hexachlorobenzene	118-74-1	0.04	ND		0.8	0.01	ND		0.8	0.01
Hexachlorobutadiene	87-68-3	0.5	ND		0.5	0.05	ND		0.5	0.05
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	ND		0.1	0.01	ND		0.1	0.01
Total SVOCs			-	-	-	-	-	-	-	-

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

B - The analyte was detected above the reporting limit in the associated method blank.

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

NA denotes Not Analyzed

NS denotes No Standard

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ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 32 - AOC-7, ARFF/Maintenance Bldg - PCBs

		SAMPLE ID:	HVRA-FD01-190807				HVRA-MAINTBLDG-190807			
		LAB ID:	L1935927-04				L1935927-03			
		COLLECTION DATE:	8/7/2019				8/7/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS[(1)]								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
POLYCHLORINATED BIPHENYLS BY GC										
PCBs, Total	1336-36-3	0.09*	ND		0.083	0.032	ND		0.083	0.032

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

* - Applies to the sum of these substances.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 33 - AOC-7, ARFF/Maintenance Bldg - Metals

		SAMPLE ID:	HVRA-FD01-190807				HVRA-MAINTBLDG-190807			
		LAB ID:	L1935927-04				L1935927-03			
		COLLECTION DATE:	8/7/2019				8/7/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS[1]								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
TOTAL METALS										
Antimony, Total	7440-36-0	3	0.72	J	4	0.42	1.25	J	4	0.42
Arsenic, Total	7440-38-2	25	7.18		0.5	0.16	8.1		0.5	0.16
Barium, Total	7440-39-3	1000	141.1		0.5	0.17	152.1		0.5	0.17
Calcium, Total	7440-70-2	NS	138000		100	39.4	148000		100	39.4
Copper, Total	7440-50-8	200	0.57	J	1	0.38	0.93	J	1	0.38
Iron, Total	7439-89-6	300	**436**		50	19.1	**434**		50	19.1
Magnesium, Total	7439-95-4	35000	**41000**		70	24.2	**42700**		70	24.2
Manganese, Total	7439-96-5	300	243.4		1	0.44	258.2		1	0.44
Nickel, Total	7440-02-0	100	1.24	J	2	0.55	1.12	J	2	0.55
Potassium, Total	7440-09-7	NS	2880		100	30.9	3040		100	30.9
Sodium, Total	7440-23-5	20000	**82900**		100	29.3	**86900**		100	29.3
Thallium, Total	7440-28-0	0.5	0.43	J	0.5	0.14	0.18	J	0.5	0.14
GENERAL CHEMISTRY										
Cyanide, Total	57-12-5	200	ND		5	1	ND		5	1

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 34 - AOC-8, Fire Pond - PFAS and 1,4-D

		SAMPLE ID:	FIRE POND-01-W				FIRE POND-02-W				FIELD BLANK				TRIP BLANK			
		LAB ID:	L1932867-08				L1932867-10				L1932867-11				L1932867-12			
		COLLECTION DATE:	7/24/2019				7/24/2019				7/24/2019				7/24/2019			
		SAMPLE DEPTH:																
		NY-AWQS(1)	WATER				WATER				WATER				WATER			
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM																		
1,4-Dioxane	123-91-1		ND		0.163	0.0368	ND		0.6	0.136	-		-	-	-	-	-	-
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ng/l)																
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	6.36		1.82	1.1	5.28		1.79	1.09	ND		2.08	1.26	ND	-	1.78	1.08
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	292		1.82	1.22	226		1.79	1.19	ND		2.08	1.39	ND	-	1.78	1.18
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.82	0.734	ND		1.79	0.72	ND		2.08	0.838	ND	-	1.78	0.715
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.82	0.591	ND		1.79	0.581	ND		2.08	0.675	ND	-	1.78	0.576
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	6.27		1.82	0.217	6.39		1.79	0.213	ND		2.08	0.248	ND	-	1.78	0.212
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	36.2		1.82	0.372	35.1		1.79	0.366	ND		2.08	0.425	ND	-	1.78	0.363
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.82	0.894	ND		1.79	0.878	ND		2.08	1.02	ND	-	1.78	0.872
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	0.945	J	1.82	0.277	1.03	J	1.79	0.272	ND		2.08	0.317	ND	-	1.78	0.27
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.82	0.339	ND		1.79	0.333	ND		2.08	0.388	ND	-	1.78	0.331
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	2.7		1.82	0.628	1.79		1.79	0.616	ND		2.08	0.717	ND	-	1.78	0.612
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	24.4		1.82	0.205	22.8		1.79	0.202	ND		2.08	0.234	ND	-	1.78	0.2
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	83.4		1.82	0.343	78		1.79	0.337	ND		2.08	0.392	ND	-	1.78	0.334
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	70.4		1.82	0.299	65.2		1.79	0.294	ND		2.08	0.342	ND	-	1.78	0.292
Perfluorononanoic Acid (PFNA)	375-95-1	NS	4.46		1.82	0.285	4.26		1.79	0.28	ND		2.08	0.325	ND	-	1.78	0.278
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.82	0.529	ND		1.79	0.52	ND		2.08	0.604	ND	-	1.78	0.516
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	214		1.82	0.46	195		1.79	0.452	ND		2.08	0.525	ND	-	1.78	0.448
Perfluorooctanoic Acid (PFOA)	335-67-1	70	26.1		1.82	0.215	23.8		1.79	0.211	1.24		2.08	0.246	0.886	J	1.78	0.21
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	107		1.82	0.361	99.6		1.79	0.355	ND		2.08	0.412	ND	-	1.78	0.352
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.82	0.226	ND		1.79	0.222	ND		2.08	0.258	ND	-	1.78	0.221
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.82	0.298	ND		1.79	0.293	ND		2.08	0.341	ND	-	1.78	0.291
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.82	0.237	ND		1.79	0.233	ND		2.08	0.412	ND	-	1.78	0.231
PFOA/PFOS, Total			240		1.82	0.215	219		1.79	0.211	1.24	J	2.08	0.246	0.886	J	1.78	0.21

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 34A - AOC-8, Fire Pond - PFAS and 1,4-D

			SAMPLE ID:	FIRE POND-01-S				FIRE POND-02-S			
			LAB ID:	L1932867-07				L1932867-09			
			COLLECTION DATE:	7/24/2019				7/24/2019			
			SAMPLE MATRIX:	SEDIMENT				SEDIMENT			
		SACS-A,B,C SGVs[2]	NY-UNRES[1]								
ANALYTE	CAS	(mg/kg)	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM											
1,4-Dioxane	123-91-1	NS	0.1	ND		0.0412	0.0105	ND		0.0345	0.00881
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ug/kg)	(ug/kg)								
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	NS	ND		1.29	0.37	ND		1.21	0.347
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	NS	ND		1.29	0.231	ND		1.21	0.217
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	NS	ND		1.29	0.109	ND	J	1.21	0.102
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	NS	ND		1.29	0.26	ND	J	1.21	0.244
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	NS	ND		1.29	0.05	ND		1.21	0.047
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	NS	0.245	J	1.29	0.029	0.342	J	1.21	0.027
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	NS	0.345	J	1.29	0.197	ND		1.21	0.185
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	NS	0.122	J	1.29	0.086	0.1	J	1.21	0.081
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	NS	0.128	J	1.29	0.09	ND		1.21	0.085
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	NS	ND		1.29	0.176	ND		1.21	0.165
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	NS	0.16	J	1.29	0.058	0.215	J	1.21	0.055
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	NS	2.27		1.29	0.078	0.208	J	1.21	0.073
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	NS	0.342	J	1.29	0.068	0.218	J	1.21	0.064
Perfluorononanoic Acid (PFNA)	375-95-1	NS	NS	0.147	J	1.29	0.097	0.206	J	1.21	0.091
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	NS	ND		1.29	0.126	ND		1.21	0.118
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	NS	NS	11.6		1.29	0.167	7.83		1.21	0.157
Perfluorooctanoic Acid (PFOA)	335-67-1	NS	NS	0.213	J	1.29	0.054	0.212	J	1.21	0.051
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	NS	0.422	J	1.29	0.059	0.737	J	1.21	0.056
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	NS	ND		1.29	0.07	ND	J	1.21	0.065
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	NS	ND		1.29	0.263	ND	J	1.21	0.247
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	NS	0.243	J	1.29	0.06	0.132	J	1.21	0.057
PFOA/PFOS, Total		NS	NS	11.8	J	1.29	0.054	8.04	J	1.21	0.051
GENERAL CHEMISTRY		(mg/kg)	(mg/kg)								
Solids, Total	NONE	NS	NS	72.9		0.1	0.1	82.3		0.1	0.1

Notes:

The regulator guidance values applied herein, are those that were in effect as of the date of data collection and the Department approved work plan.

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required

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

(2) New York State Department of Environmental Conservation Screening and Assessment of Contaminated Sediment, June 24, 2014, Class A-C Sediment Guidance Values.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

NA denotes Not Analyzed

ND denotes Non Detect

mg/kg = ppm or parts per million

ug/kg = ppb or parts per billion

Table 35 - AOC-9, North/South Runway - PFAS and 1,4-D

		SAMPLE ID:	HVRA-MW102-190809				HVRA-MW103-190809			
		LAB ID:	L1935927-10				L1935927-12			
		COLLECTION DATE:	8/9/2019				8/9/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS(1)								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM										
1,4-Dioxane	123-91-1	NS	ND		0.15	0.0339	ND		0.156	0.0353
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ng/l)								
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.95	1.18	ND		1.84	1.12
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.95	1.3	ND		1.84	1.23
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.95	0.785	ND		1.84	0.742
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.95	0.633	ND		1.84	0.598
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	ND		1.95	0.232	0.819	J	1.84	0.22
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	1.72	J	1.95	0.398	1.39	J	1.84	0.376
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.95	0.957	ND		1.84	0.904
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		1.95	0.297	ND		1.84	0.28
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.95	0.363	ND		1.84	0.343
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	ND		1.95	0.672	ND		1.84	0.635
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	0.762	J	1.95	0.22	0.819	J	1.84	0.208
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	ND		1.95	0.367	4.74		1.84	0.347
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	1.41	J	1.95	0.32	1.26	J	1.84	0.302
Perfluorononanoic Acid (PFNA)	375-95-1	NS	ND		1.95	0.305	ND		1.84	0.288
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	0.684	J	1.95	0.566	ND		1.84	0.535
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	1.17	J	1.95	0.492	1.32	J	1.84	0.465
Perfluorooctanoic Acid (PFOA)	335-67-1	70	1.26	J	1.95	0.23	2.1		1.84	0.218
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	1.38	J	1.95	0.387	1.15	J	1.84	0.365
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.95	0.242	ND		1.84	0.229
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.95	0.32	ND		1.84	0.302
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.95	0.254	ND		1.84	0.24
PFOA/PFOS, Total			2.43	J	1.95	0.23	3.42	J	1.84	0.218

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 35A - AOC-9, North/South Runway - PFAS and 1,4-D

		SAMPLE ID:	HVRA-FD01-190806				HVRA-MW102-0.5				HVRA-MW102-2.0				HVRA-MW102-4.5				HVRA-MW103-0.5				HVRA-MW103-10.0				HVRA-MW103-2.0			
		LAB ID:	L1935085-05				L1936143-07				L1936143-08				L1935085-04				L1936143-12				L1935085-06				L1936143-13			
		COLLECTION DATE:	8/6/2019				8/12/2019				8/12/2019				8/6/2019				8/12/2019				8/6/2019				8/12/2019			
		SAMPLE DEPTH:	FD of MW102-4.5				0.5' - 2.0'				2.0' - 3.0'				4.5' - 5.5'				0.5' - 2.0'				10.0 - 11.0'				2.0' - 3.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
		NY-UNRES(1)																												
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM																														
1,4-Dioxane	123-91-1	0.1	-		-	-	ND		0.0077	0.00196	ND		0.00753	0.00192	-		-	-	ND		0.0103	0.00263	-		-	-	ND		0.00767	0.00196
Semivolatile Organics by GC/MS																														
1,4-Dioxane	123-91-1	0.1	ND		0.08	0.035	-		-	-	-		-	-	ND		0.076	0.033	-		-	-	ND		0.077	0.034	-		-	-
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ug/kg)																												
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.09	0.313	ND		0.975	0.28	ND		0.976	0.28	ND		1	0.288	ND		1.47	0.422	ND		0.989	0.284	ND		1.02	0.292
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.09	0.196	ND		0.975	0.175	ND		0.976	0.175	ND		1	0.18	ND		1.47	0.264	8.28		0.989	0.178	ND		1.02	0.182
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.09	0.092	ND		0.975	0.082	ND	J	0.976	0.082	ND	J	1	0.085	ND		1.47	0.124	ND		0.989	0.084	ND		1.02	0.086
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND	J	1.09	0.22	ND	J	0.975	0.196	ND	J	0.976	0.197	ND	J	1	0.202	ND	J	1.47	0.296	ND		0.989	0.199	ND		1.02	0.205
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	ND		1.09	0.043	ND		0.975	0.038	ND		0.976	0.038	ND		1	0.039	ND		1.47	0.057	ND		0.989	0.039	ND		1.02	0.04
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	ND		1.09	0.025	0.176	J	0.975	0.022	0.06	J	0.976	0.022	ND		1	0.023	0.252	J	1.47	0.033	ND		0.989	0.022	0.093	J	1.02	0.023
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.09	0.167	ND		0.975	0.149	ND		0.976	0.149	ND		1	0.153	ND		1.47	0.225	ND		0.989	0.151	ND		1.02	0.155
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		1.09	0.073	0.089	J	0.975	0.065	ND		0.976	0.065	ND		1	0.067	0.14	J	1.47	0.099	ND		0.989	0.066	0.075	J	1.02	0.068
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.09	0.076	ND		0.975	0.068	ND		0.976	0.068	ND	J	1	0.07	ND		1.47	0.103	ND		0.989	0.069	ND		1.02	0.071
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	ND		1.09	0.149	ND		0.975	0.133	ND		0.976	0.133	ND		1	0.137	ND		1.47	0.201	ND		0.989	0.135	ND		1.02	0.139
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	ND		1.09	0.049	0.174	J	0.975	0.044	ND		0.976	0.044	ND		1	0.045	0.25	J	1.47	0.066	ND		0.989	0.045	0.085	J	1.02	0.046
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	ND		1.09	0.066	0.172	J	0.975	0.059	0.063	J	0.976	0.059	ND		1	0.061	ND		1.47	0.089	ND		0.989	0.06	ND		1.02	0.062
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	ND		1.09	0.057	0.137	J	0.975	0.051	0.082	J	0.976	0.051	ND		1	0.053	0.244	J	1.47	0.077	ND		0.989	0.052	0.144	J	1.02	0.053
Perfluorononanoic Acid (PFNA)	375-95-1	NS	ND		1.09	0.082	0.146	J	0.975	0.073	ND		0.976	0.073	ND		1	0.075	0.391	J	1.47	0.11	ND		0.989	0.074	0.239	J	1.02	0.076
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.09	0.107	ND		0.975	0.096	ND		0.976	0.096	ND		1	0.098	ND		1.47	0.144	ND		0.989	0.097	ND		1.02	0.1
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	NS	ND		1.09	0.142	1.29		0.975	0.127	0.213	J	0.976	0.127	ND		1	0.13	0.958	J	1.47	0.191	ND		0.989	0.128	0.55	J	1.02	0.132
Perfluorooctanoic Acid (PFOA)	335-67-1	NS	ND		1.09	0.046	0.415	J	0.975	0.041	0.127	J	0.976	0.041	ND		1	0.042	0.85	J	1.47	0.062	ND		0.989	0.041	0.57	J	1.02	0.043
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	ND		1.09	0.05	0.118	J	0.975	0.045	0.045	J	0.976	0.045	ND		1	0.046	0.178	J	1.47	0.068	ND		0.989	0.046	0.089	J	1.02	0.047
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.09	0.059	ND		0.975	0.053	ND		0.976	0.053	ND		1	0.054	ND		1.47	0.079	ND		0.989	0.053	ND		1.02	0.055
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.09	0.223	ND		0.975	0.199	ND		0.976	0.2	ND		1	0.205	ND		1.47	0.301	ND		0.989	0.202	ND		1.02	0.208
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.09	0.051	0.08	J	0.975	0.046	ND		0.976	0.046	ND	J	1	0.047	0.2	J	1.47	0.069	ND		0.989	0.046	0.053	J	1.02	0.048
PFOA/PFOS, Total			ND		1.09	0.046	1.71	J	0.975	0.041	0.34	J	0.976	0.041	ND		1	0.042	1.81	J	1.47	0.062	ND		0.989	0.041	1.12	J	1.02	0.043

Notes:
PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 36 - AOC-9, North/South Runway, VOCs

		SAMPLE ID:	HVRA-MW102-190809				HVRA-MW103-190809			
		LAB ID:	L1935927-10				L1935927-12			
		COLLECTION DATE:	8/9/2019				8/9/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS[1]								
ANALYTE	**CAS**	**(ug/l)**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**
VOLATILE ORGANICS BY GC/MS										
1,1,2-Trichloroethane	79-00-5	1	ND		1.5	0.5	ND		1.5	0.5
1,2-Dibromo-3-chloropropane	96-12-8	0.04	ND		2.5	0.7	ND		2.5	0.7
1,2-Dibromoethane	106-93-4	0.0006	ND		2	0.65	ND		2	0.65
Acetone	67-64-1	50	18		5	1.5	11		5	1.5
cis-1,3-Dichloropropene	10061-01-5	0.4	ND		0.5	0.14	ND		0.5	0.14
Dichlorodifluoromethane	75-71-8	5	ND		5	1	ND		5	1
trans-1,3-Dichloropropene	10061-02-6	0.4	ND		0.5	0.16	ND		0.5	0.16
Total VOCs			18	-	-	-	11	-	-	-

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 36A - AOC-9, North/South Runway - VOCs

		SAMPLE ID:	HVRA-FD01-190806				HVRA-MW102-0.5				HVRA-MW102-2.0				HVRA-MW102-4.5				HVRA-MW103-0.5				HVRA-MW103-10.0				HVRA-MW103-2.0			
		LAB ID:	L1935085-05				L1936143-07				L1936143-08				L1935085-04				L1936143-12				L1935085-06				L1936143-13			
		COLLECTION DATE:	8/6/2019				8/12/2019				8/12/2019				8/6/2019				8/12/2019				8/6/2019				8/12/2019			
		SAMPLE DEPTH:	FD of MW102-4.5				0.5' - 2.0'				2.0' - 3.0'				4.5' - 5.5'				0.5' - 2.0'				10.0' - 11.0'				2.0' - 3.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
		NY-UNRES[1]																												
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
VOLATILE ORGANICS BY EPA 5035																														
Acetone	67-64-1	0.05	**0.054**		0.01	0.0048	ND		0.011	0.0051	ND		0.0095	0.0046	0.013		0.0095	0.0046	ND		0.014	0.0066	ND		0.0096	0.0046	ND		0.0094	0.0045
Methyl Acetate	79-20-9	NS	0.038		0.004	0.00096	ND		0.0042	0.001	ND		0.0038	0.0009	ND		0.0038	0.0009	ND		0.0054	0.0013	ND		0.0038	0.00091	ND		0.0037	0.00089
Tetrachloroethene	127-18-4	1.3	ND		0.0005	0.0002	0.001		0.00053	0.00021	0.00035	J	0.00048	0.00019	ND		0.00047	0.00018	0.00065	J	0.00068	0.00027	ND		0.00048	0.00019	0.00071		0.00047	0.00018
Total VOCs			0.092	-	-	-	0.001	-	-	-	0.00035	-	-	-	0.013	-	-	-	0.00065	-	-	-	-	-	-	-	0.00071	-	-	-

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 37 - AOC-9, North/South Runway - SVOCs

		SAMPLE ID:	HVRA-MW102-190809				HVRA-MW103-190809			
		LAB ID:	L1935927-10				L1935927-12			
		COLLECTION DATE:	8/9/2019				8/9/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS(1)								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS										
1,2,4,5-Tetrachlorobenzene	95-94-3	5	ND		10	0.44	ND		10	0.44
2,4-Dichlorophenol	120-83-2	1	ND		5	0.41	ND		5	0.41
2,4-Dinitrophenol	51-28-5	10	ND		20	6.6	ND		20	6.6
2,4-Dinitrotoluene	121-14-2	5	ND		5	1.2	ND		5	1.2
2,6-Dinitrotoluene	606-20-2	5	ND		5	0.93	ND		5	0.93
2-Nitroaniline	88-74-4	5	ND		5	0.5	ND		5	0.5
3,3'-Dichlorobenzidine	91-94-1	5	ND		5	1.6	ND		5	1.6
3-Nitroaniline	99-09-2	5	ND		5	0.81	ND		5	0.81
4-Chloroaniline	106-47-8	5	ND		5	1.1	ND		5	1.1
4-Nitroaniline	100-01-6	5	ND		5	0.8	ND		5	0.8
Atrazine	1912-24-9	7.5	ND		10	0.76	ND		10	0.76
Bis(2-chloroethoxy)methane	111-91-1	5	ND		5	0.5	ND		5	0.5
Bis(2-chloroethyl)ether	111-44-4	1	ND		2	0.5	ND		2	0.5
Hexachlorocyclopentadiene	77-47-4	5	ND		20	0.69	ND		20	0.69
Nitrobenzene	98-95-3	0.4	ND		2	0.77	ND		2	0.77
Phenol	108-95-2	1	ND		5	0.57	ND		5	0.57
Total SVOCs			-	-	-	-	-	-	-	-
SEMIVOLATILE ORGANICS BY GC/MS-SIM										
Benzo(a)anthracene	56-55-3	0.002	**0.04**	J	0.1	0.02	**0.02**	J	0.1	0.02
Benzo(a)pyrene	50-32-8	ND	**0.03**	J	0.1	0.02	**0.02**	J	0.1	0.02
Benzo(b)fluoranthene	205-99-2	0.002	**0.03**	J	0.1	0.01	**0.06**	J	0.1	0.01
Benzo(ghi)perylene	191-24-2	NS	0.03	J	0.1	0.01	0.05	J	0.1	0.01
Benzo(k)fluoranthene	207-08-9	0.002	**0.03**	J	0.1	0.01	**0.02**	J	0.1	0.01
Chrysene	218-01-9	0.002	**0.02**	J	0.1	0.01	ND		0.1	0.01
Dibenzo(a,h)anthracene	53-70-3	NS	0.02	J	0.1	0.01	ND		0.1	0.01
Fluoranthene	206-44-0	50	0.02	J	0.1	0.02	ND		0.1	0.02
Hexachlorobenzene	118-74-1	0.04	ND		0.8	0.01	ND		0.8	0.01
Hexachlorobutadiene	87-68-3	0.5	ND		0.5	0.05	ND		0.5	0.05
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	**0.03**	J	0.1	0.01	**0.05**	J	0.1	0.01
Naphthalene	91-20-3	10	ND		0.1	0.05	0.06	J	0.1	0.05
Phenanthrene	85-01-8	50	0.04	J	0.1	0.02	0.02	J	0.1	0.02
Total SVOCs			0.29	-	-	-	0.3	-	-	-

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 37A - AOC-9, North/South Runway - SVOCs

		SAMPLE ID:	HVRA-FD01-190806				HVRA-MW102-0.5				HVRA-MW102-2.0				HVRA-MW102-4.5				HVRA-MW103-0.5				HVRA-MW103-10.0				HVRA-MW103-2.0			
		LAB ID:	L1935085-05				L1936143-07				L1936143-08				L1935085-04				L1936143-12				L1935085-06				L1936143-13			
		COLLECTION DATE:	8/6/2019				8/12/2019				8/12/2019				8/6/2019				8/12/2019				8/6/2019				8/12/2019			
		SAMPLE DEPTH:	FD of MW102-4.5				0.5' - 2.0'				2.0' - 3.0'				4.5' - 5.5'				0.5' - 1.5'				10.0' - 11.0'				2.0' - 3.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
		NY-UNRES[(1)]																												
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
SEMIVOLATILE ORGANICS BY GC/MS																														
Benzaldehyde	100-52-7	NS	ND		0.24	0.05	0.063	J	0.23	0.048	ND		0.23	0.047	ND		0.24	0.05	0.29	J	0.34	0.069	ND		0.23	0.048	0.14	J	0.25	0.051
Benzo(a)anthracene	56-55-3	1	ND		0.11	0.021	ND		0.11	0.02	ND		0.1	0.02	ND		0.11	0.021	ND		0.15	0.029	ND		0.11	0.02	ND		0.11	0.021
Benzo(a)pyrene	50-32-8	1	ND		0.15	0.045	ND		0.14	0.043	ND		0.14	0.042	ND		0.15	0.045	ND		0.2	0.062	ND		0.14	0.043	ND		0.15	0.046
Benzo(b)fluoranthene	205-99-2	1	ND		0.11	0.031	ND		0.11	0.03	ND		0.1	0.029	ND		0.11	0.031	ND		0.15	0.043	ND		0.11	0.03	ND		0.11	0.032
Benzo(ghi)perylene	191-24-2	100	ND		0.15	0.022	ND		0.14	0.021	ND		0.14	0.02	ND		0.15	0.022	ND		0.2	0.03	ND		0.14	0.021	ND		0.15	0.022
Benzo(k)fluoranthene	207-08-9	0.8	ND		0.11	0.029	ND		0.11	0.028	ND		0.1	0.028	ND		0.11	0.029	ND		0.15	0.041	ND		0.11	0.028	ND		0.11	0.03
Chrysene	218-01-9	1	ND		0.11	0.019	ND		0.11	0.018	ND		0.1	0.018	ND		0.11	0.019	ND		0.15	0.026	ND		0.11	0.018	ND		0.11	0.02
Fluoranthene	206-44-0	100	ND		0.11	0.021	ND		0.11	0.02	ND		0.1	0.02	ND		0.11	0.021	0.039	J	0.15	0.029	ND		0.11	0.02	0.034	J	0.11	0.022
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	ND		0.15	0.026	ND		0.14	0.025	ND		0.14	0.024	ND		0.15	0.026	ND		0.2	0.035	ND		0.14	0.025	ND		0.15	0.026
Phenanthrene	85-01-8	100	ND		0.11	0.022	ND		0.11	0.022	ND		0.1	0.021	ND		0.11	0.022	ND		0.15	0.031	ND		0.11	0.022	ND		0.11	0.023
Pyrene	129-00-0	100	ND		0.11	0.018	ND		0.11	0.018	ND		0.1	0.017	ND		0.11	0.018	0.033	J	0.15	0.025	ND		0.11	0.018	0.031	J	0.11	0.019
Total SVOCs			-	-	-	-	0.063	-	-	-	-	-	-	-	-	-	-	-	0.362	-	-	-	-	-	-	-	0.205	-	-	-

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 38 - AOC-9, North/South Runway - PCBs

		SAMPLE ID:	HVRA-MW102-190809				HVRA-MW103-190809			
		LAB ID:	L1935927-10				L1935927-12			
		COLLECTION DATE:	8/9/2019				8/9/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS[(1)]								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
POLYCHLORINATED BIPHENYLS BY GC										
PCBs, Total	1336-36-3	0.09*	ND		0.083	0.032	ND		0.083	0.032

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

* - Applies to the sum of these substances.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 38A - AOC-9, North/South Runway - PCBs

		SAMPLE ID:	HVRA-FD01-190806				HVRA-MW102-0.5				HVRA-MW102-2.0				HVRA-MW102-4.5				HVRA-MW103-0.5				HVRA-MW103-10.0				HVRA-MW103-2.0			
		LAB ID:	L1935085-05				L1936143-07				L1936143-08				L1935085-04				L1936143-12				L1935085-06				L1936143-13			
		COLLECTION DATE:	8/6/2019				8/12/2019				8/12/2019				8/6/2019				8/12/2019				8/6/2019				8/12/2019			
		SAMPLE DEPTH:	FD of MW102-4.5				0.5' - 2.0'				2.0' - 3.0'				4.5' - 5.5'				0.5' - 2.0'				10.0' - 11.0'				2.0' - 3.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
		NY-UNRES(1)																												
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
POLYCHLORINATED BIPHENYLS BY GC																														
PCBs, Total	1336-36-3		ND		0.0368	0.00327	ND		0.0356	0.00316	ND		0.0352	0.00313	ND		0.0355	0.00315	ND		0.0504	0.00448	ND		0.0355	0.00315	ND		0.0376	0.00334

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 39 - AOC-9, North/South Runway - Pesticides

		SAMPLE ID:	HVRA-MW102-190809				HVRA-MW103-190809			
		LAB ID:	L1935927-10				L1935927-12			
		COLLECTION DATE:	8/9/2019				8/9/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS(1)								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
ORGANOCHLORINE PESTICIDES BY GC										
Aldrin	309-00-2	ND	ND		0.014	0.002	ND		0.014	0.002
Alpha-BHC	319-84-6	0.01	ND		0.014	0.003	ND		0.014	0.003
Chlordane	57-74-9	0.05	ND		0.143	0.033	ND		0.143	0.033
Dieldrin	60-57-1	0.004	ND		0.029	0.003	ND		0.029	0.003
Endrin	72-20-8	ND	ND		0.029	0.003	ND		0.029	0.003
Toxaphene	8001-35-2	0.06	ND		0.143	0.045	ND		0.143	0.045

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded gray indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 39A - AOC-9, North/South Runway - Pesticides

		SAMPLE ID:	HVRA-FD01-190806				HVRA-MW102-0.5				HVRA-MW102-2.0				HVRA-MW102-4.5				HVRA-MW103-0.5				HVRA-MW103-10.0				HVRA-MW103-2.0			
		LAB ID:	L1935085-05				L1936143-07				L1936143-08				L1935085-04				L1936143-12				L1935085-06				L1936143-13			
		COLLECTION DATE:	8/6/2019				8/12/2019				8/12/2019				8/6/2019				8/12/2019				8/6/2019				8/12/2019			
		SAMPLE DEPTH:	FD of MW102-4.5				0.5' - 2.0'				2.0' - 3.0'				4.5' - 5.5'				0.5' - 1.5'				10.0' - 11.0'				2.0' - 3.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
		NY-UNRES(1)																												
ANALYTE	CAS	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
ORGANOCHLORINE PESTICIDES BY GC																														
4,4'-DDE	72-55-9	0.0033	ND		0.00175	0.000404	ND		0.00172	0.000398	ND		0.00167	0.000387	ND		0.00176	0.000408	0.000886	JP	0.00241	0.000557	ND		0.00167	0.000387	0.00052	J	0.0018	0.000415
4,4'-DDT	50-29-3	0.0033	ND		0.00328	0.00141	ND		0.00323	0.00138	ND		0.00314	0.00134	ND		0.0033	0.00142	ND		0.00451	0.00194	ND		0.00314	0.00135	ND		0.00336	0.00144

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
P - The RPD between the results for the two columns exceeds the method-specified criteria.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 40 - AOC-9, North/South Runway - Metals

		SAMPLE ID:	HVRA-MW102-190809				HVRA-MW103-190809			
		LAB ID:	L1935927-10				L1935927-12			
		COLLECTION DATE:	8/9/2019				8/9/2019			
		SAMPLE MATRIX:	WATER				WATER			
		NY-AWQS[1]								
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL
TOTAL METALS										
Aluminum, Total	7429-90-5	NS	472		10	3.27	172		10	3.27
Antimony, Total	7440-36-0	3	0.52	J	4	0.42	ND		4	0.42
Arsenic, Total	7440-38-2	25	1.52		0.5	0.16	4.79		0.5	0.16
Barium, Total	7440-39-3	1000	70.84		0.5	0.17	53.8		0.5	0.17
Cadmium, Total	7440-43-9	5	0.1	J	0.2	0.05	ND		0.2	0.05
Calcium, Total	7440-70-2	NS	206000		100	39.4	72200		100	39.4
Chromium, Total	7440-47-3	50	1.73		1	0.17	0.7	J	1	0.17
Cobalt, Total	7440-48-4	NS	6.3		0.5	0.16	1.14		0.5	0.16
Copper, Total	7440-50-8	200	2.74		1	0.38	1.17		1	0.38
Iron, Total	7439-89-6	300	**2000**		50	19.1	**7800**		50	19.1
Lead, Total	7439-92-1	25	1.13		1	0.34	0.75	J	1	0.34
Magnesium, Total	7439-95-4	35000	**66800**		70	24.2	16900		70	24.2
Manganese, Total	7439-96-5	300	**9436**		1	0.44	**3741**		1	0.44
Nickel, Total	7440-02-0	100	11.34		2	0.55	0.81	J	2	0.55
Potassium, Total	7440-09-7	NS	3520		100	30.9	1550		100	30.9
Sodium, Total	7440-23-5	20000	15900		100	29.3	**68500**		100	29.3
Thallium, Total	7440-28-0	0.5	0.16	J	0.5	0.14	ND		0.5	0.14
Zinc, Total	7440-66-6	2000	13.36		10	3.41	4.14	J	10	3.41
GENERAL CHEMISTRY										
Cyanide, Total	57-12-5	200	3	J	5	1	ND		5	1

Notes:

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 40A - AOC-9, North/South Runway - Metals

		SAMPLE ID:	HVRA-FD01-190806				HVRA-MW102-0.5				HVRA-MW102-2.0				HVRA-MW102-4.5				HVRA-MW103-0.5				HVRA-MW103-10.0				HVRA-MW103-2.0			
		LAB ID:	L1935085-05				L1936143-07				L1936143-08				L1935085-04				L1936143-12				L1935085-06				L1936143-13			
		COLLECTION DATE:	8/6/2019				8/12/2019				8/12/2019				8/6/2019				8/12/2019				8/6/2019				8/12/2019			
		SAMPLE DEPTH:	FD of MW102-4.5				0.5' - 2.0'				2.0' - 3.0'				4.5' - 5.5'				0.5' - 2.0'				10.0' - 11.0'				2.0' - 3.0'			
		SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
		NY-UNRES[(1)]																												
ANALYTE	CAS		Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
TOTAL METALS		(mg/kg)																												
Aluminum, Total	7429-90-5	NS	11400		8.64	2.33	9550		8.59	2.32	11200		8.41	2.27	11000		8.86	2.39	15500		12	3.26	10800		8.28	2.24	10200		8.91	2.41
Antimony, Total	7440-36-0	NS	1.18	J	4.32	0.328	0.834	J	4.3	0.326	1.06	J	4.21	0.32	1.35	J	4.43	0.337	1.2	J	6.03	0.458	1.32	J	4.14	0.315	0.918	J	4.46	0.339
Arsenic, Total	7440-38-2	13	4.53		0.864	0.18	3.15		0.859	0.179	4.34		0.841	0.175	4.67		0.886	0.184	5.53		1.2	0.251	5.06		0.828	0.172	3.8		0.891	0.185
Barium, Total	7440-39-3	350	50		0.864	0.15	42.4		0.859	0.15	41.2		0.841	0.146	44.1		0.886	0.154	54.7		1.2	0.21	43.1		0.828	0.144	36.8		0.891	0.155
Beryllium, Total	7440-41-7	7.2	0.363	J	0.432	0.029	0.37	J	0.43	0.028	0.387	J	0.421	0.028	0.363	J	0.443	0.029	0.494	J	0.603	0.04	0.406	J	0.414	0.027	0.365	J	0.446	0.029
Cadmium, Total	7440-43-9	2.5	ND		0.864	0.085	ND		0.859	0.084	ND		0.841	0.083	ND		0.886	0.087	ND		1.2	0.118	ND		0.828	0.081	ND		0.891	0.087
Calcium, Total	7440-70-2	NS	21900		8.64	3.02	1410		8.59	3.01	8520		8.41	2.94	34200		8.86	3.1	3610		12	4.22	22800		8.28	2.9	2360		8.91	3.12
Chromium, Total	7440-47-3	30	14.1		0.864	0.083	10.6		0.859	0.083	15.8		0.841	0.081	13.3		0.886	0.085	15.8		1.2	0.116	14		0.828	0.08	11.6		0.891	0.086
Cobalt, Total	7440-48-4	NS	9.32		1.73	0.143	6.46		1.72	0.143	9.48		1.68	0.14	9.42		1.77	0.147	10.5		2.41	0.2	10.6		1.66	0.138	7.98		1.78	0.148
Copper, Total	7440-50-8	50	29.4		0.864	0.223	20.1		0.859	0.222	26.5		0.841	0.217	27.5		0.886	0.228	32		1.2	0.311	25.5		0.828	0.214	24		0.891	0.23
Iron, Total	7439-89-6	NS	25000		4.32	0.78	17400		4.3	0.776	21800		4.21	0.76	24300		4.43	0.8	29400		6.03	1.09	23600		4.14	0.748	19700		4.46	0.805
Lead, Total	7439-92-1	63	9.87		4.32	0.232	13.2		4.3	0.23	10.9		4.21	0.226	9.85		4.43	0.237	25.5		6.03	0.323	10.7		4.14	0.222	19.7		4.46	0.239
Magnesium, Total	7439-95-4	NS	7590		8.64	1.33	3370		8.59	1.32	5080		8.41	1.3	7670		8.86	1.36	6400		12	1.86	9470		8.28	1.28	4280		8.91	1.37
Manganese, Total	7439-96-5	1600	551		0.864	0.137	415		0.859	0.137	636		0.841	0.134	657		0.886	0.141	974		1.2	0.192	730		0.828	0.132	573		0.891	0.142
Mercury, Total	7439-97-6	0.18	ND		0.071	0.046	ND		0.068	0.044	ND		0.067	0.044	ND		0.071	0.046	ND		0.097	0.063	ND		0.07	0.046	ND		0.072	0.047
Nickel, Total	7440-02-0	30	19.2		2.16	0.209	14.5		2.15	0.208	19.9		2.1	0.204	18.9		2.21	0.214	22.3		3.01	0.292	20.5		2.07	0.2	17.2		2.23	0.216
Potassium, Total	7440-09-7	NS	820		216	12.4	358		215	12.4	448		210	12.1	850		221	12.8	519		301	17.4	866		207	11.9	376		223	12.8
Selenium, Total	7782-49-2	3.9	ND		1.73	0.223	ND		1.72	0.222	ND		1.68	0.217	ND		1.77	0.228	ND		2.41	0.311	ND		1.66	0.214	ND		1.78	0.23
Sodium, Total	7440-23-5	NS	45.9	J	173	2.72	19.4	J	172	2.71	29.2	J	168	2.65	49.2	J	177	2.79	37.1	J	241	3.8	52.4	J	166	2.61	23.2	J	178	2.81
Thallium, Total	7440-28-0	NS	ND		1.73	0.272	ND		1.72	0.271	ND		1.68	0.265	ND		1.77	0.279	ND		2.41	0.38	ND		1.66	0.261	ND		1.78	0.281
Vanadium, Total	7440-62-2	NS	13.9		0.864	0.175	14		0.859	0.174	13.2		0.841	0.171	13.4		0.886	0.18	20.1		1.2	0.245	13.4		0.828	0.168	14.9		0.891	0.181
Zinc, Total	7440-66-6	109	59.5		4.32	0.253	46.1		4.3	0.252	57		4.21	0.246	57.4		4.43	0.26	75.5		6.03	0.353	56.3		4.14	0.243	60.3		4.46	0.261
GENERAL CHEMISTRY		(mg/kg)																												
Moisture	NONE		11.2		0.1	NA	-		-	-	-		-	-	10.9		0.1	NA	-		-	-	9.1		0.1	NA	-	-	-	-
Solids, Total	NONE		88.8		0.1	NA	92.8		0.1	NA	93.8		0.1	NA	89.1		0.1	NA	65.2		0.1	NA	90.9		0.1	NA	87.1		0.1	NA

Notes:
(1) NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
B - The analyte was detected above the reporting limit in the associated method blank.
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
mg/kg = ppm or parts per million
ug/kg = ppb or parts per billion
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 41 - Offsite - PFAS and 1,4-D

		SAMPLE ID:	HVRA-1581_RT_376-190904				HVRA-1601_RT376_190906				HVRA-1610_RT_376-190904				HVRA-2_HACKENSACK-190906				HVRA-7_HACKENSACK_HTS_RD-190904				HVRA-FTB01-190904				LTB01-190906			
		LAB ID:	L1940308-01				L1940894-01				L1940308-04				L1940894-02				L1940308-02				L1940308-03				L1940894-03			
		COLLECTION DATE:	9/4/2019				9/6/2019				9/4/2019				9/6/2019				9/4/2019				9/4/2019				9/6/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER				WATER				WATER				WATER				WATER			
		NY-AWQS(1)																												
ANALYTE	**CAS**	**(ug/l)**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**
1,4 DIOXANE BY 8270D-SIM																														
1,4-Dioxane	123-91-1	NS	0.216		0.144	0.0326	ND		0.16	0.0361	ND		0.139	0.0314	ND		0.156	0.0353	ND		0.144	0.0326	-	-	-	-	-	-	-	-
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		**(ng/l)**																												
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.8	1.09	ND		1.85	1.12	ND		1.84	1.11	ND		1.91	1.16	ND		1.84	1.12	ND		1.94	1.17	ND		1.79	1.09
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.8	1.2	ND		1.85	1.23	ND		1.84	1.22	ND		1.91	1.27	ND		1.84	1.23	ND		1.94	1.29	ND		1.79	1.19
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.8	0.723	ND		1.85	0.744	ND		1.84	0.739	ND		1.91	0.767	ND		1.84	0.742	ND		1.94	0.779	ND		1.79	0.72
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.8	0.583	ND		1.85	0.6	ND		1.84	0.596	ND		1.91	0.618	ND		1.84	0.598	ND		1.94	0.628	ND		1.79	0.581
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	7.48		1.8	0.214	0.407	J	1.85	0.22	ND		1.84	0.219	5.92		1.91	0.227	9.01		1.84	0.22	ND		1.94	0.231	ND		1.79	0.213
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	12.8		1.8	0.367	1.78	J	1.85	0.378	1.33	J	1.84	0.375	8.25		1.91	0.389	8.38		1.84	0.376	ND		1.94	0.395	ND		1.79	0.366
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.8	0.881	ND		1.85	0.907	ND		1.84	0.901	ND		1.91	0.935	ND		1.84	0.904	ND		1.94	0.95	ND		1.79	0.878
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		1.8	0.273	ND		1.85	0.281	ND		1.84	0.279	ND		1.91	0.29	0.524	J	1.84	0.28	ND		1.94	0.294	ND		1.79	0.272
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.8	0.334	ND		1.85	0.344	ND		1.84	0.342	ND		1.91	0.355	ND		1.84	0.343	ND		1.94	0.36	ND		1.79	0.333
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	ND		1.8	0.619	ND		1.85	0.637	ND		1.84	0.632	ND		1.91	0.656	ND		1.84	0.635	ND		1.94	0.667	ND		1.79	0.616
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	14.2		1.8	0.202	ND		1.85	0.208	ND		1.84	0.207	7.27		1.91	0.215	3.93		1.84	0.208	ND		1.94	0.218	ND		1.79	0.202
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	8.31		1.8	0.338	1.36	J	1.85	0.348	ND		1.84	0.346	5.43		1.91	0.359	2.5		1.84	0.347	ND		1.94	0.364	ND		1.79	0.337
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	36		1.8	0.295	1.27	J	1.85	0.304	1.18	J	1.84	0.301	10.7		1.91	0.313	9.41		1.84	0.302	0.368	J	1.94	0.318	0.373	J	1.79	0.294
Perfluorononanoic Acid (PFNA)	375-95-1	NS	1.1	J	1.8	0.28	ND		1.85	0.289	ND		1.84	0.287	1.19	J	1.91	0.298	1.19	J	1.84	0.288	ND		1.94	0.302	ND		1.79	0.28
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.8	0.522	ND		1.85	0.537	ND		1.84	0.533	ND		1.91	0.553	ND		1.84	0.535	ND		1.94	0.562	ND		1.79	0.52
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	42.6		1.8	0.453	0.748	J	1.85	0.467	ND		1.84	0.463	22.5		1.91	0.481	22.1		1.84	0.465	ND		1.94	0.488	ND		1.79	0.452
Perfluorooctanoic Acid (PFOA)	335-67-1	70	33.2		1.8	0.212	ND		1.85	0.218	ND		1.84	0.217	20.7		1.91	0.225	10.4		1.84	0.218	ND		1.94	0.229	ND		1.79	0.211
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	35.5		1.8	0.356	1.11	J	1.85	0.367	1.12	J	1.84	0.364	12		1.91	0.378	13.8		1.84	0.365	ND		1.94	0.384	ND		1.79	0.355
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.8	0.223	ND		1.85	0.23	ND		1.84	0.228	ND		1.91	0.237	ND		1.84	0.229	ND		1.94	0.24	ND		1.79	0.222
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.8	0.294	ND		1.85	0.303	ND		1.84	0.301	ND		1.91	0.312	ND		1.84	0.302	ND		1.94	0.317	ND		1.79	0.293
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.8	0.234	ND		1.85	0.241	ND		1.84	0.239	ND		1.91	0.248	ND		1.84	0.24	ND		1.94	0.252	ND		1.79	0.233
PFOA/PFOS, Total			191.19		1.8	0.212	6.675	J	1.85	0.218	ND		1.84	0.217	93.96		1.91	0.225	81.244		1.84	0.218	ND		1.94	0.229	ND		1.79	0.211

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

E - Concentration of analyte exceeds the range for the calibration curve and/or linear range of the instrument

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 42 - Stormwater Outfalls - PFAS and 1,4-D

		SAMPLE ID:	OUTFALL-002-W				OUTFALL-003-W				OUTFALL-004-W				OUTFALL-005-W				OUTFALL-006-W				OUTFALL-007-W				FIELD BLANK			
		LAB ID:	L1932869-05				L1932869-03				L1932869-06				L1932869-07				L1932869-02				L1932869-01				L1932869-04			
		COLLECTION DATE:	7/23/2019				7/23/2019				7/23/2019				7/23/2019				7/23/2019				7/23/2019				7/23/2019			
		SAMPLE MATRIX:	WATER				WATER				WATER				WATER				WATER				WATER				WATER			
		NY-AWQS[(1)]																												
ANALYTE	CAS	(ug/l)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM																														
1,4-Dioxane	123-91-1		ND		0.144	0.0326	ND		0.15	0.0339	ND		0.15	0.0339	ND		0.15	0.0339	ND		0.15	0.0339	ND		0.15	0.0339	-		-	-
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ng/l)																												
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.98	1.2	ND		1.98	1.2	ND		1.98	1.2	2.03		1.87	1.13	ND		1.96	1.19	ND		1.9	1.15	ND		1.8	1.09
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.98	1.32	143		1.98	1.32	ND		1.98	1.32	114		1.87	1.25	ND		1.96	1.3	ND		1.9	1.27	ND		1.8	1.2
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.98	0.794	ND		1.98	0.798	ND		1.98	0.794	ND		1.87	0.753	ND		1.96	0.788	ND		1.9	0.764	ND		1.8	0.726
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.98	0.64	ND		1.98	0.643	ND		1.98	0.64	ND		1.87	0.607	ND		1.96	0.635	ND		1.9	0.616	ND		1.8	0.585
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	1.03	J	1.98	0.235	2.04		1.98	0.236	2.54		1.98	0.235	4.33		1.87	0.223	1.1	J	1.96	0.233	1.09	J	1.9	0.226	ND		1.8	0.215
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	2.2		1.98	0.403	10.6		1.98	0.405	5.92		1.98	0.403	104		1.87	0.382	7.64		1.96	0.4	9.13		1.9	0.388	ND		1.8	0.368
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.98	0.968	ND		1.98	0.972	ND		1.98	0.968	ND		1.87	0.918	ND		1.96	0.961	ND		1.9	0.932	ND		1.8	0.884
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		1.98	0.3	ND		1.98	0.302	ND		1.98	0.3	0.412	J	1.87	0.285	ND		1.96	0.298	ND		1.9	0.289	ND		1.8	0.274
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.98	0.368	ND		1.98	0.369	ND		1.98	0.368	ND		1.87	0.348	ND		1.96	0.365	ND		1.9	0.354	ND		1.8	0.336
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	ND		1.98	0.68	4.15		1.98	0.682	ND		1.98	0.68	ND		1.87	0.644	ND		1.96	0.674	ND		1.9	0.654	ND		1.8	0.621
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	0.893	J	1.98	0.222	6.29		1.98	0.223	1.37	J	1.98	0.222	82.5		1.87	0.211	2.8		1.96	0.221	3.54		1.9	0.214	ND		1.8	0.203
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	28.1		1.98	0.372	234		1.98	0.373	14.7		1.98	0.372	11		1.87	0.352	3.15		1.96	0.369	2.9		1.9	0.357	ND		1.8	0.339
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	1.34	J	1.98	0.324	44.6		1.98	0.325	1.79	J	1.98	0.324	246		1.87	0.307	3.78		1.96	0.322	4.67		1.9	0.312	ND		1.8	0.296
Perfluorononanoic Acid (PFNA)	375-95-1	NS	0.427	J	1.98	0.308	0.659	J	1.98	0.31	0.818	J	1.98	0.308	2.62		1.87	0.292	1.14	J	1.96	0.306	1.11	J	1.9	0.296	ND		1.8	0.282
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.98	0.573	0.647	J	1.98	0.575	ND		1.98	0.573	ND		1.87	0.543	ND		1.96	0.569	ND		1.9	0.551	ND		1.8	0.523
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	13.4		1.98	0.498	339		1.98	0.5	12.7		1.98	0.498	9.24		1.87	0.472	2.68		1.96	0.494	4.23		1.9	0.479	ND		1.8	0.455
Perfluorooctanoic Acid (PFOA)	335-67-1	70	2.39		1.98	0.233	8.3		1.98	0.234	2.75		1.98	0.233	14.9		1.87	0.221	6.16		1.96	0.231	10.5		1.9	0.224	ND		1.8	0.213
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	0.877	J	1.98	0.391	51.4		1.98	0.393	1.71	J	1.98	0.391	470		1.87	0.371	5.22		1.96	0.388	5.05		1.9	0.376	ND		1.8	0.357
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.98	0.245	ND		1.98	0.246	ND		1.98	0.245	ND		1.87	0.232	ND		1.96	0.243	ND		1.9	0.236	ND		1.8	0.224
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.98	0.323	ND		1.98	0.325	ND		1.98	0.323	ND		1.87	0.306	ND		1.96	0.321	ND		1.9	0.311	ND		1.8	0.295
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.98	0.257	ND		1.98	0.258	ND		1.98	0.257	ND		1.87	0.243	ND		1.96	0.255	ND		1.9	0.247	ND		1.8	0.235
PFOA/PFOS, Total			15.8		1.98	0.233	347		1.98	0.234	15.5		1.98	0.233	24.1		1.87	0.221	8.84		1.96	0.231	14.7		1.9	0.224	ND		1.8	0.213

Notes:

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Results that are shaded yellow and in bold indicate a concentration above the AWQS.

Table 42A - Stormwater Outfalls - PFAS and 1,4-D

			SAMPLE ID:	OUTFALL-002-S				OUTFALL-003-S				OUTFALL-004-S				OUTFALL-005-S				OUTFALL-006-S				OUTFALL-007-S			
			LAB ID:	L1932867-02				L1932867-01				L1932867-03				L1932867-04				L1932867-05				L1932867-06			
			COLLECTION DATE:	7/24/2019				7/24/2019				7/24/2019				7/24/2019				7/24/2019				7/24/2019			
			SAMPLE MATRIX:	SEDIMENT				SEDIMENT				SEDIMENT				SEDIMENT				SEDIMENT				SEDIMENT			
		SACS-A,B,C SGVs(2)	NY-UNRES(1)																								
ANALYTE	CAS	(mg/kg)	(mg/kg)	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL	Conc	Q	RL	MDL
1,4 DIOXANE BY 8270D-SIM																											
1,4-Dioxane	123-91-1	NS	0.1	ND		0.0934	0.0238	ND		0.0104	0.00265	ND		0.127	0.0323	ND		0.0426	0.0109	ND		0.0337	0.00859	ND		0.0322	0.0082
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION		(ug/kg)	(ug/kg)																								
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	NS	ND		1.14	0.328	ND		1.25	0.36	ND		3.53	1.01	1.86		1.34	0.384	ND		1.2	0.344	ND		1.06	0.305
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	NS	ND		1.14	0.205	ND		1.25	0.225	ND		3.53	0.633	3.51		1.34	0.24	ND		1.2	0.215	ND		1.06	0.191
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	NS	ND		1.14	0.097	ND		1.25	0.106	ND		3.53	0.298	ND		1.34	0.113	ND		1.2	0.101	ND		1.06	0.09
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	NS	ND		1.14	0.23	ND		1.25	0.252	ND		3.53	0.71	ND		1.34	0.27	ND		1.2	0.242	ND		1.06	0.214
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	NS	ND		1.14	0.045	ND		1.25	0.049	ND		3.53	0.138	ND		1.34	0.052	ND		1.2	0.047	ND		1.06	0.042
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	NS	0.035	J	1.14	0.026	0.033	J	1.25	0.028	0.278	J	3.53	0.08	0.653	J	1.34	0.03	0.08	J	1.2	0.027	ND		1.06	0.024
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	NS	ND		1.14	0.175	ND		1.25	0.192	ND		3.53	0.54	ND		1.34	0.205	ND		1.2	0.184	ND	J	1.06	0.163
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	NS	0.103	J	1.14	0.077	ND		1.25	0.084	0.589	J	3.53	0.236	0.253	J	1.34	0.09	ND		1.2	0.08	ND		1.06	0.071
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	NS	0.225	J	1.14	0.08	ND		1.25	0.088	0.557	J	3.53	0.247	0.193	J	1.34	0.094	ND		1.2	0.084	ND		1.06	0.075
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	NS	ND		1.14	0.156	ND		1.25	0.171	ND		3.53	0.481	ND		1.34	0.183	ND		1.2	0.164	ND		1.06	0.145
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	NS	ND		1.14	0.052	ND		1.25	0.057	0.245	J	3.53	0.159	1.09	J	1.34	0.06	ND		1.2	0.054	ND		1.06	0.048
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	NS	ND		1.14	0.069	1.86		1.25	0.076	2.15	J	3.53	0.213	ND		1.34	0.081	ND		1.2	0.073	ND		1.06	0.064
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	NS	ND		1.14	0.06	0.083	J	1.25	0.066	0.236	J	3.53	0.185	1.52		1.34	0.07	ND		1.2	0.063	ND		1.06	0.056
Perfluorononanoic Acid (PFNA)	375-95-1	NS	NS	ND		1.14	0.086	ND		1.25	0.094	0.455	J	3.53	0.264	0.56	J	1.34	0.1	ND		1.2	0.09	ND		1.06	0.08
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	NS	ND		1.14	0.112	ND		1.25	0.123	ND		3.53	0.346	ND		1.34	0.131	ND		1.2	0.118	ND	J	1.06	0.104
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	NS	NS	1.09	J	1.14	0.149	7.57		1.25	0.163	7.8		3.53	0.458	1.84		1.34	0.174	0.36	J	1.2	0.156	ND		1.06	0.138
Perfluorooctanoic Acid (PFOA)	335-67-1	NS	NS	0.109	J	1.14	0.048	0.085	J	1.25	0.053	0.462	J	3.53	0.148	0.637	J	1.34	0.056	0.137	J	1.2	0.05	ND		1.06	0.045
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	NS	ND		1.14	0.053	0.098	J	1.25	0.058	0.201	J	3.53	0.162	3.37		1.34	0.062	ND		1.2	0.055	ND		1.06	0.049
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	NS	0.137	J	1.14	0.062	ND		1.25	0.068	0.335	J	3.53	0.19	0.089	J	1.34	0.072	ND		1.2	0.065	ND		1.06	0.058
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	NS	ND		1.14	0.234	ND		1.25	0.256	ND		3.53	0.721	ND		1.34	0.274	ND		1.2	0.245	ND		1.06	0.218
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	NS	0.153	J	1.14	0.054	ND		1.25	0.059	0.76	J	3.53	0.165	0.405	J	1.34	0.063	0.056	J	1.2	0.056	ND		1.06	0.05
PFOA/PFOS, Total				1.2	J	1.14	0.048	7.66	J	1.25	0.053	8.26	J	3.53	0.148	2.48	J	1.34	0.056	0.497	J	1.2	0.05	ND		1.06	0.045
GENERAL CHEMISTRY		(mg/kg)	(mg/kg)																								
Solids, Total	NONE	NS	NS	82.3		0.1	0.1	71.1		0.1	0.1	24.5		0.1	0.1	68.2		0.1	0.1	80.1		0.1	0.1	87.6		0.1	0.1

Notes:

The regulator guidance values applied herein, are those that were in effect as of the date of data collection and the Department approved work plan.

PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required

(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.

(2) New York State Department of Environmental Conservation Screening and Assessment of Contaminated Sediment, June 24, 2014, Class A-C Sediment Guidance Values.

J - Estimated Value $\geq$ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)

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

NA denotes Not Analyzed

NS denotes No Standard

ND denotes Non Detect

ug/l = ppb or parts per billion

ng/l = ppt or parts per trillion

Results that are shaded blue indicate a RL or MDL above the AWQS.

Table 43 - Rinse Blanks - PFAS

		SAMPLE ID:	RB01-190716				RB04-190716				RB05-190716				RB06-190716			
		LAB ID:	L1931180-01				L1931180-04				L1931180-05				L1931180-06			
		COLLECTION DATE:	7/16/2019				7/16/2019				7/16/2019				7/16/2019			
		SAMPLE MATRIX:	SHOP WATER				SCREEN & RISER				DRILLING ROD				ACETATE LINER & SHOE			
ANALYTE	**CAS**	**NY-AWQS (ng/l)**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION																		
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.97	1.19	ND		1.91	1.16	ND		1.92	1.16	ND		1.72	1.04
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.97	1.31	ND		1.91	1.27	ND		1.92	1.28	ND		1.72	1.15
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.97	0.791	ND		1.91	0.767	ND		1.92	0.77	ND		1.72	0.693
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.97	0.638	ND		1.91	0.618	ND		1.92	0.621	ND		1.72	0.559
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	0.646	J	1.97	0.234	ND		1.91	0.227	ND		1.92	0.228	ND		1.72	0.205
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	2.63		1.97	0.402	ND		1.91	0.389	ND		1.92	0.391	ND		1.72	0.352
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.97	0.964	ND		1.91	0.935	ND		1.92	0.939	ND		1.72	0.845
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		1.97	0.299	ND		1.91	0.29	ND		1.92	0.291	ND		1.72	0.262
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.97	0.366	ND		1.91	0.355	ND		1.92	0.356	ND		1.72	0.321
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	ND		1.97	0.677	ND		1.91	0.656	ND		1.92	0.659	ND		1.72	0.593
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	2.09	J	1.97	0.222	ND		1.91	0.215	ND		1.92	0.216	ND		1.72	0.194
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	1.03	J	1.97	0.37	ND		1.91	0.359	ND		1.92	0.36	ND		1.72	0.324
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	2.26		1.97	0.323	ND		1.91	0.313	ND		1.92	0.314	ND		1.72	0.283
Perfluorononanoic Acid (PFNA)	375-95-1	NS	0.531	J	1.97	0.307	ND		1.91	0.298	ND		1.92	0.299	ND		1.72	0.269
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.97	0.571	ND		1.91	0.553	ND		1.92	0.556	ND		1.72	0.5
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	70	2.95		1.97	0.496	ND		1.91	0.481	ND		1.92	0.483	ND		1.72	0.434
Perfluorooctanoic Acid (PFOA)	335-67-1	70	2.4		1.97	0.232	ND		1.91	0.225	ND		1.92	0.226	ND		1.72	0.203
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	1.77	J	1.97	0.39	ND		1.91	0.378	ND		1.92	0.379	ND		1.72	0.341
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.97	0.244	ND		1.91	0.237	ND		1.92	0.238	ND		1.72	0.214
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.97	0.344	ND		1.91	0.312	ND		1.92	0.313	ND		1.72	0.282
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.97	0.256	ND		1.91	0.248	ND		1.92	0.249	ND		1.72	0.224
PFOA/PFOS, Total			5.35		1.97	0.232	ND		1.91	0.225	ND		1.92	0.226	ND		1.72	0.203

SAMPLE ID:	RB07-190716				RB08-190716				RB09-190716				TRIP BLANK			
LAB ID:	L1931180-07				L1931180-08				L1931180-09				L1931180-10			
COLLECTION DATE:	7/16/2019				7/16/2019				7/16/2019				7/16/2019			
SAMPLE MATRIX:	AUGER				MACRO CORE				TOTE				WATER			
ANALYTE	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION																
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		1.75	1.06	ND		1.8	1.09	ND		1.77	1.07	ND		2.02	1.22
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		1.75	1.16	ND		1.8	1.2	ND		1.77	1.18	ND		2.02	1.34
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		1.75	0.703	ND		1.8	0.726	ND		1.77	0.713	ND		2.02	0.81
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		1.75	0.566	ND		1.8	0.585	ND		1.77	0.574	ND		2.02	0.653
Perfluorobutanesulfonic Acid (PFBS)	ND		1.75	0.208	ND		1.8	0.215	ND		1.77	0.211	ND		2.02	0.24
Perfluorobutanoic Acid (PFBA)	ND		1.75	0.357	9.82	J	1.8	0.368	ND		1.77	0.362	ND		2.02	0.411
Perfluorodecanesulfonic Acid (PFDS)	ND		1.75	0.857	ND		1.8	0.884	ND		1.77	0.869	ND		2.02	0.988
Perfluorodecanoic Acid (PFDA)	ND		1.75	0.266	ND		1.8	0.274	ND		1.77	0.27	ND		2.02	0.306
Perfluorododecanoic Acid (PFDoA)	ND		1.75	0.325	ND		1.8	0.336	ND		1.77	0.33	ND		2.02	0.375
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.75	0.601	ND		1.8	0.621	ND		1.77	0.61	ND		2.02	0.694
Perfluoroheptanoic Acid (PFHpA)	ND		1.75	0.197	ND		1.8	0.203	ND		1.77	0.2	ND		2.02	0.227
Perfluorohexanesulfonic Acid (PFHxS)	ND		1.75	0.329	ND		1.8	0.339	ND		1.77	0.333	ND		2.02	0.379
Perfluorohexanoic Acid (PFHxA)	ND		1.75	0.287	ND		1.8	0.296	ND		1.77	0.291	ND		2.02	0.331
Perfluorononanoic Acid (PFNA)	ND		1.75	0.273	ND		1.8	0.282	ND		1.77	0.276	ND		2.02	0.314
Perfluorooctanesulfonamide (FOSA)	ND		1.75	0.507	ND		1.8	0.523	ND		1.77	0.514	ND		2.02	0.585
Perfluorooctanesulfonic Acid (PFOS)	ND		1.75	0.44	ND		1.8	0.455	ND		1.77	0.447	ND		2.02	0.508
Perfluorooctanoic Acid (PFOA)	ND		1.75	0.206	ND		1.8	0.213	ND		1.77	0.209	ND		2.02	0.238
Perfluoropentanoic Acid (PFPeA)	ND		1.75	0.346	0.379	J	1.8	0.357	ND		1.77	0.351	ND		2.02	0.399
Perfluorotetradecanoic Acid (PFTA)	ND		1.75	0.217	ND		1.8	0.224	ND		1.77	0.22	ND		2.02	0.25
Perfluorotridecanoic Acid (PFTrDA)	ND		1.75	0.286	ND		1.8	0.295	ND		1.77	0.29	ND		2.02	0.33
Perfluoroundecanoic Acid (PFUnA)	ND		1.75	0.227	ND		1.8	0.235	ND		1.77	0.23	ND		2.02	0.262
PFOA/PFOS, Total	ND		1.75	0.206	ND		1.8	0.213	ND		1.77	0.209	ND		2.02	0.238

		SAMPLE ID:	RB02-190716				RB03-190716			
		LAB ID:	L1931180-02				L1931180-04			
		COLLECTION DATE:	7/16/2019				7/16/2019			
		SAMPLE MATRIX:	BENTONITE CHIPS				SAND			
ANALYTE	**CAS**	**NY-AWQS (ug/kg)**	**Conc**	**Q**	**RL**	**MDL**	**Conc**	**Q**	**RL**	**MDL**
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION										
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	NS	ND		1.08	0.311	ND		0.97	0.278
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	NS	ND		1.08	0.195	ND		0.97	0.174
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	ND		1.08	0.092	ND	J	0.97	0.082
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	ND		1.08	0.219	ND	J	0.97	0.195
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	ND		1.08	0.042	ND		0.97	0.038
Perfluorobutanoic Acid (PFBA)	375-22-4	NS	ND		1.08	0.025	ND	J	0.97	0.022
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	ND		1.08	0.166	ND		0.97	0.148
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	ND		1.08	0.073	ND		0.97	0.065
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	ND		1.08	0.076	ND		0.97	0.068
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	ND		1.08	0.148	ND		0.97	0.132
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	ND		1.08	0.049	ND		0.97	0.044
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	ND		1.08	0.066	ND		0.97	0.059
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	ND		1.08	0.057	ND		0.97	0.051
Perfluorononanoic Acid (PFNA)	375-95-1	NS	ND		1.08	0.081	ND		0.97	0.073
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	ND		1.08	0.106	ND		0.97	0.095
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	NS	ND		1.08	0.141	ND		0.97	0.126
Perfluorooctanoic Acid (PFOA)	335-67-1	NS	ND		1.08	0.046	ND		0.97	0.041
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	ND		1.08	0.05	ND		0.97	0.045
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	ND		1.08	0.059	ND		0.97	0.052
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	ND		1.08	0.222	ND		0.97	0.198
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	ND		1.08	0.051	ND		0.97	0.045
PFOA/PFOS, Total			ND		1.08	0.046	ND		0.97	0.041

Notes:
PFOA and PFOS are confirmed site-related contaminants of concern on and off-site, and further assessments of PFOA and PFOS is required.
(1) New York Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. June 1998 and Addendums.
J - Estimated Value ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation or Reporting Limit (LOQ or RL)
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
NA denotes Not Analyzed
NS denotes No Standard
ND denotes Non Detect
ng/l = ppt or parts per trillion
ug/kg = ppm or parts per million
Results that are shaded blue indicate a RL or MDL above the AWQS.
Results that are shaded yellow and in bold indicate a concentration above the AWQS.

APPENDIX A
SOIL BORING LOGS

C.T. MALE ASSOCIATES

DIRECT-PUSH EXPLORATION LOG

BORING NO.:	**MW100**		
ELEV.:		**DATUM:**	
START DATE:	**8/5/19**	**FINISH DATE:**	**8/5/19**
SHEET	**1 of 1**		

PROJECT:	Hudson Valley Regional Airport SC Investigation	CTM PROJECT NO.:	18.8090
LOCATION:	Wappingers Falls, Dutchess County, NY	CTM OBSERVER:	D. King

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (FT)	SAMPLE CLASSIFICATION	NOTES
0–5	0–5	1	2.5	Asphalt ±0.25' Brown coarse SAND and fine to coarse GRAVEL, trace brick, ±6.0'	Fill Moist
5–10	5–10	2	3.5	Brown medium and coarse SAND, firm, well sorted	Saturated at 6.0' bgs
10–15	10–15	3	5.0	±15.0'	Saturated MW installed to 14.0' bgs with 10' screen
16				End of Boring at 15.0' bgs	

DRILLING CONTRACTOR:	NYEG Drilling
DIRECT-PUSH TYPE:	Geoprobe 7720 DT
METHOD OF SAMPLING:	5' Macro Core

GROUNDWATER LEVEL READINGS

DATE	LEVEL	REFERENCE MEASURING POINT
8/7	6.51	Top of Casing

SAMPLE CLASSIFICATION BY: D. King

C.T. MALE ASSOCIATES

DIRECT-PUSH EXPLORATION LOG

BORING NO.:	**MW101**		
ELEV.:		**DATUM:**	
START DATE:	**8/5/19**	**FINISH DATE:**	**8/5/19**
SHEET	**1 of 1**		

PROJECT:	Hudson Valley Regional Airport SC Investigation	CTM PROJECT NO.:	18.8090
LOCATION:	Wappingers Falls, Dutchess County, NY	CTM OBSERVER:	D. King

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (FT)	SAMPLE CLASSIFICATION	NOTES
0–5	0–5	1	3.5	Topsoil ±1.5'	Moist
				Light Brown fine SAND and SILT, Some medium and coarse Sand, firm, poorly sorted ±3.0'	Moist
				Light Brown coarse SAND and fine to coarse GRAVEL, loose, poorly sorted	Moist
5–10	5–10	2	3.0	±10.5'	Moist Saturated at 8.5' bgs Gray/Black staining in soil at top of water table at 8.5' bgs - petroleum odor
10–15	10–15	3	3.5	Gray SILT and fine SAND, trace fine gravel, firm, well sorted ±15.0'	Saturated MW installed to 15.0' bgs with 10' screen
16				End of Boring at 15.0' bgs	

DRILLING CONTRACTOR:	NYEG Drilling
DIRECT-PUSH TYPE:	Geoprobe 7720 DT
METHOD OF SAMPLING:	5' Macro Core

GROUNDWATER LEVEL READINGS

DATE	LEVEL	REFERENCE MEASURING POINT
8/7	6.50	Top of Casing

SAMPLE CLASSIFICATION BY:

D. King

C.T. MALE ASSOCIATES

DIRECT-PUSH EXPLORATION LOG

BORING NO.:	**MW102**		
ELEV.:		**DATUM:**	
START DATE:	**8/6/19**	**FINISH DATE:**	**8/6/19**
SHEET	**1 of 2**		

PROJECT:	Hudson Valley Regional Airport SC Investigation	CTM PROJECT NO.:	18.8090
LOCATION:	Wappingers Falls, Dutchess County, NY	CTM OBSERVER:	D. King

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (FT)	SAMPLE CLASSIFICATION	NOTES
0–4	0–5	1	4.0	Topsoil ±1.0' Brown fine SAND and fine to coarse GRAVEL, litte medium and coarse sand, firm, poorly sorted ±4.0'	Moist Moist Wet from 4.0' to 4.5' bgs
6–10	5–10	2	4.5	Gray and Brown Till, primarily - SILT, Some fine to coarse Gravel, little fine sand, dense, poorly sorted	Till appears reworked through entire logged interval, with varying moisture and irregular color sequence - short sections (<1.0' thick) of roughly alternating gray and brown Moist Wet from 9.0' to 10.0' bgs
12–14	10–15	3	4.0		Moist Wet from 12.0' to 13.0' bgs
16	15–	4	4.0		Moist

DRILLING CONTRACTOR:	NYEG Drilling
DIRECT-PUSH TYPE:	Geoprobe 7720 DT
METHOD OF SAMPLING:	5' Macro Core

GROUNDWATER LEVEL READINGS

DATE	LEVEL	REFERENCE MEASURING POINT
8/7	12.52	Top of Casing

SAMPLE CLASSIFICATION BY: D. King

C.T. MALE ASSOCIATES

DIRECT-PUSH EXPLORATION LOG

BORING NO.:	**MW102**		
ELEV.:		**DATUM:**	
START DATE:	**8/6/19**	**FINISH DATE:**	**8/6/19**
SHEET	**2 of 2**		

PROJECT:	Hudson Valley Regional Airport SC Investigation	CTM PROJECT NO.:	18.8090
LOCATION:	Wappingers Falls, Dutchess County, NY	CTM OBSERVER:	D. King

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (FT)	SAMPLE CLASSIFICATION	NOTES
				Gray and Brown Till, primarily - SILT, Some fine to coarse Gravel, little fine sand, dense, poorly sorted	Moist
18		4	4.0		
20					
					Wet from 20.0' to 21.0' bgs
22					
		5	5.0		
24					
					Wet from 24.5' to 26.5' bgs
26		6	1.5	±26.5'	MW installed to 20.0' bgs with 10' screen (Casing refusal at 20.0' bgs)
				Refusal at 26.5' bgs - End of Boring	
28					
30					
32					

DRILLING CONTRACTOR:	NYEG Drilling
DIRECT-PUSH TYPE:	Geoprobe 7720 DT
METHOD OF SAMPLING:	5' Macro Core

GROUNDWATER LEVEL READINGS

DATE	LEVEL	REFERENCE MEASURING POINT
8/7	12.52	Top of Casing

SAMPLE CLASSIFICATION BY: D. King

C.T. MALE ASSOCIATES

DIRECT-PUSH EXPLORATION LOG

BORING NO.:	**MW103**		
ELEV.:		**DATUM:**	
START DATE:	**8/6/19**	**FINISH DATE:**	**8/6/19**
SHEET	**1 of 1**		

PROJECT:	Hudson Valley Regional Airport SC Investigation	CTM PROJECT NO.:	18.8090
LOCATION:	Wappingers Falls, Dutchess County, NY	CTM OBSERVER:	D. King

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (FT)	SAMPLE CLASSIFICATION	NOTES
	0–5	1	4.0	Topsoil ±1.0'	Moist
2				Gray Till, primarily - SILT and fine SAND, Some fine to coarse Gravel, dense, poorly sorted	Moist Till is moderately weathered
4					
6	5–10	2	2.5		Moist Wet at 6.5' bgs
8					
10	10–15	3	5.0		Saturated at 10.0' bgs Till loosens significantly at 10.0' bgs
12					
14				±14.0'	
				Gray and Brown SILT, little fine sand and clay, varved, dense, well sorted ±15.0'	Wet at 14.0' bgs
16				Refusal at 15.0' bgs - End of Boring	MW installed to 14.0' bgs with 10' screen

DRILLING CONTRACTOR:	NYEG Drilling
DIRECT-PUSH TYPE:	Geoprobe 7720 DT
METHOD OF SAMPLING:	5' Macro Core

GROUNDWATER LEVEL READINGS

DATE	LEVEL	REFERENCE MEASURING POINT
8/7	3.98	Top of Casing

SAMPLE CLASSIFICATION BY: D. King

C.T. MALE ASSOCIATES

DIRECT-PUSH EXPLORATION LOG

BORING NO.: MW104
ELEV.: **DATUM:**
START DATE: 8/6/19 **FINISH DATE:** 8/6/19
SHEET 1 of 2

PROJECT:	Hudson Valley Regional Airport SC Investigation	CTM PROJECT NO.:	18.8090
LOCATION:	Wappingers Falls, Dutchess County, NY	CTM OBSERVER:	D. King

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (FT)	SAMPLE CLASSIFICATION	NOTES
				Topsoil ±1.0'	Moist
2				Light Brown fine to coarse SAND and fine to coarse GRAVEL, loose, poorly sorted	Moist
		1	5.0		
4					
6					Moist
		2	2.5		
8					
				±9.5'	
10				Tan SILT, Some Clay, trace fine sand, laminated beds, dense, well sorted Frequent partings of Gray and Dark Brown SILT and CLAY Occasional partings of Brown fine SAND	Moist
12					
		3	5.0		
14					
16		4	5.0		Wet at 16.0' bgs

DRILLING CONTRACTOR:	NYEG Drilling
DIRECT-PUSH TYPE:	Geoprobe 7720 DT
METHOD OF SAMPLING:	5' Macro Core

GROUNDWATER LEVEL READINGS

DATE	LEVEL	REFERENCE MEASURING POINT
8/7	18.71	Top of Casing

SAMPLE CLASSIFICATION BY:
D. King

C.T. MALE ASSOCIATES

DIRECT-PUSH EXPLORATION LOG

BORING NO.: MW104
ELEV.: **DATUM:**
START DATE: 8/6/19 **FINISH DATE:** 8/6/19
SHEET 2 of 2

PROJECT: Hudson Valley Regional Airport SC Investigation — CTM PROJECT NO.: 18.8090
LOCATION: Wappingers Falls, Dutchess County, NY — CTM OBSERVER: D. King

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (FT)	SAMPLE CLASSIFICATION	NOTES
18, 20		4	5.0	Tan SILT, Some Clay, trace fine sand, laminated beds, dense, well sorted At 16.0' bgs, partings transition to - Occasional partings of Gray SILT Occasional partings of Brown fine SAND ±21.0'	Wet
22, 24		5	5.0	Gray SILT, Some Clay, trace fine sand, dense, low plasticity, well sorted	Wet Saturated at 21.0' bgs
26, 28, 30		6	5.0	±30.0'	Saturated
32				End of Boring at 30.0' bgs	MW installed to 25.0' bgs with 10' screen (Casing refusal at 25.0' bgs)

DRILLING CONTRACTOR: NYEG Drilling
DIRECT-PUSH TYPE: Geoprobe 7720 DT
METHOD OF SAMPLING: 5' Macro Core

GROUNDWATER LEVEL READINGS

DATE	LEVEL	REFERENCE MEASURING POINT
8/7	18.71	Top of Casing

SAMPLE CLASSIFICATION BY:
D. King

C.T. MALE ASSOCIATES

DIRECT-PUSH EXPLORATION LOG

BORING NO.: MW105
ELEV.: **DATUM:**
START DATE: 8/6/19 **FINISH DATE:** 8/6/19
SHEET 1 of 2

PROJECT: Hudson Valley Regional Airport SC Investigation CTM PROJECT NO.: 18.8090
LOCATION: Wappingers Falls, Dutchess County, NY CTM OBSERVER: D. King

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (FT)	SAMPLE CLASSIFICATION	NOTES
				Topsoil ±1.0'	Moist
2		1	4.5	Brown fine to coarse SAND and fine to coarse GRAVEL, firm, poorly sorted ±4.0'	Moist
4					
6		2	5.0	Brown Till, primarily - SILT and fine SAND, Some fine to coarse Gravel and Cobble, dense, poorly sorted ±9.5'	Moist
8					
10		3	5.0	Gray Till, primarily - SILT, Some fine Gravel and fine Sand, little clay and coarse gravel, very dense, poorly sorted	Moist
12					
14					
16		4	5.0		Moist

DRILLING CONTRACTOR: NYEG Drilling
DIRECT-PUSH TYPE: Geoprobe 7720 DT
METHOD OF SAMPLING: 5' Macro Core

GROUNDWATER LEVEL READINGS

DATE	LEVEL	REFERENCE MEASURING POINT
8/7	DRY	Top of Casing

SAMPLE CLASSIFICATION BY: D. King

C.T. MALE ASSOCIATES

DIRECT-PUSH EXPLORATION LOG

BORING NO.:	**W105**		
ELEV.:		**DATUM:**	
START DATE:	**8/6/19**	**FINISH DATE:**	**8/6/19**
SHEET	**2 of 2**		

PROJECT:	Hudson Valley Regional Airport SC Investigation	CTM PROJECT NO.:	18.8090
LOCATION:	Wappingers Falls, Dutchess County, NY	CTM OBSERVER:	D. King

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (FT)	SAMPLE CLASSIFICATION	NOTES
18		4	5.0	Gray Till, primarily - SILT, Some fine Gravel and fine Sand, little clay and coarse gravel, very dense, poorly sorted ±19.0'	Moist
20				Refusal at 19.0' bgs - End of Boring	MW installed to 6.0' bgs with 3' screen (Casing refusal at 6.0' bgs)
22					
24					
26					
28					
30					
32					

DRILLING CONTRACTOR:	NYEG Drilling
DIRECT-PUSH TYPE:	Geoprobe 7720 DT
METHOD OF SAMPLING:	5' Macro Core

GROUNDWATER LEVEL READINGS

DATE	LEVEL	REFERENCE MEASURING POINT
8/7	DRY	Top of Casing

SAMPLE CLASSIFICATION BY:

D. King

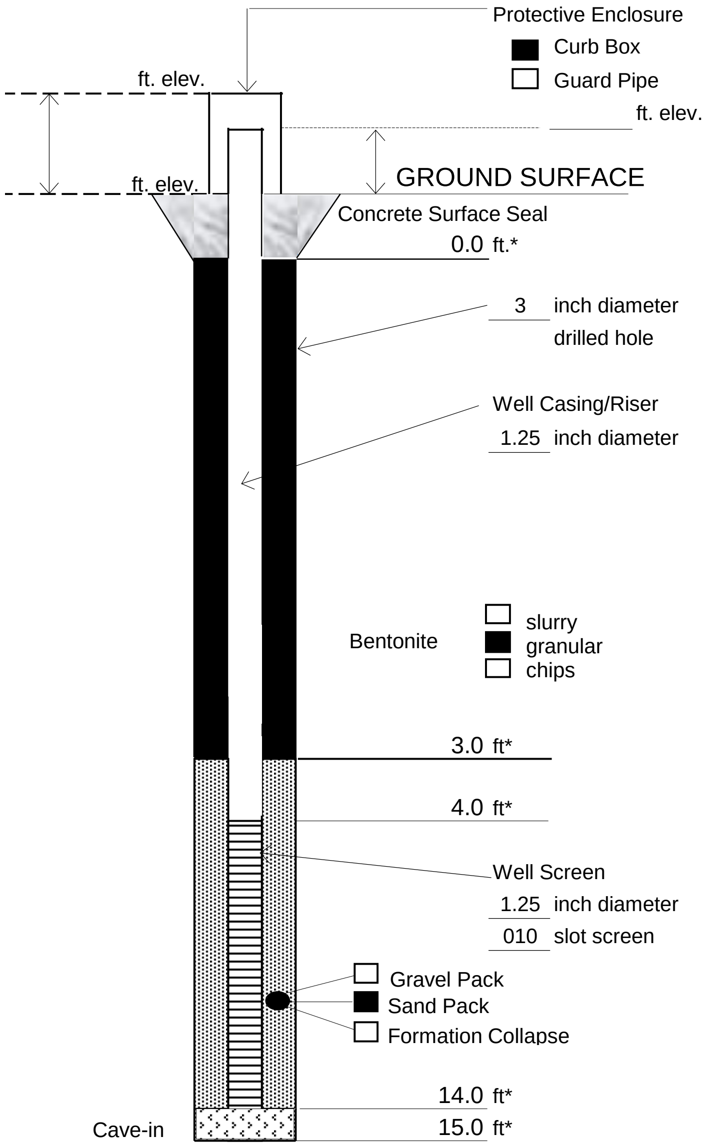
APPENDIX B

MONITORING WELL CONSTRUCTION LOGS

C.T. MALE ASSOCIATES

Well No. MW100

MONITORING WELL CONSTRUCTION LOG



* Depth below ground surface.

Project Name: Hudson Valley Regional Airport
SC Investigation

Project Number: 18.8090

Well No.: MW100 Boring No.: MW100

Town/City: Wappingers Falls

County: Dutchess State: NY

Installation Date(s): 8/5/2019

Drilling Contractor: NYEG Drilling

Drilling Method: Geoprobe 7720 DT

Water Depth From Top of Riser: 6.51 ft 8/7/19
Date

C.T. Male Observer: D. King

Materials Used:

1.0	Bags of Sand		(50 lb. bags)
	Sand Size: #0		Brand: Filpro
0.5	Bags of Bentonite		(50 lb. bags)
	Brand:	Cetco	
10	ft. of	Schedule 40 PVC	well screen
4	ft. of	Schedule 40 PVC	well riser
0	Bags of Cement/Concrete		(80 lb. bags)
	Brand:	Quikrete	

Grout Mixture:

No grout used for monitoring well construction.

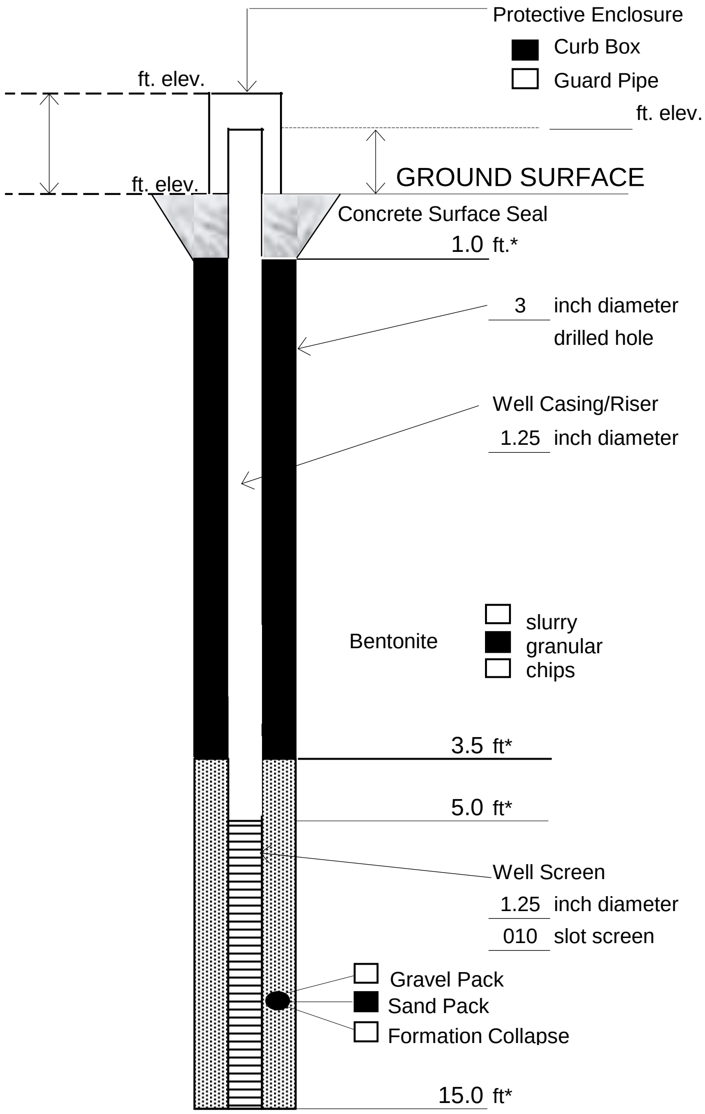
Notes:

Blacktop patched around roadbox following installation.

Well No. **MW101**

MONITORING WELL CONSTRUCTION LOG

C.T. MALE ASSOCIATES



* Depth below ground surface.

Project Name: Hudson Valley Regional Airport
SC Investigation

Project Number: 18.8090

Well No.: MW101 Boring No.: MW101

Town/City: Wappingers Falls

County: Dutchess State: NY

Installation Date(s): 8/5/2019

Drilling Contractor: NYEG Drilling

Drilling Method: Geoprobe 7720 DT

Water Depth From Top of Riser: 6.50 ft 8/7/19 (Date)

C.T. Male Observer: D. King

Materials Used:

1.0	Bags of Sand		(50 lb. bags)
	Sand Size:	#0	Brand: Filpro
0.5	Bags of Bentonite		(50 lb. bags)
	Brand:	Cetco	
10	ft. of	Schedule 40 PVC	well screen
5	ft. of	Schedule 40 PVC	well riser
1.0	Bags of Cement/Concrete		(80 lb. bags)
	Brand:	Quikrete	

Grout Mixture:

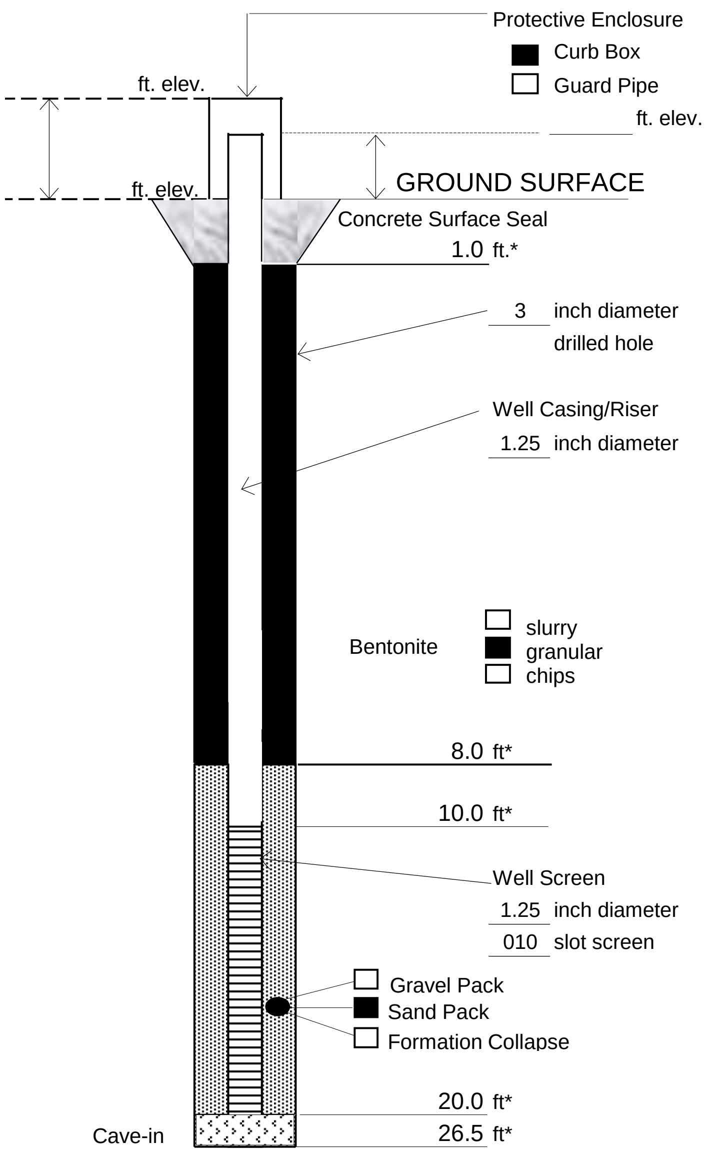
No grout used for monitoring well construction.

Notes:

Well No. MW102

MONITORING WELL CONSTRUCTION LOG

C.T. MALE ASSOCIATES



* Depth below ground surface.

Project Name: Hudson Valley Regional Airport SC Investigation

Project Number: 18.8090

Well No.: MW102 Boring No.: MW102

Town/City: Wappingers Falls

County: Dutchess State: NY

Installation Date(s): 8/6/2019

Drilling Contractor: NYEG Drilling

Drilling Method: Geoprobe 7720 DT

Water Depth From Top of Riser: 12.52 ft 8/7/19 (Date)

C.T. Male Observer: D. King

Materials Used:

1.0	Bags of Sand	(50 lb. bags)	
	Sand Size: #0	Brand: Filpro	
0.5	Bags of Bentonite	(50 lb. bags)	
	Brand: Cetco		
10	ft. of	Schedule 40 PVC	well screen
10	ft. of	Schedule 40 PVC	well riser
1.00	Bags of Cement/Concrete	(80 lb. bags)	
	Brand: Quikrete		

Grout Mixture:

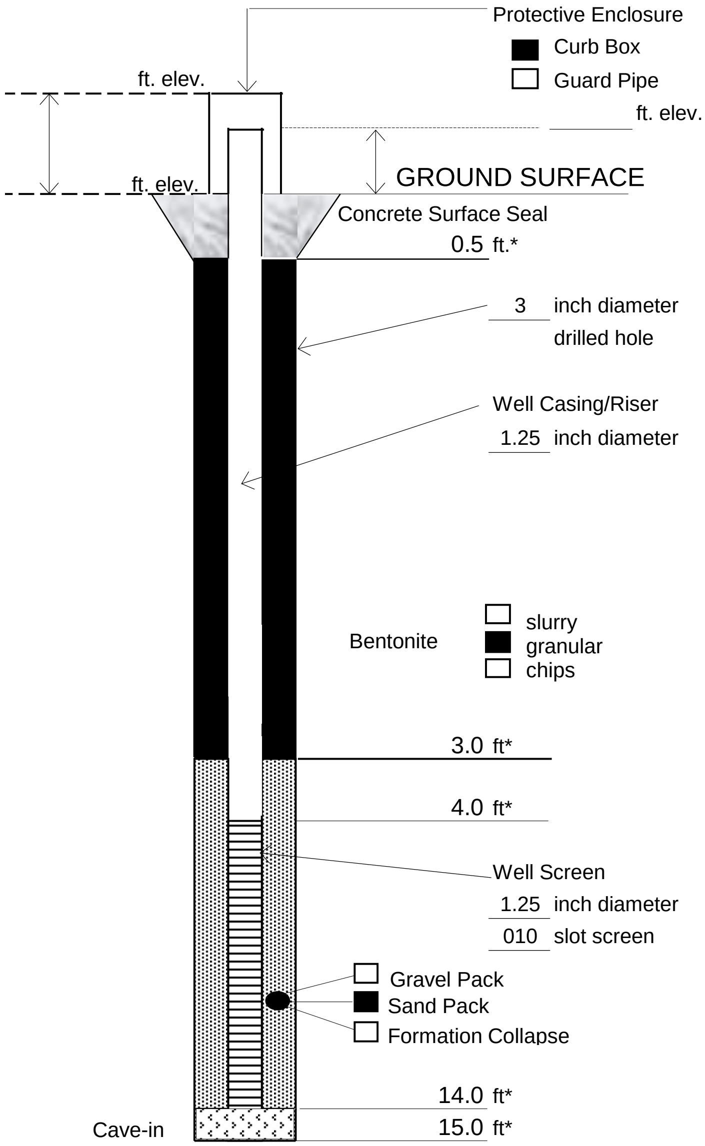
No grout used for monitoring well construction.

Notes:

C.T. MALE ASSOCIATES

Well No. MW103

MONITORING WELL CONSTRUCTION LOG



* Depth below ground surface.

Project Name: Hudson Valley Regional Airport SC Investigation

Project Number: 18.8090

Well No.: MW103 Boring No.: MW103

Town/City: Wappingers Falls

County: Dutchess State: NY

Installation Date(s): 8/6/2019

Drilling Contractor: NYEG Drilling

Drilling Method: Geoprobe 7720 DT

Water Depth From Top of Riser: 3.98 ft 8/7/19 Date

C.T. Male Observer: D. King

Materials Used:

1.0	Bags of Sand		(50 lb. bags)
	Sand Size:	#0	Brand: Filpro
0.5	Bags of Bentonite		(50 lb. bags)
	Brand:	Cetco	
10	ft. of	Schedule 40 PVC	well screen
4	ft. of	Schedule 40 PVC	well riser
1.0	Bags of Cement/Concrete		(80 lb. bags)
	Brand:	Quikrete	

Grout Mixture:

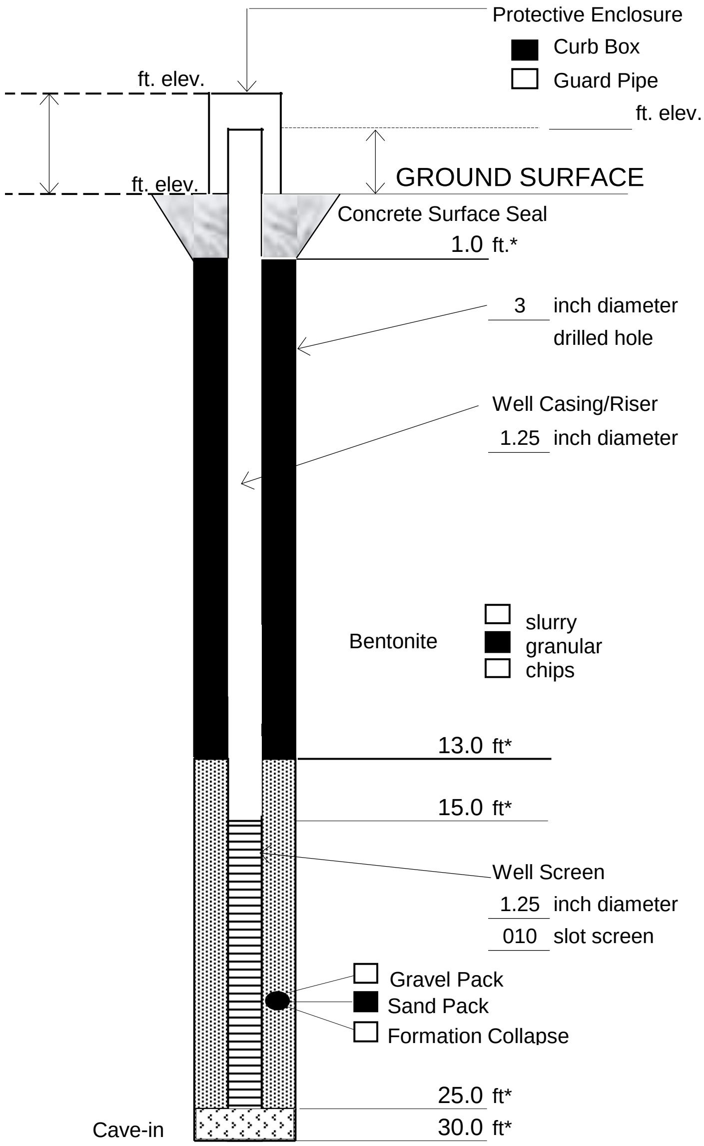
No grout used for monitoring well construction.

Notes:

C.T. MALE ASSOCIATES

Well No. MW104

MONITORING WELL CONSTRUCTION LOG



* Depth below ground surface.

Project Name: Hudson Valley Regional Airport
SC Investigation

Project Number: 18.8090

Well No.: MW104 Boring No.: MW104

Town/City: Wappingers Falls

County: Dutchess State: NY

Installation Date(s): 8/6/2019

Drilling Contractor: NYEG Drilling

Drilling Method: Geoprobe 7720 DT

Water Depth From Top of Riser: 18.71 ft 8/7/19 Date

C.T. Male Observer: D. King

Materials Used:

1.0	Bags of Sand		(50 lb. bags)
	Sand Size:	#0	Brand: Filpro
1.0	Bags of Bentonite		(50 lb. bags)
	Brand:	Cetco	
10	ft. of	Schedule 40 PVC	well screen
15	ft. of	Schedule 40 PVC	well riser
1.0	Bags of Cement/Concrete		(80 lb. bags)
	Brand:	Quikrete	

Grout Mixture:

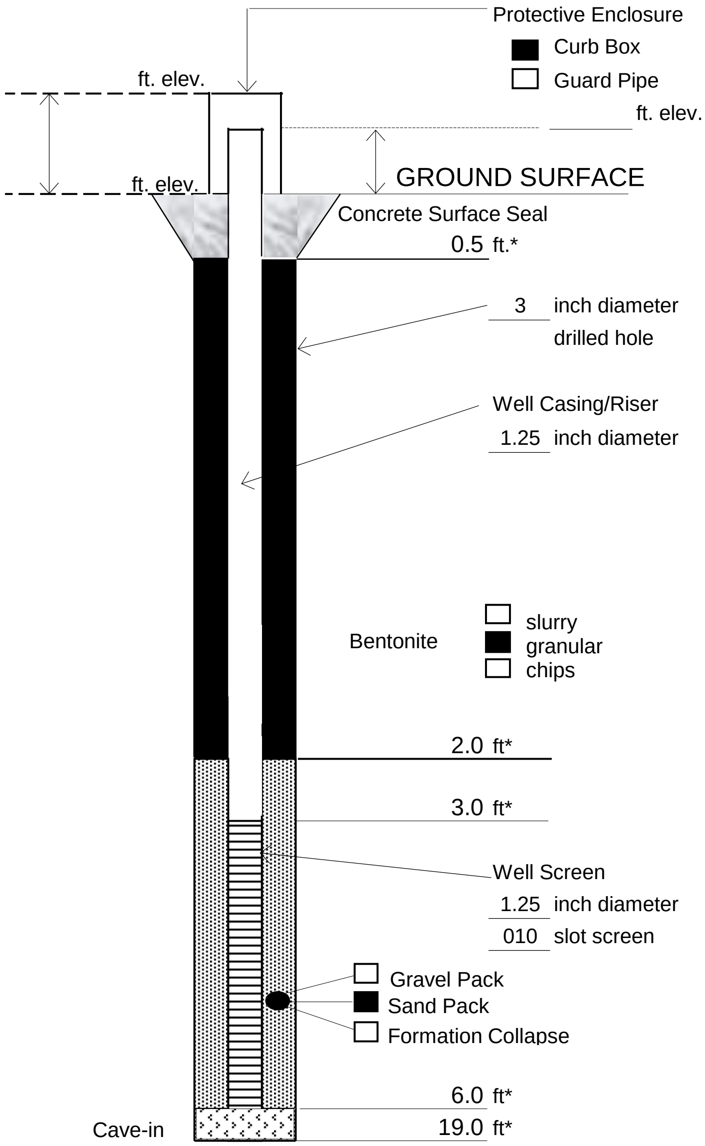
No grout used for monitoring well construction.

Notes:

Well No. MW105

MONITORING WELL CONSTRUCTION LOG

C.T. MALE ASSOCIATES



* Depth below ground surface.

Project Name: Hudson Valley Regional Airport
SC Investigation

Project Number: 18.8090

Well No.: MW105 Boring No.: MW105

Town/City: Wappingers Falls

County: Dutchess State: NY

Installation Date(s): 8/6/2019

Drilling Contractor: NYEG Drilling

Drilling Method: Geoprobe 7720 DT

Water Depth From Top of Riser: DRY ft 8/7/19
Date

C.T. Male Observer: D. King

Materials Used:

0.5 Bags of Sand (50 lb. bags)
Sand Size: #0 Brand: Filpro
0.5 Bags of Bentonite (50 lb. bags)
Brand: Cetco
3 ft. of Schedule 40 PVC well screen
3 ft. of Schedule 40 PVC well riser
1.0 Bags of Cement/Concrete (80 lb. bags)
Brand: Quikrete

Grout Mixture:

No grout used for monitoring well construction.

Notes:

APPENDIX C

SUMMARY TABLE OF MONITORING WELL DETAILS AND ASSOCIATED LOGS

MONITORING WELL CONSTRUCTION DETAILS SUMMARY					
Well ID	Install Date	Bedrock/Overburden	Drilled Depth (bgs)	Well Total Depth (bgs)	Screened Interval (bgs)
MW100	2019-08-05	Overburden	15	14	4-14
MW101	2019-08-05	Overburden	15	15	5-15
MW102	2019-08-06	Overburden	26.5	20	10-20
MW103	2019-08-06	Overburden	15	14	4-14
MW104	2019-08-06	Overburden	30	25	15-25
MW105	2019-08-06	Overburden	19	6	3-6
DGC-1	1988-05-09	Overburden	22	17	7-17
MW-1	1990-11-26	Overburden	27	25	15-25
MW-2	1990-11-26	Overburden	22	20	10-20
MW-3	1990-11-27	Bedrock	51	51	41-51
MW-4	1990-12-03	Bedrock	74	74	64-74
MW-5	1990-12-03	Bedrock	55	54	44-54
MW-6	1991-10-25	Overburden	23	23	3-23
MW-7A	1994-04-03	Overburden	20	19.5	4.5-19.5
MW-8	1992-01-17	Overburden	26	25	?-25
MW-9	1992-03-23	Overburden	7	7	2-7
MW-10	1992-03-23	Overburden	7	7	2-7
ME-11	1994-04-29	Bedrock	59	58	49-58
ME-12	1994-04-25	Overburden	24	24	9-24
ME-13	1994-04-21	Overburden	23	23	8-23
ME-14	1994-04-18	Overburden	21.3	20.4	5.4-20.4
ME-15	1994-04-14	Overburden	22	22	7-22
ME-16	1994-05-02	Overburden	15.8	15.8	5.8-15.8
ME-17	1994-04-27	Bedrock	59	59	51-59
ME-18	?	Overburden	23	23	8-23
ME-19	1997-02-21	Overburden	24	24	9-24
MW-9/10	2003-10-29	Overburden	19	19	4-19
MW-20	2000-06-22	Overburden	23	23	5-23
MW-1	2011-01-13	Overburden	14	13	3-13
MW-2	2011-01-14	Overburden	13	13	3-13
MW-3	2011-01-14	Overburden	13.5	13.5	3.5-13.5
A-21G	1986-05-13	Overburden	37	36	31-36
A-21S	1986-05-13	Overburden	12.25	10.33	0.33-10.33
A-21R	1986-05-09	Bedrock	65.25	63.2	48.2-63.2
A-40S	1988-08-22	Overburden	24	24	4-24
A-41S*	1988-08-23	Overburden	26	25	5-25
A-42S*	1988-08-23	Overburden	24	24	4-24
A-43S*	1988-08-23	Overburden	26	23	4-23
A-44S*	1988-08-24	Overburden	20	14	4-14
A-45G*	1988-08-25	Overburden	60	56.5	51.5-56.5
MW-15	2007-02-21	Overburden	11	8	3-8
MW-20	2007-02-21	Overburden	11	11	3-11
MW-29	2007-02-22	Overburden	18	16	11-16
B-2	1985-04-24	Overburden	24	16	6-16
B-3S	1985-04-25	Overburden	15	15	5-15
B-3	1985-04-24	Bedrock	53	52	37-52

bgs denotes below ground surface

* Well identification cut off on log, assumed based on field measurements.

APPENDIX D

MONITORING WELL DEVELOPMENT AND SAMPLING LOGS

C.T. MALE ASSOCIATES

Daily Calibration Record

Date: 8/7/19

C.T.M. Project #: 18.8090

Project: HV Airport SC Investigation

Location: Wappingers Falls, NY

Techinian Name(s): Pan King

Ambient Temperature: ~70°F

Serial Number	Time	Temperature Accuracy	Pre-Cal Values	Calibration Values	Post-Cal or Bump Check Values
YSI: FA03966 ProDSS	0840	Yes No	pH: 4.07 / 7.03 / 10.12 Dissolved Oxygen: 98.9 % Sp. Conductivity: 6975 ORP: 22.5	pH: 4.00 / 7.01 / 10.03 Dissolved Oxygen: 100.0 % Sp. Conductivity: 7000 ORP: 230.3	pH: 4.00 / 7.01 / 10.05 Dissolved Oxygen: ~~[illegible]~~ % Sp. Conductivity: 7000 ORP: 230.3
YSI: FA01466	0920	Yes No	pH: 3.99 / 6.97 / 9.96 Dissolved Oxygen: 97.8 % Sp. Conductivity: 6954 ORP: 224.8	pH: 4.01 / 6.99 / 10.00 Dissolved Oxygen: 100.6 % Sp. Conductivity: 7000 ORP: 229.7	pH: 4.01 / 6.99 / 10.00 Dissolved Oxygen: — % Sp. Conductivity: 7000 ORP: 229.7
YSI:		Yes No	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:
YSI:		Yes No	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:
YSI:		Yes No	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:

Turbidity Meters

1) Ser.No. CTM	Time 0925	Reading 10.26 NTU	4) Ser.No.	Time	Reading NTU
2) Ser.No.	Time	Reading NTU	5) Ser.No.	Time	Reading NTU
3) Ser.No.	Time	Reading NTU	6) Ser.No.	Time	Reading NTU

WELL DEVEOPMENT LOG

Project Name: HV Airport SC Investigation

Date Started: 8/7/19

Project Number: 18.8090

Date Finished: 8/7/19

Field Parameters		Well Volumes and Corresponding Field Parameters Value									
	Intitial	1	2	3	4	5	6	7	8	9	10
Water Level	12.52	18.00	18.59								
Temperature (C)	14.4	14.6	14.6								
DO (mg/L)	11.90	7.95	4.51								
Conductivity (uS)	961	1080	1091								
pH	6.22	6.36	6.55								
ORP (mV)	42.8	24.9	14.9								
Turbidity (NTU)	110	1194AU	869AU								

Monitoring Well: MW102
Total Depth: 19.35'
Water Column: 6.83'
One Well Volume: 0.44 gal.

Notes:
- Begin dev. @ 10:44 w/ peri. pump
- Dry @ 10:50 - purged ~0.80 gal - testing recharge
- Recover to 17.92 @ 11:12
- Purged dry @ 11:15 - ~~tal~~ ~1.0 gal, purged, end development

Field Parameters		Well Volumes and Corresponding Field Parameters Value									
	Intitial	1	2	3	4	5	6	7	8	9	10
Water Level	18.71	20.99									
Temperature (C)	15.3	16.9									
DO (mg/L)	7.71	7.26									
Conductivity (uS)	527	552									
pH	7.13	6.94									
ORP (mV)	155.9	133.5									
Turbidity (NTU)	OR	OR									

Monitoring Well: MW104
Total Depth: 21.30'
Water Column: 2.59'
One Well Volume: 0.17 gal.

Notes:
- Begin dev. @ 11:42 w/ peri. pump
- Dry @ 11:44 - purged ~0.2 gal. - testing recharge
- Recover to 20.99 @ 11:58
- Purge dry @ 11:59 - total ~0.3 gal, purged, end development

Field Parameters		Well Volumes and Corresponding Field Parameters Value									
	Intitial	1	2	3	4	5	6	7	8	9	10
Water Level	DRY										
Temperature (C)											
DO (mg/L)											
Conductivity (uS)											
pH											
ORP (mV)											
Turbidity (NTU)											

Monitoring Well: MW105
Total Depth: 4.92'
Water Column: —
One Well Volume: —

Notes:
- Dry, not developed

Field Parameters		Well Volumes and Corresponding Field Parameters Value									
	Intitial	1	2	3	4	5	6	7	8	9	10
Water Level	3.98	11.04	12.19								
Temperature (C)	16.1	18.1	16.1								
DO (mg/L)	1.76	5.40	6.90								
Conductivity (uS)	662	703	700								
pH	6.56	6.56	6.77								
ORP (mV)	-7.6	19.4	-2.0								
Turbidity (NTU)	808AU	900AU	604AU								

Monitoring Well: ~~13.80~~ MW103
Total Depth: 13.80'
Water Column: 9.82'
One Well Volume: 0.63 gal.

Notes:
- Begin dev. @ 12:34 w/ peri. pump
- Dry @ 12:40 - purged ~1.2 gal. - testing recharge
- Recover to 12.04 @ 13:00
- Purge dry @ 13:02 - total ~1.25 gal. purged, end development

MV

WELL DEVEOPMENT LOG

Project Name: HV Airport SC Investigation

Date Started: 8/7/19

Project Number: 18.8090

Date Finished: 8/7/19

Field Parameters		Well Volumes and Corresponding Field Parameters Value									
	Intitial	1	2	3	4	5	6	7	8	9	10
Water Level	6.50	12.53	12.78	12.90	9.25	11.07	12.38	11.51	12.17	11.77	11.85
Temperature (C)	17.7	16.3	16.1	16.0	19.7	16.8	15.6	17.7	15.5	17.0	17.6
DO (mg/L)	1.98	0.68	4.77	5.65	6.87	5.19	4.17	5.78	6.07	6.56	~~[illegible]~~ 6.01
Conductivity (uS)	431.8	402.6	412.2	396.0	441.0	403.8	398.4	425.2	392.0	399.3	415.3
pH	7.29	7.06	6.68	7.06	7.09	7.09	7.18	6.83	6.90	6.92	7.07
ORP (mV)	132.9	52.8	55.4	99.6	82.1	68.3	35.9	61.1	55.9	67.3	59.6
Turbidity (NTU)	3051	2199	2302	1072	2282	601	2531	670	792	127	1215

* Total Depth after development *
↳ 13.31

Monitoring Well: MW-101
*Total Depth: 12.92
Water Column: 6.42
One Well Volume: 0.41 gal

Notes: Start @ 1035
Stop @ 1205
10 Volumes = 4.1 gal
Well Pumps dry/recovery to finish development
4.5 gal Purged
1.25" well
Peristaltic Pump
YSI DSS Pro: FA03966

Field Parameters		Well Volumes and Corresponding Field Parameters Value									
	Intitial	1	2	3	4	5	6	7	8	9	10
Water Level	6.51	7.50	7.32	7.34	–		7.35			7.35	7.39
Temperature (C)	17.5	19.0	19.2	18.9			18.6	~~[illegible]~~		18.7	~~[illegible]~~ 18.1
DO (mg/L)	2.33	1.05	1.14	1.26			1.29			1.39	1.54
Conductivity (uS)	870	880	849	790			782			786	766
pH	10.00	8.82	8.91	8.26			7.94			7.48	6.92
ORP (mV)	-7.0	-93.3	-98.3	-95.4			-71.7			-30.0	-25.2
Turbidity (NTU)	2141	2000	1571	2195			2024			2367	1336

*Total Depth * after Development
↳ 13.42

Monitoring Well: MW-100
* Total Depth: 12.29
Water Column: 5.78
One Well Volume: 0.37 gal

Notes: Start @ 1315
Stop @ 1335
*Purge too fast to collect all readings
4 gal Purged
1.25" well
10 Volumes = 3.7 gal
Peristaltic Pump
YSI DSS Pro: FA03966

Field Parameters		Well Volumes and Corresponding Field Parameters Value									
	Intitial	1	2	3	4	5	6	7	8	9	10
Water Level											
Temperature (C)											
DO (mg/L)											
Conductivity (uS)											
pH											
ORP (mV)											
Turbidity (NTU)											

Monitoring Well:
Total Depth:
Water Column:
One Well Volume:

Notes:

Field Parameters		Well Volumes and Corresponding Field Parameters Value									
	Intitial	1	2	3	4	5	6	7	8	9	10
Water Level											
Temperature (C)											
DO (mg/L)											
Conductivity (uS)											
pH											
ORP (mV)											
Turbidity (NTU)											

Monitoring Well:
Total Depth:
Water Column:
One Well Volume:

Notes:

Residental Well Sampling Services Field Log

C.T. MALE ASSOCIATES

DATE: 8/7/19	ON SITE: 07:50 OFF SITE: 16:00	PROJECT NO.: 18.8090
PROJECT NAME: HVRA		PROJECT LOCATION: Wappingers Falls, NY
SAMPLING PERSONNEL: D. King	SAMPLE TYPE: POET ☐ POU ☐	LTM ☑ OTHER ☐
SAMPLE ADDRESS: Maintenance Building		DOUBLE PAIR OF NITRILE GLOVES USED ☑
SITE CONTACT PRESENT? YES ☑ NO ☐		NAME: Mike (HVRA Maintenance)
PURGING SOURCE: Sink (Not Bathroom)	PURGE DURATION: ~25 min	SAMPLE LOCATION(S): Sink (Not Bathroom)
INITIAL SAMPLING ☑ ROUTINE SAMPLING ☐	VESSEL CHANGE-OUT ☐	OTHER ☐
INFLUENT SAMPLE COLLECTION TIME: —	MID POINT SAMPLE COLLECTION TIME: —	EFFLUENT SAMPLE COLLECTION TIME: *See COC*
FLOW METER READING (GALLONS): —		

NOTES:
- Aerator not removed
- Collected MS/MSD + FD

Key:
POET: Point Of Entry Treatment system
POU: Point Of Use Treatment system
LTM: Long Term Monitoring location

Exampe Sample Locations:
POET vessel ports
Pressure tank
Kitchen Sink (aerator removed)
Outdoor Spigot

PFCs Sampling Checklist

Date: 8/8/A

Weather (*temp./precipitation*): ____________ Site Name: HVRA

Field Clothing and PPE:

- [x] No clothing or boots containing Gore-Tex™
- [x] All safety boots made from polyurethane and PVC
- [x] No materials containing Tyvek®
- [x] Field crew has not used fabric softener on clothing
- [x] Field crew has not used cosmetics, moisturizers, hand cream, or other related products this morning
- [x] Field crew has not applied unauthorized sunscreen or insect repellant

Field Equipment:

- [x] No Teflon® or LDPE containing materials on-site
- [x] All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- [x] No waterproof field books on-site
- [x] No plastic clipboards, binders, or spiral hard cover notebooks on-site
- [x] No adhesives (Post-It Notes) on-site
- [x] Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- [x] All sample containers made of HDPE or polypropylene
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only

Equipment Decontamination:

- [x] "PFC-free" water on-site for decontamination of sample equipment. No other water sources to be used.
- [x] Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- [x] No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Lead shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the site or removal of worker offsite until in compliance.

Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

____

____

____

Field Lead Name: Dan King

Field Lead Signature: [signature] Time: ____________

C.T. MALE ASSOCIATES

Daily Calibration Record

Date: 8/8/19

C.T.M. Project #: 18.8090

Project: HV Airport SC Investigation

Location: Wappingers Falls, NY

Techinian Name(s): D. King, C. Bondi

Ambient Temperature: ~75°F

Serial Number	Time	Temperature Accuracy	Pre-Cal Values	Calibration Values	Post-Cal or Bump Check Values
YSI: FA03966 Pro DSS	0820	Yes / No	pH: 4.04 / 6.99 / 10.05 Dissolved Oxygen: 98.3 % Sp. Conductivity: 6564 ORP: 231.2	pH: 4.00 / 7.01 / 10.03 Dissolved Oxygen: — % Sp. Conductivity: 7000 ORP: 232.7	pH: 4.00 / 7.01 / 10.03 Dissolved Oxygen: — % Sp. Conductivity: 7000 ORP: 232.7
YSI: FA01466	0820	Yes / No	pH: 3.99 / 7.00 / 10.06 Dissolved Oxygen: 110.7 % Sp. Conductivity: 7026 ORP: 229.5	pH: 4.00 / 7.01 / 10.03 Dissolved Oxygen: — % Sp. Conductivity: 7000 ORP: 232.4	pH: 4.00 / 7.01 / 10.05 Dissolved Oxygen: — % Sp. Conductivity: 7000 ORP: 232.4
YSI:		Yes No	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:
YSI:		Yes No	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:
YSI:		Yes No	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:

Turbidity Meters

1) Ser.No. CTM	Time 1000	Reading 10.25 NTU	4) Ser.No.	Time	Reading NTU
2) Ser.No.	Time	Reading NTU	5) Ser.No.	Time	Reading NTU
3) Ser.No.	Time	Reading NTU	6) Ser.No.	Time	Reading NTU

WELL LOW-FLOW PURGING LOG

Sampling Activity (check all that apply):

☐ Initial / 3 Vol. ☑ Low-Flow ☐ Sample

DATE: 8/8/19
PROJECT NO.: 18.8090
SAMPLING PERSONNEL: D. King
NOTES TAKEN BY: D. King

PROJECT NAME: HV Airport SC Investigation
PROJECT LOCATION: Wappingers Falls, NY

NOTES CHECKED BY:

MONITORING WELL ID#: MW102
DEPTH TO WATER (ft): 11.08 FROM: TPVC
DEPTH TO BOTTOM (ft): 19.35 FROM: TPVC
WATER COLUMN HEIGHT: 8.27 ft
WELL VOLUME: 0.53 GALLONS

WELL CASING DIAMETER: 1.25 in.

CONVERSION FACTORS LINEAR FEET TO GALLONS

1" = 0.041 GAL/LF	3" = 0.38 GAL/LF
1.25" = 0.064 GAL/LF	4" = 0.66 GAL/LF
2" = 0.16 GAL/LF	6" = 1.47 GAL/LF

Field Parameters	Stabilization	Time (since start of purging)										
Time (minutes)	-	Initial	5	10	15	20	25	30	35	38		
Water Level (ft)	± 0.00	11.08	12.48	13.56	14.39	15.28	16.19	17.30	18.82	DRY		
Temperature (C)	± 3%	16.4	16.9	17.0	17.1	17.1	17.2	17.2	17.0			
DO (mg/L)	±10% or < 0.5	3.48	3.21	3.04	2.96	2.85	2.81	3.01	3.26			
Conductivity (uS)	± 3%	1150	1157	1160	1134	1126	1129	1139	1210			
pH (SU)	± 0.1	6.24	6.26	6.34	6.39	6.42	6.42	6.43	6.43			
ORP (mV)	±10 mV	28.6	11.6	2.2	-3.0	-5.8	-7.0	-5.5	-2.9			
Turbidity (NTU)	±10% or < 5	39.5	16.5	25.8	48.4	59.0	56.2	64.8	105.1			

Field Parameters	Time (since start of purging)												
Time (minutes)													
Water Level (ft)													
Temperature (C)													
DO (mg/L)													
Conductivity (uS)													
pH (SU)													
ORP (mV)													
Turbidity (NTU)													

VOLUMES PURGED: ~ 1.1 GALLONS
AVG PURGE RATE: ~110 mL/min.

TIME STARTED: 10:11
TIME FINISHED: Dry @ 10:49

OBSERVATIONS: COLOR None
ODOR None
SHEEN None
OTHER

WATER LEVEL AT 80% RECOV.: — ft
WATER RECOVERY HEIGHT: — ft

SAMPLE COLLECTION TIME: —
RECOVERY TIME IN MINUTES: —

NOTES: ~~Sampled~~ ~~for~~ Low-flowed dry, grab sample to be collected tomorrow after recharge.

EQUIPMENT: PERISTALTIC PUMP NEW DISPOSABLE BAILER STAINLESS STEEL BAILER

BLADDER PUMP SUBMERSIBLE PUMP OTHER

SERIAL NOs: YSI FA01466 Turb. CTM

WELL LOW-FLOW PURGING LOG

Sampling Activity (check all that apply):

☐ Initial / 3 Vol. ☑ Low-Flow ☐ Sample

DATE: 8/8/19

PROJECT NO.: 18.8090

SAMPLING PERSONNEL: D. King

NOTES TAKEN BY: D. King

PROJECT NAME: HV Airport SC Investigation

PROJECT LOCATION: Wappingers Falls, NY

NOTES CHECKED BY:

MONITORING WELL ID#: MW104

DEPTH TO WATER (ft): 17.91 FROM: TPVC

DEPTH TO BOTTOM (ft): 21.30 FROM: TPVC

WATER COLUMN HEIGHT: 3.39 ft

WELL VOLUME: 0.22 GALLONS

WELL CASING DIAMETER: 1.25 in.

CONVERSION FACTORS LINEAR FEET TO GALLONS

1" = 0.041 GAL/LF 3" = 0.38 GAL/LF

1.25" = 0.064 GAL/LF 4" = 0.66 GAL/LF

2" = 0.16 GAL/LF 6" = 1.47 GAL/LF

Field Parameters	Stabilization	Time (since start of purging)										
Time (minutes)	-	Initial	@5 gal	8								
Water Level (ft)	± 0.00	17.91	~~19.09~~	DRY								
Temperature (C)	± 3%	18.3	16.9									
DO (mg/L)	±10% or < 0.5	7.65	6.03									
Conductivity (uS)	± 3%	509	483.5									
pH (SU)	± 0.1	7.10	6.98									
ORP (mV)	±10 mV	146.5	128.5									
Turbidity (NTU)	±10% or < 5	79244	44.5									

Field Parameters	Time (since start of purging)												
Time (minutes)													
Water Level (ft)													
Temperature (C)													
DO (mg/L)													
Conductivity (uS)													
pH (SU)													
ORP (mV)													
Turbidity (NTU)													

VOLUMES PURGED: ~0.25 GALLONS

AVG PURGE RATE: 110mL/min.

TIME STARTED: 11:34

TIME FINISHED: DRY @ 11:42

OBSERVATIONS: COLOR None ODOR None

SHEEN None OTHER

WATER LEVEL AT 80% RECOV.: — ft

WATER RECOVERY HEIGHT: — ft

SAMPLE COLLECTION TIME: —

RECOVERY TIME IN MINUTES: —

NOTES: Low-flowed dry, grab sample to be collected tomorrow after recharge.

EQUIPMENT: PERISTALTIC PUMP NEW DISPOSABLE BAILER STAINLESS STEEL BAILER

BLADDER PUMP SUBMERSIBLE PUMP OTHER

SERIAL NOs: YSI FA01466 Turb. CTM

WELL LOW-FLOW PURGING LOG

Sampling Activity (check all that apply):

☐ Initial / 3 Vol. ☑ Low-Flow ☐ Sample

DATE: 8/8/19

PROJECT NO.: 18.8090

SAMPLING PERSONNEL: D. King

NOTES TAKEN BY: D. King

PROJECT NAME: HV Airport SC Investigation

PROJECT LOCATION: Wappingers Falls, NY

NOTES CHECKED BY:

MONITORING WELL ID#: MW103

DEPTH TO WATER (ft): 4.30 FROM: TPVC

DEPTH TO BOTTOM (ft): 13.80 FROM: TPVC

WATER COLUMN HEIGHT: 9.50 ft

WELL VOLUME: ~~0.42~~ 0.61 GALLONS

WELL CASING DIAMETER: 1.25 in.

CONVERSION FACTORS LINEAR FEET TO GALLONS

1" = 0.041 GAL/LF 3" = 0.38 GAL/LF

1.25" = 0.064 GAL/LF 4" = 0.66 GAL/LF

2" = 0.16 GAL/LF 6" = 1.47 GAL/LF

Field Parameters	Stabilization	Time (since start of purging)										
Time (minutes)	-	Initial	5	10	15	20	25	29				
Water Level (ft)	± 0.00	4.30	6.26	8.81	9.70	10.55	11.94	DRY				
Temperature (C)	± 3%	18.9	18.9	19.2	19.4	19.5	19.5					
DO (mg/L)	±10% or < 0.5	3.56	1.43	3.98	4.27	4.89	4.99					
Conductivity (uS)	± 3%	734	724	770	779	772	780					
pH (SU)	± 0.1	6.53	6.48	6.53	6.59	6.62	6.65					
ORP (mV)	±10 mV	-29.5	-27.1	-12.5	1.8	11.7	16.2					
Turbidity (NTU)	±10% or < 5	40.9	45.2	30.5	21.0	14.7	13.4					

Field Parameters	Time (since start of purging)												
Time (minutes)													
Water Level (ft)													
Temperature (C)													
DO (mg/L)													
Conductivity (uS)													
pH (SU)													
ORP (mV)													
Turbidity (NTU)													

VOLUMES PURGED: ~1.2 GALLONS

AVG PURGE RATE: 110 mL/min.

TIME STARTED: 12:11

TIME FINISHED: DRY @ 12:40

OBSERVATIONS: COLOR None ODOR None

SHEEN None OTHER

WATER LEVEL AT 80% RECOV.: — ft

WATER RECOVERY HEIGHT: — ft

SAMPLE COLLECTION TIME: —

RECOVERY TIME IN MINUTES: —

NOTES: Low-flowed dry, grab sample to be collected tomorrow after recharge.

EQUIPMENT: **PERISTALTIC PUMP** NEW DISPOSABLE BAILER STAINLESS STEEL BAILER

BLADDER PUMP SUBMERSIBLE PUMP OTHER

SERIAL NOs: YSI FA01466 Turb. CTM

WELL LOW-FLOW PURGING LOG

Sampling Activity (check all that apply):

☐ Initial / 3 Vol. ☑ Low-Flow ☑ Sample

DATE: 8/8/19 PROJECT NAME: HV Airport SC Investigation

PROJECT NO.: 18.8090 PROJECT LOCATION: Wappingers Falls, NY

SAMPLING PERSONNEL: Cliff Bondi

NOTES TAKEN BY: CB NOTES CHECKED BY: D. King

MONITORING WELL ID#: MW-100 WELL CASING DIAMETER: 1.25 in.

DEPTH TO WATER (ft): 6.69 FROM: TPVC

DEPTH TO BOTTOM (ft): 13.43 FROM: TPVC

WATER COLUMN HEIGHT: 6.74 ft

WELL VOLUME: 0.43 GALLONS

CONVERSION FACTORS LINEAR FEET TO GALLONS

1" = 0.041 GAL/LF 3" = 0.38 GAL/LF

1.25" = 0.064 GAL/LF 4" = 0.66 GAL/LF

2" = 0.16 GAL/LF 6" = 1.47 GAL/LF

Field Parameters	Stabilization	Time (since start of purging)										
Time (minutes)	-	Initial	5	10	15	20	25	30	35	40	45	50
Water Level (ft)	± 0.00	6.69	6.83	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81	6.81
Temperature (C)	± 3%	18.5	18.9	19.0	19.1	19.4	19.1	19.2	19.3	19.3	19.4	19.3
DO (mg/L)	±10% or < 0.5	3.01	1.16	1.18	1.27	1.30	1.32	1.34	1.35	1.35	1.36	1.37
Conductivity (uS)	± 3%	882	892	862	847	841	828	825	824	823	819	819
pH (SU)	± 0.1	7.47	7.04	6.93	6.82	6.76	6.71	6.69	6.67	6.65	6.63	6.63
ORP (mV)	±10 mV	43.2	-72.8	-58.2	-43.9	-36.2	-29.1	-25.5	-21.9	-19.8	-15.3	-14.9
Turbidity (NTU)	±10% or < 5	99.71	77.85	30.15	29.41	20.62	27.62	33.56	39.66	14.52	6.83	14.38

Field Parameters	Time (since start of purging)											
Time (minutes)	55	60										
Water Level (ft)	6.81	6.81										
Temperature (C)	19.1	19.2										
DO (mg/L)	1.40	1.40										
Conductivity (uS)	814	816										
pH (SU)	6.62	6.61										
ORP (mV)	-12.4	-10.7										
Turbidity (NTU)	14.98	14.03										

VOLUMES PURGED: 5.5 GALLONS AVG PURGE RATE: 370 ml/min

TIME STARTED: 1220 TIME FINISHED: 1320

OBSERVATIONS: COLOR Clear ODOR None

SHEEN None OTHER ——

WATER LEVEL AT 80% RECOV.: —— ft WATER RECOVERY HEIGHT: —— ft

SAMPLE COLLECTION TIME: 1320 RECOVERY TIME IN MINUTES: ——

NOTES: MS/MSD Collected here / FD Collected here

Sampled for full Suite TCL/TAL, CN, PFAS, 1,4-Dioxane

→ VOCs, SVOCs, PCBs, Pest.

EQUIPMENT: PERISTALTIC PUMP NEW DISPOSABLE BAILER STAINLESS STEEL BAILER

BLADDER PUMP SUBMERSIBLE PUMP OTHER

SERIAL NOs: YSI DSS Pro : FA03966

WELL LOW-FLOW PURGING LOG

Sampling Activity (check all that apply):

☐ Initial / 3 Vol. ☑ Low-Flow ☑ ~~Sample~~ CB

DATE: 8/8/19

PROJECT NAME: HV Airport SC Investigation

PROJECT NO.: 18.8096

PROJECT LOCATION: Wappingers Falls, NY

SAMPLING PERSONNEL: Cliff Bondi

NOTES TAKEN BY: CB

NOTES CHECKED BY:

MONITORING WELL ID#: MW-101

WELL CASING DIAMETER: 1.25 in.

DEPTH TO WATER (ft): 6.45 FROM: TPVC

DEPTH TO BOTTOM (ft): 13.82 FROM: TPVC

WATER COLUMN HEIGHT: CB ~~6.46~~ 7.37 ft

WELL VOLUME: CB ~~0.44~~ 0.47 GALLONS

CONVERSION FACTORS LINEAR FEET TO GALLONS

1" = 0.041 GAL/LF
1.25" = 0.064 GAL/LF
2" = 0.16 GAL/LF
3" = 0.38 GAL/LF
4" = 0.66 GAL/LF
6" = 1.47 GAL/LF

Field Parameters	Stabilization	Time (since start of purging)										
Time (minutes)	-	Initial	5	10	15	20	25	30	35	40	45	50
Water Level (ft)	± 0.00	6.45	7.67	7.95	8.07	8.30	8.46	8.64	8.81	9.00	9.22	9.73
Temperature (C)	± 3%	17.1	17.1	17.3	17.6	17.1	17.1	16.8	17.4	17.6	17.7	17.0
DO (mg/L)	±10% or < 0.5	4.70	2.92	3.12	2.28	1.29	0.81	0.56	0.40	0.46	0.75	1.70
Conductivity (uS)	± 3%	436.6	424.1	429.0	434.9	427.5	428.4	428.4	435.1	438.9	440.1	432.8
pH (SU)	± 0.1	7.30	7.10	7.03	7.09	7.17	7.22	7.22	7.20	7.14	7.10	7.05
ORP (mV)	±10 mV	172.6	113.5	112.9	97.0	54.1	36.2	26.9	23.3	21.2	17.5	25.4
Turbidity (NTU)	±10% or < 5	58.41	95.48	26.78	17.18	20.35	17.97	26.61	42.57	43.61	53.95	56.60

Field Parameters	Time (since start of purging)											
Time (minutes)	55	60	65	70	75	80	85	90	95	100		
Water Level (ft)	10.37	10.82	11.31	11.58	11.73	11.90	12.44	12.84	13.36	13.82		
Temperature (C)	16.8	16.9	16.9	16.6	16.9	17.4	16.6	16.3	16.8	17.4		
DO (mg/L)	2.33	3.22	4.40	4.08	5.18	5.41	5.85	5.95	5.66	5.45		
Conductivity (uS)	430.1	432.3	431.3	429.3	428.5	433.2	424.6	422.1	425.0	431.3		
pH (SU)	7.02	6.96	6.57	6.94	6.87	6.88	6.91	6.81	6.94	6.95		
ORP (mV)	30.1	48.48	51.8	28.7	45.9	43.8	57.9	54.9	50.5	53.1		
Turbidity (NTU)	90.63	48.70	89.70	187.7	1181	293.96	146.72	9.45	268.29	745.32		

VOLUMES PURGED: 4.0 GALLONS

AVG PURGE RATE: 160 ml/min

TIME STARTED: 0940

TIME FINISHED: 1120 *Dry

OBSERVATIONS: COLOR Clear/cloudy ODOR None

SHEEN None OTHER —

WATER LEVEL AT 80% RECOV.: — ft

WATER RECOVERY HEIGHT: — ft

SAMPLE COLLECTION TIME: —

RECOVERY TIME IN MINUTES: —

NOTES: Well purged dry → Will allow for recovery overnight prior to collecting grab sample

EQUIPMENT: PERISTALTIC PUMP NEW DISPOSABLE BAILER STAINLESS STEEL BAILER

BLADDER PUMP SUBMERSIBLE PUMP OTHER

SERIAL NOs: YSI DSS Pro : FA03966

PFCs Sampling Checklist

Date: 8/9/19

Weather (*temp./precipitation*): Clear, calm, humid, ~70°F Site Name: HVRA

Field Clothing and PPE:

- [x] No clothing or boots containing Gore-Tex™
- [x] All safety boots made from polyurethane and PVC
- [x] No materials containing Tyvek®
- [x] Field crew has not used fabric softener on clothing
- [x] Field crew has not used cosmetics, moisturizers, hand cream, or other related products this morning
- [x] Field crew has not applied unauthorized sunscreen or insect repellant

Field Equipment:

- [x] No Teflon® or LDPE containing materials on-site
- [x] All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- [x] No waterproof field books on-site
- [x] No plastic clipboards, binders, or spiral hard cover notebooks on-site
- [x] No adhesives (Post-It Notes) on-site
- [x] Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- [x] All sample containers made of HDPE or polypropylene
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only

Equipment Decontamination:

- [x] "PFC-free" water on-site for decontamination of sample equipment. No other water sources to be used.
- [x] Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- [x] No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Lead shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the site or removal of worker offsite until in compliance.

Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

Field Lead Name: Dan King

Field Lead Signature: [signature] Time: 07:56

C.T. MALE ASSOCIATES

Daily Calibration Record

Date: 8/9/19

C.T.M. Project #: 18.8090

Project: HV Airport SC Investigation

Location: Wappingers Falls, NY

Techinian Name(s): D. King

Ambient Temperature: ~70°F

Serial Number	Time	Temperature Accuracy	Pre-Cal Values	Calibration Values	Post-Cal or Bump Check Values
YSI: FA01466	0715	Yes No	pH: 4.04 / 7.01 / 10.07 Dissolved Oxygen: 98.8 % Sp. Conductivity: 7032 ORP: 237.9	pH: 4.00 / 7.03 / 10.08 Dissolved Oxygen: 100.6 % Sp. Conductivity: 7000 ORP: 239.4	pH: 4.00 / 7.05 / 10.08 Dissolved Oxygen: — % Sp. Conductivity: 7000 ORP:
YSI: FA03966 ProDSS	0715	Yes No	pH: 4.15 / 7.09 / 10.14 Dissolved Oxygen: 99.6 % Sp. Conductivity: 7330 ORP: 232.7	pH: 4.00 / 7.03 / 10.08 Dissolved Oxygen: 100.0 % Sp. Conductivity: 7000 ORP: 238.9	pH: 4.00 / 7.05 / 10.08 Dissolved Oxygen: — % Sp. Conductivity: 7000 ORP: 238.9
YSI:		Yes No	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:
YSI:		Yes No	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:
YSI:		Yes No	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:	pH: / / Dissolved Oxygen: % Sp. Conductivity: ORP:

Turbidity Meters

1) Ser.No. CTM	Time 0745	Reading 10.19 NTU	4) Ser.No.	Time	Reading NTU
2) Ser.No.	Time	Reading NTU	5) Ser.No.	Time	Reading NTU
3) Ser.No.	Time	Reading NTU	6) Ser.No.	Time	Reading NTU

WELL LOW-FLOW PURGING LOG

Sampling Activity (check all that apply):

☐ Initial / 3 Vol. ☐ Low-Flow ☑ Sample

DATE:	8/9/19	PROJECT NAME:	HV Airport SC Investigation
PROJECT NO.:	18.809	PROJECT LOCATION:	Wappingers Falls, NY
SAMPLING PERSONNEL:	D. King		
NOTES TAKEN BY:	D. King	NOTES CHECKED BY:	

MONITORING WELL ID#:	MW102	WELL CASING DIAMETER:	1.25 in.
DEPTH TO WATER (ft):	10.49 FROM: TPVC	CONVERSION FACTORS LINEAR FEET TO GALLONS	
DEPTH TO BOTTOM (ft):	19.35 FROM: TPVC	1" = 0.041 GAL/LF	3" = 0.38 GAL/LF
WATER COLUMN HEIGHT:	8.86 ft	1.25" = 0.064 GAL/LF	4" = 0.66 GAL/LF
WELL VOLUME:	0.57 GALLONS	2" = 0.16 GAL/LF	6" = 1.47 GAL/LF

Field Parameters	Stabilization	Time (since start of purging)										
Time (minutes)	-	Initial										
Water Level (ft)	± 0.00	10.49										
Temperature (C)	± 3%	16.6										
DO (mg/L)	±10% or < 0.5	5.24										
Conductivity (uS)	± 3%	1132										
pH (SU)	± 0.1	6.54										
ORP (mV)	±10 mV	19.4										
Turbidity (NTU)	±10% or < 5	61.2										

Field Parameters	Time (since start of purging)												
Time (minutes)													
Water Level (ft)													
Temperature (C)													
DO (mg/L)													
Conductivity (uS)													
pH (SU)													
ORP (mV)													
Turbidity (NTU)													

VOLUMES PURGED: — GALLONS AVG PURGE RATE: —

TIME STARTED: — TIME FINISHED: —

OBSERVATIONS: COLOR None ODOR None

SHEEN None OTHER

WATER LEVEL AT 80% RECOV.: — ft WATER RECOVERY HEIGHT: 10.49 ft

SAMPLE COLLECTION TIME: 0840 RECOVERY TIME IN MINUTES: —

NOTES: Sampled for: TCL/TAL, CN, PFAS, 1,4-dioxane
VOCs, SVOCs, PCBs, Pest.

EQUIPMENT: $\boxed{\text{PERISTALTIC PUMP}}$ NEW DISPOSABLE BAILER STAINLESS STEEL BAILER

BLADDER PUMP SUBMERSIBLE PUMP OTHER

SERIAL NOs: YSI FA01466 Turb. CTM

WELL LOW-FLOW PURGING LOG

Sampling Activity (check all that apply):

☐ Initial / 3 Vol. ☐ Low-Flow ☑ Sample

DATE: 8/9/19
PROJECT NO.: 18.809
SAMPLING PERSONNEL: D. King
NOTES TAKEN BY: D. King

PROJECT NAME: HV Airport SC Investigation
PROJECT LOCATION: Wappingers Falls, NY

NOTES CHECKED BY:

MONITORING WELL ID#: MW104
DEPTH TO WATER (ft): 17.92 FROM: TPVC
DEPTH TO BOTTOM (ft): 21.30 FROM: TPVC
WATER COLUMN HEIGHT: 3.38 ft
WELL VOLUME: 0.22 GALLONS

WELL CASING DIAMETER: 1.25 in.

CONVERSION FACTORS LINEAR FEET TO GALLONS

1" = 0.041 GAL/LF
1.25" = 0.064 GAL/LF
2" = 0.16 GAL/LF
3" = 0.38 GAL/LF
4" = 0.66 GAL/LF
6" = 1.47 GAL/LF

Field Parameters	Stabilization	Time (since start of purging)										
Time (minutes)	-	Initial										
Water Level (ft)	± 0.00	17.92										
Temperature (C)	± 3%	17.5										
DO (mg/L)	±10% or < 0.5	6.58										
Conductivity (uS)	± 3%	483.5										
pH (SU)	± 0.1	7.19										
ORP (mV)	±10 mV	190.7										
Turbidity (NTU)	±10% or < 5	OR										

Field Parameters	Time (since start of purging)													
Time (minutes)														
Water Level (ft)														
Temperature (C)														
DO (mg/L)														
Conductivity (uS)														
pH (SU)														
ORP (mV)														
Turbidity (NTU)														

VOLUMES PURGED: — GALLONS
AVG PURGE RATE: —
TIME STARTED: —
TIME FINISHED: —

OBSERVATIONS: COLOR None
SHEEN None
ODOR None
OTHER

WATER LEVEL AT 80% RECOV.: — ft
WATER RECOVERY HEIGHT: 17.92 ft
SAMPLE COLLECTION TIME: 0925
RECOVERY TIME IN MINUTES: —

NOTES: Sampled for: PFAS, 1,4-Dioxane

EQUIPMENT: PERISTALTIC PUMP NEW DISPOSABLE BAILER STAINLESS STEEL BAILER
BLADDER PUMP SUBMERSIBLE PUMP OTHER

SERIAL NOs: YSI FA01466 Turb. CTM

WELL LOW-FLOW PURGING LOG

Sampling Activity (check all that apply):

☐ Initial / 3 Vol. ☐ Low-Flow ☑ Sample

DATE: 8/9/19

PROJECT NO.: 18.809

SAMPLING PERSONNEL: B. King

NOTES TAKEN BY: B. King

PROJECT NAME: HV Airport SC Investigation

PROJECT LOCATION: Wappingers Falls, NY

NOTES CHECKED BY:

MONITORING WELL ID#: MW103

DEPTH TO WATER (ft): 4.68 FROM: TPVC

DEPTH TO BOTTOM (ft): 13.80 FROM: TPVC

WATER COLUMN HEIGHT: 9.12 ft

WELL VOLUME: 0.58 GALLONS

WELL CASING DIAMETER: 1.25 in.

CONVERSION FACTORS LINEAR FEET TO GALLONS

1" = 0.041 GAL/LF, 1.25" = 0.064 GAL/LF, 2" = 0.16 GAL/LF, 3" = 0.38 GAL/LF, 4" = 0.66 GAL/LF, 6" = 1.47 GAL/LF

Field Parameters	Stabilization	Time (since start of purging)										
Time (minutes)	-	Initial										
Water Level (ft)	± 0.00	4.68										
Temperature (C)	± 3%	19.2										
DO (mg/L)	±10% or < 0.5	5.32										
Conductivity (uS)	± 3%	747										
pH (SU)	± 0.1	6.68										
ORP (mV)	±10 mV	0.3										
Turbidity (NTU)	±10% or < 5	49.7										

Field Parameters	Time (since start of purging)												
Time (minutes)													
Water Level (ft)													
Temperature (C)													
DO (mg/L)													
Conductivity (uS)													
pH (SU)													
ORP (mV)													
Turbidity (NTU)													

VOLUMES PURGED: — GALLONS

AVG PURGE RATE: —

TIME STARTED: —

TIME FINISHED: —

OBSERVATIONS: COLOR None ODOR None

SHEEN None OTHER

WATER LEVEL AT 80% RECOV.: — ft

WATER RECOVERY HEIGHT: 4.68 ft

SAMPLE COLLECTION TIME: 1000

RECOVERY TIME IN MINUTES: —

NOTES: Sampled for! TCL/TAL, CN, PFAS, 1,4-Dioxane
<5 VOCs, SVOCs, PCBs, Pest,

EQUIPMENT: PERISTALTIC PUMP NEW DISPOSABLE BAILER STAINLESS STEEL BAILER

BLADDER PUMP SUBMERSIBLE PUMP OTHER

SERIAL NOs: YSI FA01466 Turb, CTM

WELL LOW-FLOW PURGING LOG

Sampling Activity (check all that apply):

☐ Initial / 3 Vol. ☐ Low-Flow ☑ Sample

DATE: 8/9/19
PROJECT NO.: 18.8090
SAMPLING PERSONNEL: Cliff Bondi
NOTES TAKEN BY: CB

PROJECT NAME: HV Airport SC Investigation
PROJECT LOCATION: Wappingers Falls, NY
NOTES CHECKED BY:

MONITORING WELL ID#: MW-101
DEPTH TO WATER (ft): 6.49 FROM: TPVC
DEPTH TO BOTTOM (ft): 13.88 FROM: TPVC
WATER COLUMN HEIGHT: 7.39 ft
WELL VOLUME: 0.47 GALLONS

WELL CASING DIAMETER: 1.25 in.
CONVERSION FACTORS LINEAR FEET TO GALLONS
1" = 0.041 GAL/LF 3" = 0.38 GAL/LF
1.25" = 0.064 GAL/LF 4" = 0.66 GAL/LF
2" = 0.16 GAL/LF 6" = 1.47 GAL/LF

Field Parameters	Stabilization	Time (since start of purging)											
Time (minutes)	-	*Initial	Final										
Water Level (ft)	± 0.00	5.33	10.24										
Temperature (C)	± 3%	17.2	17.0										
DO (mg/L)	±10% or < 0.5	5.83	4.17										
Conductivity (uS)	± 3%	402.9	414.4										
pH (SU)	± 0.1	7.20	7.23										
ORP (mV)	±10 mV	211.6	204.8										
Turbidity (NTU)	±10% or < 5	191.81	202.50										

Field Parameters	Time (since start of purging)													
Time (minutes)														
Water Level (ft)														
Temperature (C)														
DO (mg/L)														
Conductivity (uS)														
pH (SU)														
ORP (mV)														
Turbidity (NTU)														

VOLUMES PURGED: — GALLONS AVG PURGE RATE: —

TIME STARTED: — TIME FINISHED: —

OBSERVATIONS: COLOR Clear/Cloudy ODOR Slight Petroleum odor
SHEEN None OTHER —

WATER LEVEL AT 80% RECOV.: — ft WATER RECOVERY HEIGHT: — ft

SAMPLE COLLECTION TIME: 0915 RECOVERY TIME IN MINUTES: —

NOTES: Grab Sample Collected -> well low-flowed dry yesterday 8/8/19
Sampled for: PFAS, 1,4 Dioxane, Metals, TCN
* 1 set of parameters collected after PFAS/Dioxane samples, 1 set after full sample collected (Final)

EQUIPMENT: PERISTALTIC PUMP NEW DISPOSABLE BAILER STAINLESS STEEL BAILER
~~BLADDER PUMP~~ SUBMERSIBLE PUMP OTHER

SERIAL NOs: YSI DSS Pro: FA03966

APPENDIX E

DRINKING WATER WELL SAMPLING LOGS

C.T. MALE ASSOCIATES

Residental Well Sampling Services Field Log

DATE: 09/04/2019

ON SITE: 1308

OFF SITE: 1346

PROJECT NO.: 18.8090

PROJECT NAME: HVRA

PROJECT LOCATION: Wappingers Falls, NY

SAMPLING PERSONNEL: Amanda Hens

SAMPLE TYPE: POET ☐ POU ☐ LTM ☐ OTHER ☒

SAMPLE ADDRESS: 1581 Route 376

DOUBLE PAIR OF NITRILE GLOVES USED ☒

SITE CONTACT PRESENT? YES ☒ NO ☐ NAME: Rob (worker)

PURGING SOURCE: outside hose spigot

PURGE DURATION: (AH) ~~1320~~ 10 min

SAMPLE LOCATION(S): outside spigot

INITIAL SAMPLING ☐ ROUTINE SAMPLING ☐ VESSEL CHANGE-OUT ☐ OTHER ☒

INFLUENT SAMPLE COLLECTION TIME:

MID POINT SAMPLE COLLECTION TIME:

EFFLUENT SAMPLE COLLECTION TIME:

FLOW METER READING (GALLONS): NA

NOTES: Started purge at 1320 ended at 1330
· Collected sample at 1333
· DEC & Dept of health rep. present onsite.

Key:
POET: Point Of Entry Treatment system
POU: Point Of Use Treatment system
LTM: Long Term Monitoring location

Exampe Sample Locations:
POET vessel ports
Pressure tank
Kitchen Sink (aerator removed)
Outdoor Spigot

C.T. MALE ASSOCIATES

Residental Well Sampling Services Field Log

DATE: 09/04/2019	ON SITE: 1353 OFF SITE: 1415	PROJECT NO.: 18.8090
PROJECT NAME: HVRA		PROJECT LOCATION: Wappingers Falls, NY
SAMPLING PERSONNEL: Amanda Hens	SAMPLE TYPE: POET ☐ POU ☐ LTM ☐ OTHER ☒	
SAMPLE ADDRESS: 7 Hackensack Heights Rd.		DOUBLE PAIR OF NITRILE GLOVES USED ☒
SITE CONTACT PRESENT? (A) YES ☐ NO ☒ NAME: (A) Left Property owner made/wrote note to Sampler		
PURGING SOURCE: outside spigot	PURGE DURATION: 10 min	SAMPLE LOCATION(S): outside spigot
INITIAL SAMPLING ☐ ROUTINE SAMPLING ☐ VESSEL CHANGE-OUT ☐ OTHER ☒		
INFLUENT SAMPLE COLLECTION TIME:	MID POINT SAMPLE COLLECTION TIME:	EFFLUENT SAMPLE COLLECTION TIME:
FLOW METER READING (GALLONS): NA		

NOTES:
- DEC official started purge at 1348 ended at 1358 sampled at 1400.
- Resident left note; wated signed so she knew we were here. signed and took picture
- FTB taken at 1404
- DEC & Dept of Health representatives present onsite

Key:
POET: Point Of Entry Treatment system
POU: Point Of Use Treatment system
LTM: Long Term Monitoring location

Exampe Sample Locations:
POET vessel ports
Pressure tank
Kitchen Sink (aerator removed)
Outdoor Spigot

C.T. MALE ASSOCIATES

Residental Well Sampling Services Field Log

DATE: 09/04/2019	ON SITE: 1417 OFF SITE: 1455	PROJECT NO.: 18.8090
PROJECT NAME: HVRA		PROJECT LOCATION: Wappingers Falls, NY
SAMPLING PERSONNEL: Amanda Hens	SAMPLE TYPE: POET ☐ POU ☐	LTM ☐ OTHER ☒
SAMPLE ADDRESS: FTC Enterprises (Camo Pollution Contol) 1610 Rt. 376		DOUBLE PAIR OF NITRILE GLOVES USED ☒
SITE CONTACT PRESENT? YES ☒ NO ☐		NAME: Mike (property owner)
PURGING SOURCE: outside spigot	PURGE DURATION: 10 min	SAMPLE LOCATION(S): outside spigot
INITIAL SAMPLING ☐ ROUTINE SAMPLING ☐	VESSEL CHANGE-OUT ☐	OTHER ☒
INFLUENT SAMPLE COLLECTION TIME:	MID POINT SAMPLE COLLECTION TIME:	EFFLUENT SAMPLE COLLECTION TIME:
FLOW METER READING (GALLONS): NA		

NOTES: · Arrived at 1417 waiting for property owner Mike
· Owner arrived showed where new well was and where we could sample it; new well ~500 ft deep
started purge at 1430 ended at 1440
sampled at 1441
· DEC & Dept. of Health rep. present onsite

Key:
POET: Point Of Entry Treatment system
POU: Point Of Use Treatment system
LTM: Long Term Monitoring location

Exampe Sample Locations:
POET vessel ports
Pressure tank
Kitchen Sink (aerator removed)
Outdoor Spigot

Residental Well Sampling Services Field Log

C.T. MALE ASSOCIATES

DATE: 09/04/2019	ON SITE: 1505 OFF SITE:	PROJECT NO.: 18.8090
PROJECT NAME: HVRA		PROJECT LOCATION: Wappingers Falls, NY
SAMPLING PERSONNEL: Amanda Hens	SAMPLE TYPE: POET ☐ POU ☐	LTM ☐ OTHER ☒
SAMPLE ADDRESS: 2 Hackensack Heights Rd.		DOUBLE PAIR OF NITRILE GLOVES USED ☒
SITE CONTACT PRESENT? YES ☒ NO ☐		NAME: Homeowners parents
PURGING SOURCE: —	PURGE DURATION: —	SAMPLE LOCATION(S): —
INITIAL SAMPLING ☐ ROUTINE SAMPLING ☐	VESSEL CHANGE-OUT ☐	OTHER ☐
INFLUENT SAMPLE COLLECTION TIME:	MID POINT SAMPLE COLLECTION TIME:	EFFLUENT SAMPLE COLLECTION TIME:
FLOW METER READING (GALLONS): NA		

NOTES: Sample was not taken; miscommunication about meeting time. Mr. Chung was not home. Was material/iteams over crawl space enterance. Older couple could not move items and sampling point was in confined space. Told couple we could keep the time they thought had been scheduled Friday at 4pm and someone could come then to sample. Talked to David Lent and said he would either have someone sample it or call homeowner.

Key:
POET: Point Of Entry Treatment system
POU: Point Of Use Treatment system
LTM: Long Term Monitoring location

Exampe Sample Locations:
POET vessel ports
Pressure tank
Kitchen Sink (aerator removed)
Outdoor Spigot

C.T. MALE ASSOCIATES

Residental Well Sampling Services Field Log

DATE: 09/06/19	ON SITE: 1445 OFF SITE: 1540	PROJECT NO.: 18.8090
PROJECT NAME: HVRA		PROJECT LOCATION: 1601 Rt. 376
SAMPLING PERSONNEL: D. Lent	SAMPLE TYPE: POET ☐ POU ☐ LTM ☐ OTHER ☒	
SAMPLE ADDRESS: 1601 Rt. 376 Wappinger Falls NY 12590		DOUBLE PAIR OF NITRILE GLOVES USED ☒
SITE CONTACT PRESENT? YES ☒ NO ☐	NAME: Herald Bochner	
PURGING SOURCE: Spigot - South side of building	PURGE DURATION: 10 min	SAMPLE LOCATION(S): Outside Spigot
INITIAL SAMPLING ☐ ROUTINE SAMPLING ☐	VESSEL CHANGE-OUT ☐	OTHER ☒
INFLUENT SAMPLE COLLECTION TIME:	MID POINT SAMPLE COLLECTION TIME:	EFFLUENT SAMPLE COLLECTION TIME:
FLOW METER READING (GALLONS): NA		

NOTES:
Started purge at 1505; ended at 1515
Collected sample at 1515

Key:
POET: Point Of Entry Treatment system
POU: Point Of Use Treatment system
LTM: Long Term Monitoring location

Exampe Sample Locations:
POET vessel ports
Pressure tank
Kitchen Sink (aerator removed)
Outdoor Spigot

C.T. MALE ASSOCIATES

Residental Well Sampling Services Field Log

DATE: 09/06/19	ON SITE: 1545 OFF SITE: 1620	PROJECT NO.: 18.8090
PROJECT NAME: HVRA		PROJECT LOCATION: 2 Hackensack Heights Rd.
SAMPLING PERSONNEL: D. Lent	SAMPLE TYPE: POET ☐ POU ☐ LTM ☐ OTHER ☒	
SAMPLE ADDRESS: 2 Hackensack Heights Rd		DOUBLE PAIR OF NITRILE GLOVES USED ☐
SITE CONTACT PRESENT? YES ☒ NO ☐	NAME: Melon Chung	
PURGING SOURCE: Rear Spigot at deck	PURGE DURATION: 10 Min	SAMPLE LOCATION(S): Outside Spigot
INITIAL SAMPLING ☐ ROUTINE SAMPLING ☐	VESSEL CHANGE-OUT ☐	OTHER ☒
INFLUENT SAMPLE COLLECTION TIME:	MID POINT SAMPLE COLLECTION TIME:	EFFLUENT SAMPLE COLLECTION TIME:
FLOW METER READING (GALLONS): NA		

NOTES:

Started Purge at 1550; Ended Purge at 1600
Collected Sample at 1600

Key:
POET: Point Of Entry Treatment system
POU: Point Of Use Treatment system
LTM: Long Term Monitoring location

Exampe Sample Locations:
POET vessel ports
Pressure tank
Kitchen Sink (aerator removed)
Outdoor Spigot

APPENDIX F

LABORATORY REPORTS

ANALYTICAL REPORT

Lab Number:	L1931312
Client:	C.T. Male Associates 12 Raymond Avenue Poughkeepsie, NY 12603
ATTN:	David Lent
Phone:	(845) 454-4400
Project Name:	HVRA
Project Number:	18.8090
Report Date:	07/31/19

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).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1931312-01	HVRA-AAG-PW01	WATER	AAG HANGAR	07/16/19 13:20	07/16/19
L1931312-02	TRIP BLANK	WATER	AAG HANGAR	07/16/19 13:20	07/16/19
L1931312-03	FIELD BLANK	WATER	AAG HANGAR	07/16/19 00:00	07/16/19
L1931312-04	HVRA-AAG-PW01	WATER	AAG HANGAR	07/17/19 10:00	07/17/19
L1931312-05	TRIP BLANK	WATER	AAG HANGAR	07/17/19 10:00	07/17/19
L1931312-06	FIELD BLANK	WATER	AAG HANGAR	07/17/19 10:00	07/17/19

Project Name:	HVRA	**Lab Number:**	L1931312
Project Number:	18.8090	**Report Date:**	07/31/19

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: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

Case Narrative (continued)

Report Submission
July 31, 2019: This final report includes the results of all requested analyses.
July 31, 2019: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt
L1931312-01: One container for the PCBs analysis was received broken; however, there was adequate sample remaining to perform the requested analysis.
L1931312-01: The Perfluorinated Alkyl Acids analysis was requested on the Chain of Custody, but a container was not received. This was later received and is reported as L1931312-04.
L1931312-02: A sample identified as "TRIP BLANK" was received but not listed on the Chain of Custody. At the client's request, this sample was not analyzed.
L1931312-03: A sample identified as "FIELD BLANK" was received but not listed on the Chain of Custody. At the client's request, this sample was not analyzed.
L1931312-04: The sample identified as "HVRA-AAG-PW01" on the chain of custody was identified as "HVRA-ARFF-PW01" on the container label. At the client's request, the sample is reported as "HVRA-AAG-PW01".

Perfluorinated Alkyl Acids by Isotope Dilution
WG1266320-2: The continuing calibration standard had the response for PFHxS is outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

PCBs
The WG1261777-2 LCS recoveries, associated with L1931312-01, were outside the acceptance criteria for

Case Narrative (continued)

aroclor 1016 (28%) and aroclor 1260 (26%); however, re-extraction could not be performed due to lack of additional sample. The results of the original analyses are reported.

The surrogate recoveries for the WG1261777-2 LCS, associated with L1931312-01, are outside the acceptance criteria for 2,4,5,6-tetrachloro-m-xylene (24%, 24%).

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: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 07/31/19

ORGANICS

SEMIVOLATILES

Project Name: HVRA **Lab Number:** L1931312

Project Number: 18.8090 **Report Date:** 07/31/19

SAMPLE RESULTS

Lab ID: L1931312-01
Client ID: HVRA-AAG-PW01
Sample Location: AAG HANGAR

Date Collected: 07/16/19 13:20
Date Received: 07/16/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 07/18/19 19:14
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 07/17/19 15:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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	1.7	J	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
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

Project Name:	HVRA	**Lab Number:**	L1931312
Project Number:	18.8090	**Report Date:**	07/31/19

SAMPLE RESULTS

Lab ID:	L1931312-01	Date Collected:	07/16/19 13:20
Client ID:	HVRA-AAG-PW01	Date Received:	07/16/19
Sample Location:	AAG HANGAR	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	57		21-120
Phenol-d6	52		10-120
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	96		15-120
2,4,6-Tribromophenol	61		10-120
4-Terphenyl-d14	113		41-149

Project Name: HVRA **Lab Number:** L1931312

Project Number: 18.8090 **Report Date:** 07/31/19

SAMPLE RESULTS

Lab ID:	L1931312-01	Date Collected:	07/16/19 13:20
Client ID:	HVRA-AAG-PW01	Date Received:	07/16/19
Sample Location:	AAG HANGAR	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	07/17/19 15:47
Analytical Date:	07/18/19 14:54		
Analyst:	DV		

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	0.04	J	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: HVRA **Lab Number:** L1931312

Project Number: 18.8090 **Report Date:** 07/31/19

SAMPLE RESULTS

Lab ID:	L1931312-01	Date Collected:	07/16/19 13:20
Client ID:	HVRA-AAG-PW01	Date Received:	07/16/19
Sample Location:	AAG HANGAR	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	58		21-120
Phenol-d6	56		10-120
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	95		15-120
2,4,6-Tribromophenol	90		10-120
4-Terphenyl-d14	107		41-149

Project Name:	HVRA	**Lab Number:**	L1931312
Project Number:	18.8090	**Report Date:**	07/31/19

SAMPLE RESULTS

Lab ID:	L1931312-01	Date Collected:	07/16/19 13:20
Client ID:	HVRA-AAG-PW01	Date Received:	07/16/19
Sample Location:	AAG HANGAR	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	07/23/19 08:50
Analytical Date:	07/25/19 11:30		
Analyst:	MA		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	144	32.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	36		15-110

Project Name: HVRA **Lab Number:** L1931312

Project Number: 18.8090 **Report Date:** 07/31/19

SAMPLE RESULTS

Lab ID: L1931312-04
Client ID: HVRA-AAG-PW01
Sample Location: AAG HANGAR

Date Collected: 07/17/19 10:00
Date Received: 07/17/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 07/30/19 16:17
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 07/29/19 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	191		ng/l	20.0	4.08	1
Perfluoropentanoic Acid (PFPeA)	838		ng/l	20.0	3.96	1
Perfluorobutanesulfonic Acid (PFBS)	23.6		ng/l	20.0	2.38	1
Perfluorohexanoic Acid (PFHxA)	621		ng/l	20.0	3.28	1
Perfluoroheptanoic Acid (PFHpA)	191		ng/l	20.0	2.25	1
Perfluorohexanesulfonic Acid (PFHxS)	553		ng/l	20.0	3.76	1
Perfluorooctanoic Acid (PFOA)	233		ng/l	20.0	2.36	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2180		ng/l	20.0	13.3	1
Perfluoroheptanesulfonic Acid (PFHpS)	37.6		ng/l	20.0	6.88	1
Perfluorononanoic Acid (PFNA)	21.4		ng/l	20.0	3.12	1
Perfluorooctanesulfonic Acid (PFOS)	1090		ng/l	20.0	5.04	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	20.0	3.04	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	42.4		ng/l	20.0	12.1	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	20.0	6.48	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	20.0	2.60	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	20.0	9.80	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	20.0	5.80	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	20.0	8.04	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	20.0	3.72	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	20.0	3.27	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	20.0	2.48	1
PFOA/PFOS, Total	1320		ng/l	20.0	2.36	1

Project Name: HVRA **Lab Number:** L1931312

Project Number: 18.8090 **Report Date:** 07/31/19

SAMPLE RESULTS

Lab ID:	L1931312-04	Date Collected:	07/17/19 10:00
Client ID:	HVRA-AAG-PW01	Date Received:	07/17/19
Sample Location:	AAG HANGAR	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	126		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	119		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	129		33-143

Project Name: HVRA | **Lab Number:** L1931312
Project Number: 18.8090 | **Report Date:** 07/31/19

SAMPLE RESULTS

Lab ID: L1931312-05
Client ID: TRIP BLANK
Sample Location: AAG HANGAR

Date Collected: 07/17/19 10:00
Date Received: 07/17/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 07/30/19 15:11
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 07/29/19 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.88	0.383	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.88	0.372	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.88	0.224	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.88	0.308	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.88	0.212	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.88	0.353	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.88	0.222	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.88	1.25	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.88	0.647	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.88	0.293	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.88	0.474	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.88	0.286	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.88	1.14	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.88	0.609	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	0.244	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.88	0.921	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.88	0.545	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.88	0.756	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	0.350	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.88	0.308	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.88	0.233	1
PFOA/PFOS, Total	ND		ng/l	1.88	0.222	1

Project Name:	HVRA	**Lab Number:**	L1931312
Project Number:	18.8090	**Report Date:**	07/31/19

SAMPLE RESULTS

Lab ID:	L1931312-05	Date Collected:	07/17/19 10:00
Client ID:	TRIP BLANK	Date Received:	07/17/19
Sample Location:	AAG HANGAR	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	44		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	59		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	66		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		33-143

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

SAMPLE RESULTS

Lab ID:	L1931312-06	Date Collected:	07/17/19 10:00
Client ID:	FIELD BLANK	Date Received:	07/17/19
Sample Location:	AAG HANGAR	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	07/29/19 09:45
Analytical Date:	07/30/19 15:28		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.80	0.296	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.884	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1
PFOA/PFOS, Total	ND		ng/l	1.80	0.213	1

Project Name:	HVRA	**Lab Number:**	L1931312
Project Number:	18.8090	**Report Date:**	07/31/19

SAMPLE RESULTS

Lab ID:	L1931312-06	Date Collected:	07/17/19 10:00
Client ID:	FIELD BLANK	Date Received:	07/17/19
Sample Location:	AAG HANGAR	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	61		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	67		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	58		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		33-143

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/18/19 00:44
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 07/16/19 17:22

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1260590-1					
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
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
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
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
Isophorone	ND		ug/l	5.0	1.2
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	1.6	J	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
Dimethyl phthalate	ND		ug/l	5.0	1.8
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
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

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931312
Report Date: 07/31/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/18/19 00:44
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 07/16/19 17:22

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1260590-1					
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
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
Phenol	ND		ug/l	5.0	0.57
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77
Carbazole	ND		ug/l	2.0	0.49
Atrazine	ND		ug/l	10	0.76
Benzaldehyde	ND		ug/l	5.0	0.53
Caprolactam	ND		ug/l	10	3.3
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	58		21-120
Phenol-d6	47		10-120
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	78		15-120
2,4,6-Tribromophenol	59		10-120
4-Terphenyl-d14	90		41-149

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931312
Report Date: 07/31/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/17/19 21:17
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 07/16/19 17:32

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1260602-1					
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: HVRA
Project Number: 18.8090
Lab Number: L1931312
Report Date: 07/31/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/17/19 21:17
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 07/16/19 17:32

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1260602-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	57		21-120
Phenol-d6	47		10-120
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	78		15-120
2,4,6-Tribromophenol	88		10-120
4-Terphenyl-d14	94		41-149

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931312
Report Date: 07/31/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/25/19 09:29
Analyst: MA

Extraction Method: EPA 3510C
Extraction Date: 07/23/19 08:50

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 01 Batch: WG1263177-1					
1,4-Dioxane	ND		ng/l	150	33.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	37		15-110

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931312
Report Date: 07/31/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 07/30/19 14:05
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 07/29/19 09:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 04-06 Batch: WG1265710-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: HVRA | **Lab Number:** L1931312
Project Number: 18.8090 | **Report Date:** 07/31/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 07/30/19 14:05
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 07/29/19 09:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 04-06 Batch: WG1265710-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	75		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	67		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931312
Report Date: 07/31/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1260590-2 WG1260590-3								
Bis(2-chloroethyl)ether	68		72		40-140	6		30
3,3'-Dichlorobenzidine	66		69		40-140	4		30
2,4-Dinitrotoluene	68		71		48-143	4		30
2,6-Dinitrotoluene	73		84		40-140	14		30
4-Chlorophenyl phenyl ether	68		73		40-140	7		30
4-Bromophenyl phenyl ether	75		80		40-140	6		30
Bis(2-chloroisopropyl)ether	89		91		40-140	2		30
Bis(2-chloroethoxy)methane	82		75		40-140	9		30
Hexachlorocyclopentadiene	57		65		40-140	13		30
Isophorone	78		80		40-140	3		30
Nitrobenzene	80		78		40-140	3		30
NDPA/DPA	74		75		40-140	1		30
n-Nitrosodi-n-propylamine	84		85		29-132	1		30
Bis(2-ethylhexyl)phthalate	68		81		40-140	17		30
Butyl benzyl phthalate	78		80		40-140	3		30
Di-n-butylphthalate	72		77		40-140	7		30
Di-n-octylphthalate	70		80		40-140	13		30
Diethyl phthalate	77		80		40-140	4		30
Dimethyl phthalate	77		86		40-140	11		30
Biphenyl	62		67		40-140	8		30
4-Chloroaniline	74		77		40-140	4		30
2-Nitroaniline	74		81		52-143	9		30
3-Nitroaniline	60		63		25-145	5		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1931312
Report Date: 07/31/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1260590-2 WG1260590-3								
4-Nitroaniline	67		70		51-143	4		30
Dibenzofuran	67		69		40-140	3		30
1,2,4,5-Tetrachlorobenzene	58		66		2-134	13		30
Acetophenone	66		66		39-129	0		30
2,4,6-Trichlorophenol	74		82		30-130	10		30
p-Chloro-m-cresol	83		86		23-97	4		30
2-Chlorophenol	71		73		27-123	3		30
2,4-Dichlorophenol	71		76		30-130	7		30
2,4-Dimethylphenol	62		57		30-130	8		30
2-Nitrophenol	76		79		30-130	4		30
4-Nitrophenol	73		74		10-80	1		30
2,4-Dinitrophenol	70		70		20-130	0		30
4,6-Dinitro-o-cresol	81		87		20-164	7		30
Phenol	55		62		12-110	12		30
3-Methylphenol/4-Methylphenol	75		77		30-130	3		30
2,4,5-Trichlorophenol	72		85		30-130	17		30
Carbazole	78		83		55-144	6		30
Atrazine	110		120		40-140	9		30
Benzaldehyde	69		68		40-140	1		30
Caprolactam	56		51		10-130	9		30
2,3,4,6-Tetrachlorophenol	73		77		40-140	5		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1931312

Report Date: 07/31/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1260590-2 WG1260590-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	61		64		21-120
Phenol-d6	55		61		10-120
Nitrobenzene-d5	79		79		23-120
2-Fluorobiphenyl	71		77		15-120
2,4,6-Tribromophenol	73		77		10-120
4-Terphenyl-d14	83		83		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931312
Report Date: 07/31/19

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 Batch: WG1260602-2 WG1260602-3								
Acenaphthene	81		83		40-140	2		40
2-Chloronaphthalene	78		80		40-140	3		40
Fluoranthene	83		92		40-140	10		40
Hexachlorobutadiene	59		60		40-140	2		40
Naphthalene	73		75		40-140	3		40
Benzo(a)anthracene	84		93		40-140	10		40
Benzo(a)pyrene	86		96		40-140	11		40
Benzo(b)fluoranthene	86		96		40-140	11		40
Benzo(k)fluoranthene	87		98		40-140	12		40
Chrysene	82		91		40-140	10		40
Acenaphthylene	81		85		40-140	5		40
Anthracene	84		92		40-140	9		40
Benzo(ghi)perylene	85		94		40-140	10		40
Fluorene	82		86		40-140	5		40
Phenanthrene	82		90		40-140	9		40
Dibenzo(a,h)anthracene	90		100		40-140	11		40
Indeno(1,2,3-cd)pyrene	90		98		40-140	9		40
Pyrene	83		92		40-140	10		40
2-Methylnaphthalene	77		78		40-140	1		40
Pentachlorophenol	88		101		40-140	14		40
Hexachlorobenzene	83		87		40-140	5		40
Hexachloroethane	63		66		40-140	5		40

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

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 Batch: WG1260602-2 WG1260602-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	60		64		21-120
Phenol-d6	50		54		10-120
Nitrobenzene-d5	83		85		23-120
2-Fluorobiphenyl	75		76		15-120
2,4,6-Tribromophenol	97		105		10-120
4-Terphenyl-d14	92		101		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1931312
Report Date: 07/31/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 01 Batch: WG1263177-2 WG1263177-3								
1,4-Dioxane	110		108		40-140	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	35		34		15-110

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931312
Report Date: 07/31/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04-06 Batch: WG1265710-2 WG1265710-3								
Perfluorobutanoic Acid (PFBA)	111		108		67-148	3		30
Perfluoropentanoic Acid (PFPeA)	112		108		63-161	4		30
Perfluorobutanesulfonic Acid (PFBS)	100		98		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	123		119		69-168	3		30
Perfluoroheptanoic Acid (PFHpA)	118		112		58-159	5		30
Perfluorohexanesulfonic Acid (PFHxS)	85		82		69-177	4		30
Perfluorooctanoic Acid (PFOA)	119		111		63-159	7		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		107		49-187	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		100		61-179	4		30
Perfluorononanoic Acid (PFNA)	114		110		68-171	4		30
Perfluorooctanesulfonic Acid (PFOS)	78		75		52-151	4		30
Perfluorodecanoic Acid (PFDA)	118		116		63-171	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	110		92		56-173	18		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	99		102		60-166	3		30
Perfluoroundecanoic Acid (PFUnA)	113		106		60-153	6		30
Perfluorodecanesulfonic Acid (PFDS)	83		83		38-156	0		30
Perfluorooctanesulfonamide (FOSA)	112		95		46-170	16		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		103		45-170	15		30
Perfluorododecanoic Acid (PFDoA)	96		94		67-153	2		30
Perfluorotridecanoic Acid (PFTrDA)	122		104		48-158	16		30
Perfluorotetradecanoic Acid (PFTA)	111		104		59-182	7		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1931312
Report Date: 07/31/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04-06 Batch: WG1265710-2 WG1265710-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		108		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		105		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81		92		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		97		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		100		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		115		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		98		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		100		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		95		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		98		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		95		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	72		89		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		84		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		94		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		39		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80		70		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		92		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		98		33-143

PCBS

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

SAMPLE RESULTS

Lab ID: L1931312-01
Client ID: HVRA-AAG-PW01
Sample Location: AAG HANGAR

Date Collected: 07/16/19 13:20
Date Received: 07/16/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8082A
Analytical Date: 07/20/19 18:21
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 07/18/19 21:08
Cleanup Method: EPA 3665A
Cleanup Date: 07/19/19
Cleanup Method: EPA 3660B
Cleanup Date: 07/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	79		30-150	A
Decachlorobiphenyl	102		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		30-150	B
Decachlorobiphenyl	94		30-150	B

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 07/19/19 14:54
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 07/18/19 21:08
Cleanup Method: EPA 3665A
Cleanup Date: 07/19/19
Cleanup Method: EPA 3660B
Cleanup Date: 07/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG1261777-1						
Aroclor 1016	ND		ug/l	0.083	0.034	A
Aroclor 1221	ND		ug/l	0.083	0.067	A
Aroclor 1232	ND		ug/l	0.083	0.046	A
Aroclor 1242	ND		ug/l	0.083	0.039	A
Aroclor 1248	ND		ug/l	0.083	0.049	A
Aroclor 1254	ND		ug/l	0.083	0.039	A
Aroclor 1260	ND		ug/l	0.083	0.032	A
Aroclor 1262	ND		ug/l	0.083	0.035	A
Aroclor 1268	ND		ug/l	0.083	0.034	A
PCBs, Total	ND		ug/l	0.083	0.032	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	95		30-150	A
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	89		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG1261777-2 WG1261777-3									
Aroclor 1016	**28**	Q	85		40-140	**100**	Q	50	A
Aroclor 1260	**26**	Q	86		40-140	**108**	Q	50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**24**	Q	78		30-150	A
Decachlorobiphenyl	31		100		30-150	A
2,4,5,6-Tetrachloro-m-xylene	**24**	Q	75		30-150	B
Decachlorobiphenyl	31		92		30-150	B

METALS

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

SAMPLE RESULTS

Lab ID: L1931312-01 Date Collected: 07/16/19 13:20
Client ID: HVRA-AAG-PW01 Date Received: 07/16/19
Sample Location: AAG HANGAR 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	ND		mg/l	0.0100	0.00327	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Antimony, Total	0.00097	J	mg/l	0.00400	0.00042	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00022	J	mg/l	0.00050	0.00016	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Barium, Total	0.05878		mg/l	0.00050	0.00017	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Calcium, Total	102.		mg/l	0.100	0.0394	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Chromium, Total	0.00024	J	mg/l	0.00100	0.00017	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Cobalt, Total	0.00039	J	mg/l	0.00050	0.00016	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Copper, Total	0.02239		mg/l	0.00100	0.00038	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Iron, Total	0.0299	J	mg/l	0.0700	0.0191	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Lead, Total	0.00238		mg/l	0.00100	0.00034	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Magnesium, Total	18.6		mg/l	0.0700	0.0242	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Manganese, Total	0.1805		mg/l	0.00100	0.00044	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	07/22/19 11:22	07/23/19 02:18	EPA 7470A	1,7470A	GD
Nickel, Total	0.00071	J	mg/l	0.00200	0.00055	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Potassium, Total	2.44		mg/l	0.100	0.0309	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Sodium, Total	157.		mg/l	0.100	0.0293	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM
Zinc, Total	0.00774	J	mg/l	0.01000	0.00341	1	07/20/19 11:10	07/22/19 20:17	EPA 3005A	1,6020B	AM

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

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 Batch: WG1262436-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Antimony, Total	0.00090	J	mg/l	0.00400	0.00042	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Calcium, Total	ND		mg/l	0.100	0.0394	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Iron, Total	0.0215	J	mg/l	0.0700	0.0191	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Thallium, Total	0.00028	J	mg/l	0.00050	0.00014	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM

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 Batch: WG1262816-1										
Mercury, Total	ND		mg/l	0.00020	0.00009	1	07/22/19 11:22	07/23/19 01:25	1,7470A	GD

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Lab Number: L1931312
Project Number: 18.8090
Report Date: 07/31/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1262436-2								
Aluminum, Total	106		-		80-120	-		
Antimony, Total	82		-		80-120	-		
Arsenic, Total	114		-		80-120	-		
Barium, Total	107		-		80-120	-		
Beryllium, Total	103		-		80-120	-		
Cadmium, Total	110		-		80-120	-		
Calcium, Total	113		-		80-120	-		
Chromium, Total	102		-		80-120	-		
Cobalt, Total	102		-		80-120	-		
Copper, Total	100		-		80-120	-		
Iron, Total	107		-		80-120	-		
Lead, Total	115		-		80-120	-		
Magnesium, Total	114		-		80-120	-		
Manganese, Total	102		-		80-120	-		
Nickel, Total	101		-		80-120	-		
Potassium, Total	113		-		80-120	-		
Selenium, Total	105		-		80-120	-		
Silver, Total	102		-		80-120	-		
Sodium, Total	104		-		80-120	-		
Thallium, Total	111		-		80-120	-		
Vanadium, Total	104		-		80-120	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1262436-2					
Zinc, Total	105	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1262816-2					
Mercury, Total	100	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931312
Report Date: 07/31/19

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 QC Batch ID: WG1262436-3 WG1262436-4 QC Sample: L1931311-02 Client ID: MS Sample												
Aluminum, Total	0.220	2	2.32	105		2.44	111		75-125	5		20
Antimony, Total	0.00098J	0.5	0.6594	**132**	Q	0.6382	**128**	Q	75-125	3		20
Arsenic, Total	0.00168	0.12	0.1306	107		0.1286	106		75-125	2		20
Barium, Total	0.06271	2	2.182	106		2.173	106		75-125	0		20
Beryllium, Total	ND	0.05	0.05055	101		0.05250	105		75-125	4		20
Cadmium, Total	ND	0.051	0.05754	113		0.05617	110		75-125	2		20
Calcium, Total	149.	10	154	**50**	Q	160	110		75-125	4		20
Chromium, Total	0.00065J	0.2	0.2011	100		0.2029	101		75-125	1		20
Cobalt, Total	0.01258	0.5	0.5162	101		0.5182	101		75-125	0		20
Copper, Total	0.00214	0.25	0.2467	98		0.2623	104		75-125	6		20
Iron, Total	1.73	1	2.87	114		2.96	123		75-125	3		20
Lead, Total	0.00090J	0.51	0.6560	**129**	Q	0.5707	112		75-125	14		20
Magnesium, Total	71.0	10	77.0	**60**	Q	80.1	91		75-125	4		20
Manganese, Total	2.978	0.5	3.239	**52**	Q	3.289	**62**	Q	75-125	2		20
Nickel, Total	0.04437	0.5	0.5478	101		0.5475	101		75-125	0		20
Potassium, Total	3.05	10	13.6	106		14.0	110		75-125	3		20
Selenium, Total	ND	0.12	0.126	105		0.141	118		75-125	11		20
Silver, Total	ND	0.05	0.05230	105		0.05168	103		75-125	1		20
Sodium, Total	10.1	10	20.0	99		20.4	103		75-125	2		20
Thallium, Total	ND	0.12	0.1486	124		0.1308	109		75-125	13		20
Vanadium, Total	ND	0.5	0.5205	104		0.5172	103		75-125	1		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1931312
Report Date: 07/31/19

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 QC Batch ID: WG1262436-3 WG1262436-4 QC Sample: L1931311-02 Client ID: MS Sample												
Zinc, Total	0.01409	0.5	0.5370	104		0.6631	**130**	Q	75-125	**21**	Q	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1262816-3 WG1262816-4 QC Sample: L1931311-02 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.00252	**50**	Q	0.00249	**50**	Q	75-125	1		20

INORGANICS
&
MISCELLANEOUS

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 07/31/19

SAMPLE RESULTS

Lab ID:	L1931312-01	Date Collected:	07/16/19 13:20
Client ID:	HVRA-AAG-PW01	Date Received:	07/16/19
Sample Location:	AAG HANGAR	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	ND		mg/l	0.005	0.001	1	07/18/19 11:45	07/18/19 15:13	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1931312

Project Number: 18.8090 **Report Date:** 07/31/19

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 Batch: WG1261461-1										
Cyanide, Total	ND		mg/l	0.005	0.001	1	07/18/19 11:45	07/18/19 14:56	1,9010C/9012B	LH

Lab Control Sample Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1931312

Report Date: 07/31/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1261461-2 WG1261461-3								
Cyanide, Total	107		103		85-115	4		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931312
Report Date: 07/31/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1261461-4 WG1261461-5 QC Sample: L1931271-01 Client ID: MS Sample												
Cyanide, Total	ND	0.2	0.203	102		0.194	97		80-120	5		20

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931312
Report Date: 07/31/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
A1	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1931312-01A	Plastic 250ml HNO3 preserved	A	<2	<2	2.9	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1931312-01B	Plastic 250ml NaOH preserved	A	>12	>12	2.9	Y	Absent		TCN-9010(14)
L1931312-01C	Amber 120ml unpreserved	A	7	7	2.9	Y	Absent		NYTCL-8082-LVI(7)
L1931312-01D	Amber 120ml unpreserved	A	N/A	N/A	2.9	Y	Absent		NYTCL-8082-LVI(7)
L1931312-01E	Amber 250ml unpreserved	A	7	7	2.9	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1931312-01F	Amber 250ml unpreserved	A	7	7	2.9	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1931312-01G	Amber 250ml unpreserved	A	7	7	2.9	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1931312-01H	Amber 250ml unpreserved	A	7	7	2.9	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1931312-02A	Plastic 250ml Trizma preserved	A	NA		2.9	Y	Absent		HOLD-537(14)
L1931312-03A	Plastic 250ml Trizma preserved	A	NA		2.9	Y	Absent		HOLD-537(14)
L1931312-03B	Plastic 250ml Trizma preserved	A	NA		2.9	Y	Absent		HOLD-537(14)
L1931312-04A	2 Plastic Trizma/1 Plastic/1 H20+Trizma	A1	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1931312-04B	2 Plastic Trizma/1 Plastic/1 H20+Trizma	A1	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1931312-05A	2 Plastic/1 Plastic/1 H20 Plastic	A1	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1931312-06A	2 Plastic/1 Plastic/1 H20 Plastic	A1	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name:	HVRA	**Lab Number:**	L1931312
Project Number:	18.8090	**Report Date:**	07/31/19

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.

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.

Footnotes

Report Format: DU Report with 'J' Qualifiers

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.

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. If a 'Total' result is requested, the results of its individual components will also be reported.

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 Condensation Product".

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.

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.

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

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

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
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; 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.**

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.

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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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: 7/16/19

ALPHA Job #: L1931312

Project Information
Project Name: HVRA
Project Location: AAG Hangar
Project #: 18.8090
(Use Project name as Project #) ☐
Project Manager: ~~Jim M~~ DJm David Lent
ALPHAQuote #:

Turn-Around Time
Standard ☑
Rush (only if pre approved) ☐
Due Date:
# of Days:

Client Information
Client: CT Male
Address: 12 Raymond Avenue
Poughkeepsie, NY 12603
Phone: 518-783-7400
Fax:
Email:

Deliverables
☐ ASP-A ☒ ASP-B
☐ EQuIS (1 File) ☒ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS DJm ☒ 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:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Send Results to d.lent@ctmale.com

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	PFAS	1,4 Dioxane	TCL-SVOCs	TCL-PCBs	TAL Metals	TCN			Sample Specific Comments	Total Bottles
31312-01	HVRA-AAG-AW01	07/16/19	1320	Water	DJm	X	X	X	X	X	X				

	PFAS	1,4 Dioxane	TCL-SVOCs	TCL-PCBs	TAL Metals	TCN		
Container Type	P	A	A	A	P	P		
Preservative		A	A	A	C	E		

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
[signature]	7/16/19 17:40	G.Jacobs AAL	7/16/19 17:40
G.Jacobs AAL	7/16/19 19:20	[signature]	7/16 1945
[signature]	7/16 2335	[signature]	7/16/19 23:35

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)

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 1 of 1

Date Rec'd in Lab: 7/18/19

ALPHA Job #: L1931312

Project Information
Project Name: HV RA
Project Location: AAG Hanger
Project #: 18.8090
(Use Project name as Project #) ☐
Project Manager: David Lent
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information
Client: C.T. Male
Address: 12 Raymond Ave Poughkeepsie NY
Phone: 845 592 1162
Fax:
Email: dlent@ctmale.com

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:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Send results to dlent@ctmale.com

Please specify Metals or TAL.

ANALYSIS: 1,4 Dioxane 8270 SIM / PFAS 537

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	1,4 Dioxane / PFAS 537	Sample Specific Comments	Total Bottles
31312-04	HVRA-AAG-PW01	7/17/19	10:00	W	DL	X		
-05	~~FB~~ Field Blank	7/17/19	10:00	W	DL	X		
-06	~~FB~~ Trip Blank	7/17/19	10:00	W	DL	X		

Container Type	P
Preservative	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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/17/19 1706	COA AAL	7-17-19 1706
COA AAL	7-17-19 1950	[signature] AAC	7/17/19 2000
[signature] AAC	7/18/19 0110	[signature]	7/18/19 0110
[signature]	7/18/19 0525	[signature]	7/18/19 05:25

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:	L1932867
Client:	C.T. Male Associates 12 Raymond Avenue Poughkeepsie, NY 12603
ATTN:	David Lent
Phone:	(845) 454-4400
Project Name:	HUDSON VALLEY REGIONAL AIRPORT
Project Number:	18.8090
Report Date:	08/02/19

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).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932867
Report Date: 08/02/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1932867-01	OUTFALL-003-S	SOIL	WAPPINGERS FALLS, NY	07/24/19 11:30	07/24/19
L1932867-02	OUTFALL-002-S	SOIL	WAPPINGERS FALLS, NY	07/24/19 11:50	07/24/19
L1932867-03	OUTFALL-004-S	SOIL	WAPPINGERS FALLS, NY	07/24/19 12:10	07/24/19
L1932867-04	OUTFALL-005-S	SOIL	WAPPINGERS FALLS, NY	07/24/19 12:30	07/24/19
L1932867-05	OUTFALL-006-S	SOIL	WAPPINGERS FALLS, NY	07/24/19 13:15	07/24/19
L1932867-06	OUTFALL-007-S	SOIL	WAPPINGERS FALLS, NY	07/24/19 13:30	07/24/19
L1932867-07	FIRE POND-01-S	SOIL	WAPPINGERS FALLS, NY	07/24/19 14:00	07/24/19
L1932867-08	FIRE POND-01-W	WATER	WAPPINGERS FALLS, NY	07/24/19 14:10	07/24/19
L1932867-09	FIRE POND-02-S	SOIL	WAPPINGERS FALLS, NY	07/24/19 14:25	07/24/19
L1932867-10	FIRE POND-02-W	WATER	WAPPINGERS FALLS, NY	07/24/19 14:35	07/24/19
L1932867-11	FIELD BLANK	WATER	WAPPINGERS FALLS, NY	07/24/19 14:45	07/24/19
L1932867-12	TRIP BLANK	WATER	WAPPINGERS FALLS, NY	07/24/19 14:50	07/24/19

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.

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

L1932867-05: The sample identified as "OUTFALL-006-S" on the chain of custody was identified as "no id's on label" on the container label. At the client's request, the sample is reported as "OUTFALL-006-S".

Perfluorinated Alkyl Acids by Isotope Dilution

L1932867-06 and -09: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1266495-4 MS recoveries, performed on L1932867-08, are outside the acceptance criteria for 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (24%) and perfluorooctanesulfonic acid (pfos) (29%). The unacceptable percent recoveries are attributed to the elevated concentrations of target compounds present in 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: Elizabeth Porta

Title: Technical Director/Representative Date: 08/02/19

ORGANICS

SEMIVOLATILES

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867

Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-01	Date Collected:	07/24/19 11:30
Client ID:	OUTFALL-003-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	07/28/19 09:35
Analytical Date:	07/31/19 03:32		
Analyst:	PS		
Percent Solids:	71%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	10.4	2.65	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	78		15-110

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-01	Date Collected:	07/24/19 11:30
Client ID:	OUTFALL-003-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	07/30/19 14:00
Analytical Date:	08/01/19 06:59		
Analyst:	JW		
Percent Solids:	71%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.033	J	ug/kg	1.25	0.028	1
Perfluoropentanoic Acid (PFPeA)	0.098	J	ug/kg	1.25	0.058	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.25	0.049	1
Perfluorohexanoic Acid (PFHxA)	0.083	J	ug/kg	1.25	0.066	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.25	0.057	1
Perfluorohexanesulfonic Acid (PFHxS)	1.86		ug/kg	1.25	0.076	1
Perfluorooctanoic Acid (PFOA)	0.085	J	ug/kg	1.25	0.053	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.25	0.225	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.25	0.171	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.25	0.094	1
Perfluorooctanesulfonic Acid (PFOS)	7.57		ug/kg	1.25	0.163	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.25	0.084	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.25	0.360	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.25	0.252	1
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.25	0.059	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.25	0.192	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.25	0.123	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.25	0.106	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.25	0.088	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.25	0.256	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.25	0.068	1
PFOA/PFOS, Total	7.66	J	ug/kg	1.25	0.053	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867

Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-01	Date Collected:	07/24/19 11:30
Client ID:	OUTFALL-003-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	63		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	65		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	65		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		26-160

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932867
Project Number: 18.8090
Report Date: 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-02
Client ID: OUTFALL-002-S
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 11:50
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 07:15
Analyst: JW
Percent Solids: 82%

Extraction Method: EPA 537(M)
Extraction Date: 07/30/19 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.035	J	ug/kg	1.14	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.14	0.053	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.14	0.045	1
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.14	0.060	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.14	0.052	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.14	0.069	1
Perfluorooctanoic Acid (PFOA)	0.109	J	ug/kg	1.14	0.048	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.14	0.205	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.14	0.156	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.14	0.086	1
Perfluorooctanesulfonic Acid (PFOS)	1.09	J	ug/kg	1.14	0.149	1
Perfluorodecanoic Acid (PFDA)	0.103	J	ug/kg	1.14	0.077	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.14	0.328	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.14	0.230	1
Perfluoroundecanoic Acid (PFUnA)	0.153	J	ug/kg	1.14	0.054	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.14	0.175	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.14	0.112	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.14	0.097	1
Perfluorododecanoic Acid (PFDoA)	0.225	J	ug/kg	1.14	0.080	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.14	0.234	1
Perfluorotetradecanoic Acid (PFTA)	0.137	J	ug/kg	1.14	0.062	1
PFOA/PFOS, Total	1.20	J	ug/kg	1.14	0.048	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867

Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-02	Date Collected:	07/24/19 11:50
Client ID:	OUTFALL-002-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	68		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		26-160

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-02 D	Date Collected:	07/24/19 11:50
Client ID:	OUTFALL-002-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	07/28/19 09:35
Analytical Date:	07/31/19 03:59		
Analyst:	PS		
Percent Solids:	82%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	93.4	23.8	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	74		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867

Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-03	Date Collected:	07/24/19 12:10
Client ID:	OUTFALL-004-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	07/30/19 14:00
Analytical Date:	08/01/19 07:49		
Analyst:	JW		
Percent Solids:	25%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.278	J	ug/kg	3.53	0.080	1
Perfluoropentanoic Acid (PFPeA)	0.201	J	ug/kg	3.53	0.162	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	3.53	0.138	1
Perfluorohexanoic Acid (PFHxA)	0.236	J	ug/kg	3.53	0.185	1
Perfluoroheptanoic Acid (PFHpA)	0.245	J	ug/kg	3.53	0.159	1
Perfluorohexanesulfonic Acid (PFHxS)	2.15	J	ug/kg	3.53	0.213	1
Perfluorooctanoic Acid (PFOA)	0.462	J	ug/kg	3.53	0.148	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	3.53	0.633	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	3.53	0.481	1
Perfluorononanoic Acid (PFNA)	0.455	J	ug/kg	3.53	0.264	1
Perfluorooctanesulfonic Acid (PFOS)	7.80		ug/kg	3.53	0.458	1
Perfluorodecanoic Acid (PFDA)	0.589	J	ug/kg	3.53	0.236	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	3.53	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	3.53	0.710	1
Perfluoroundecanoic Acid (PFUnA)	0.760	J	ug/kg	3.53	0.165	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	3.53	0.540	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	3.53	0.346	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	3.53	0.298	1
Perfluorododecanoic Acid (PFDoA)	0.557	J	ug/kg	3.53	0.247	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	3.53	0.721	1
Perfluorotetradecanoic Acid (PFTA)	0.335	J	ug/kg	3.53	0.190	1
PFOA/PFOS, Total	8.26	J	ug/kg	3.53	0.148	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-03	Date Collected:	07/24/19 12:10
Client ID:	OUTFALL-004-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	77		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	63		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	76		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	8		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	55		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		26-160

Project Name: HUDSON VALLEY REGIONAL AIRPORT | **Lab Number:** L1932867

Project Number: 18.8090 | **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-03 D | Date Collected: 07/24/19 12:10

Client ID: OUTFALL-004-S | Date Received: 07/24/19

Sample Location: WAPPINGERS FALLS, NY | Field Prep: Not Specified

Sample Depth:

Matrix: Soil | Extraction Method: EPA 3570

Analytical Method: 1,8270D-SIM | Extraction Date: 07/28/19 09:35

Analytical Date: 07/31/19 04:26

Analyst: PS

Percent Solids: 25%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	127	32.3	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	75		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-04
Client ID: OUTFALL-005-S
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 12:30
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 08:05
Analyst: JW
Percent Solids: 68%

Extraction Method: EPA 537(M)
Extraction Date: 07/30/19 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.653	J	ug/kg	1.34	0.030	1
Perfluoropentanoic Acid (PFPeA)	3.37		ug/kg	1.34	0.062	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.34	0.052	1
Perfluorohexanoic Acid (PFHxA)	1.52		ug/kg	1.34	0.070	1
Perfluoroheptanoic Acid (PFHpA)	1.09	J	ug/kg	1.34	0.060	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.34	0.081	1
Perfluorooctanoic Acid (PFOA)	0.637	J	ug/kg	1.34	0.056	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.51		ug/kg	1.34	0.240	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.34	0.183	1
Perfluorononanoic Acid (PFNA)	0.560	J	ug/kg	1.34	0.100	1
Perfluorooctanesulfonic Acid (PFOS)	1.84		ug/kg	1.34	0.174	1
Perfluorodecanoic Acid (PFDA)	0.253	J	ug/kg	1.34	0.090	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.86		ug/kg	1.34	0.384	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.34	0.270	1
Perfluoroundecanoic Acid (PFUnA)	0.405	J	ug/kg	1.34	0.063	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.34	0.205	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.34	0.131	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.34	0.113	1
Perfluorododecanoic Acid (PFDoA)	0.193	J	ug/kg	1.34	0.094	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.34	0.274	1
Perfluorotetradecanoic Acid (PFTA)	0.089	J	ug/kg	1.34	0.072	1
PFOA/PFOS, Total	2.48	J	ug/kg	1.34	0.056	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-04	Date Collected:	07/24/19 12:30
Client ID:	OUTFALL-005-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	83		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	67		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		26-160

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-04 D	Date Collected:	07/24/19 12:30
Client ID:	OUTFALL-005-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	07/28/19 09:35
Analytical Date:	07/31/19 04:53		
Analyst:	PS		
Percent Solids:	68%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	42.6	10.9	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	69		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867

Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-05
Client ID: OUTFALL-006-S
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 13:15
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 08:22
Analyst: JW
Percent Solids: 80%

Extraction Method: EPA 537(M)
Extraction Date: 07/30/19 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.080	J	ug/kg	1.20	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.20	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.20	0.047	1
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.20	0.063	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.20	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.20	0.073	1
Perfluorooctanoic Acid (PFOA)	0.137	J	ug/kg	1.20	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.20	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.20	0.164	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.20	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	0.360	J	ug/kg	1.20	0.156	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.20	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.20	0.344	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.20	0.242	1
Perfluoroundecanoic Acid (PFUnA)	0.056	J	ug/kg	1.20	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.20	0.184	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.20	0.118	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.20	0.101	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.20	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.20	0.245	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.20	0.065	1
PFOA/PFOS, Total	0.497	J	ug/kg	1.20	0.050	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-05	Date Collected:	07/24/19 13:15
Client ID:	OUTFALL-006-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	89		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		26-160

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-05 D	Date Collected:	07/24/19 13:15
Client ID:	OUTFALL-006-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	07/28/19 09:35
Analytical Date:	07/31/19 05:20		
Analyst:	PS		
Percent Solids:	80%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	33.7	8.59	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	70		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867

Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-06
Client ID: OUTFALL-007-S
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 13:30
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 08:38
Analyst: JW
Percent Solids: 88%

Extraction Method: EPA 537(M)
Extraction Date: 07/30/19 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ug/kg	1.06	0.024	1
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.06	0.049	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.06	0.042	1
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.06	0.056	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.06	0.048	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.06	0.064	1
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.06	0.045	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.06	0.191	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.06	0.145	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.06	0.080	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.06	0.138	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.06	0.071	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.06	0.305	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.06	0.214	1
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.06	0.050	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.06	0.163	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.06	0.104	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.06	0.090	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.06	0.075	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.06	0.218	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.06	0.058	1
PFOA/PFOS, Total	ND		ug/kg	1.06	0.045	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-06 Date Collected: 07/24/19 13:30
Client ID: OUTFALL-007-S Date Received: 07/24/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	69		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	82		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	71		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	53		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**0**	Q	1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		26-160

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-06 D	Date Collected:	07/24/19 13:30
Client ID:	OUTFALL-007-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	07/28/19 09:35
Analytical Date:	07/31/19 05:47		
Analyst:	PS		
Percent Solids:	88%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	32.2	8.20	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	73		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932867
Project Number: 18.8090
Report Date: 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-07
Client ID: FIRE POND-01-S
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 14:00
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 08:55
Analyst: JW
Percent Solids: 73%

Extraction Method: EPA 537(M)
Extraction Date: 07/30/19 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.245	J	ug/kg	1.29	0.029	1
Perfluoropentanoic Acid (PFPeA)	0.422	J	ug/kg	1.29	0.059	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.29	0.050	1
Perfluorohexanoic Acid (PFHxA)	0.342	J	ug/kg	1.29	0.068	1
Perfluoroheptanoic Acid (PFHpA)	0.160	J	ug/kg	1.29	0.058	1
Perfluorohexanesulfonic Acid (PFHxS)	2.27		ug/kg	1.29	0.078	1
Perfluorooctanoic Acid (PFOA)	0.213	J	ug/kg	1.29	0.054	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.29	0.231	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.29	0.176	1
Perfluorononanoic Acid (PFNA)	0.147	J	ug/kg	1.29	0.097	1
Perfluorooctanesulfonic Acid (PFOS)	11.6		ug/kg	1.29	0.167	1
Perfluorodecanoic Acid (PFDA)	0.122	J	ug/kg	1.29	0.086	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.29	0.370	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.29	0.260	1
Perfluoroundecanoic Acid (PFUnA)	0.243	J	ug/kg	1.29	0.060	1
Perfluorodecanesulfonic Acid (PFDS)	0.345	J	ug/kg	1.29	0.197	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.29	0.126	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.29	0.109	1
Perfluorododecanoic Acid (PFDoA)	0.128	J	ug/kg	1.29	0.090	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.29	0.263	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.29	0.070	1
PFOA/PFOS, Total	11.8	J	ug/kg	1.29	0.054	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-07 Date Collected: 07/24/19 14:00
Client ID: FIRE POND-01-S Date Received: 07/24/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	69		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	89		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62		26-160

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-07 D	Date Collected:	07/24/19 14:00
Client ID:	FIRE POND-01-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	07/28/19 09:35
Analytical Date:	07/31/19 06:13		
Analyst:	PS		
Percent Solids:	73%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	41.2	10.5	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	72		15-110

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-08	Date Collected:	07/24/19 14:10
Client ID:	FIRE POND-01-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	07/26/19 18:55
Analytical Date:	07/27/19 02:26		
Analyst:	MA		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	163	36.8	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	42		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-08	Date Collected:	07/24/19 14:10
Client ID:	FIRE POND-01-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	07/30/19 19:30
Analytical Date:	08/01/19 03:24		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	36.2		ng/l	1.82	0.372	1
Perfluoropentanoic Acid (PFPeA)	107		ng/l	1.82	0.361	1
Perfluorobutanesulfonic Acid (PFBS)	6.27		ng/l	1.82	0.217	1
Perfluorohexanoic Acid (PFHxA)	70.4		ng/l	1.82	0.299	1
Perfluoroheptanoic Acid (PFHpA)	24.4		ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	83.4		ng/l	1.82	0.343	1
Perfluorooctanoic Acid (PFOA)	26.1		ng/l	1.82	0.215	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	292		ng/l	1.82	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.70		ng/l	1.82	0.628	1
Perfluorononanoic Acid (PFNA)	4.46		ng/l	1.82	0.285	1
Perfluorooctanesulfonic Acid (PFOS)	214		ng/l	1.82	0.460	1
Perfluorodecanoic Acid (PFDA)	0.945	J	ng/l	1.82	0.277	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	6.36		ng/l	1.82	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.591	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.894	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.529	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.734	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.226	1
PFOA/PFOS, Total	240		ng/l	1.82	0.215	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-08	Date Collected:	07/24/19 14:10
Client ID:	FIRE POND-01-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	150		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	46		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867

Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-09
Client ID: FIRE POND-02-S
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 14:25
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 09:11
Analyst: JW
Percent Solids: 82%

Extraction Method: EPA 537(M)
Extraction Date: 07/30/19 14:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.342	J	ug/kg	1.21	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.737	J	ug/kg	1.21	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.21	0.047	1
Perfluorohexanoic Acid (PFHxA)	0.218	J	ug/kg	1.21	0.064	1
Perfluoroheptanoic Acid (PFHpA)	0.215	J	ug/kg	1.21	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	0.208	J	ug/kg	1.21	0.073	1
Perfluorooctanoic Acid (PFOA)	0.212	J	ug/kg	1.21	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.21	0.217	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.21	0.165	1
Perfluorononanoic Acid (PFNA)	0.206	J	ug/kg	1.21	0.091	1
Perfluorooctanesulfonic Acid (PFOS)	7.83		ug/kg	1.21	0.157	1
Perfluorodecanoic Acid (PFDA)	0.100	J	ug/kg	1.21	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.21	0.347	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.21	0.244	1
Perfluoroundecanoic Acid (PFUnA)	0.132	J	ug/kg	1.21	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.21	0.185	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.21	0.118	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.21	0.102	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.21	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.21	0.247	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.21	0.065	1
PFOA/PFOS, Total	8.04	J	ug/kg	1.21	0.051	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-09	Date Collected:	07/24/19 14:25
Client ID:	FIRE POND-02-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	61		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	67		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**59**	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**60**	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	73		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	62		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	50		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	66		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**62**	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**33**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	66		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**30**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	59		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**19**	Q	26-160

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867

Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-09 D	Date Collected:	07/24/19 14:25
Client ID:	FIRE POND-02-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	07/28/19 09:35
Analytical Date:	07/31/19 06:39		
Analyst:	PS		
Percent Solids:	82%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	34.5	8.81	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	68		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-10	Date Collected:	07/24/19 14:35
Client ID:	FIRE POND-02-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	07/30/19 19:30
Analytical Date:	08/01/19 03:40		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	35.1		ng/l	1.79	0.366	1
Perfluoropentanoic Acid (PFPeA)	99.6		ng/l	1.79	0.355	1
Perfluorobutanesulfonic Acid (PFBS)	6.39		ng/l	1.79	0.213	1
Perfluorohexanoic Acid (PFHxA)	65.2		ng/l	1.79	0.294	1
Perfluoroheptanoic Acid (PFHpA)	22.8		ng/l	1.79	0.202	1
Perfluorohexanesulfonic Acid (PFHxS)	78.0		ng/l	1.79	0.337	1
Perfluorooctanoic Acid (PFOA)	23.8		ng/l	1.79	0.211	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	226		ng/l	1.79	1.19	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.79		ng/l	1.79	0.616	1
Perfluorononanoic Acid (PFNA)	4.26		ng/l	1.79	0.280	1
Perfluorooctanesulfonic Acid (PFOS)	195		ng/l	1.79	0.452	1
Perfluorodecanoic Acid (PFDA)	1.03	J	ng/l	1.79	0.272	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	5.28		ng/l	1.79	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.79	0.581	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.79	0.233	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.79	0.878	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.79	0.520	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.79	0.720	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.79	0.333	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.79	0.293	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.79	0.222	1
PFOA/PFOS, Total	219		ng/l	1.79	0.211	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867

Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-10	Date Collected:	07/24/19 14:35
Client ID:	FIRE POND-02-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	145		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	44		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	42		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		33-143

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-10 D	Date Collected:	07/24/19 14:35
Client ID:	FIRE POND-02-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	07/26/19 18:55
Analytical Date:	07/27/19 02:50		
Analyst:	MA		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	600	136.	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	45		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-11
Client ID: FIELD BLANK
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 14:45
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 04:13
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 07/30/19 19:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.08	0.425	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.08	0.412	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.08	0.248	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.08	0.342	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.08	0.234	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.08	0.392	1
Perfluorooctanoic Acid (PFOA)	1.24	J	ng/l	2.08	0.246	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.08	1.39	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.08	0.717	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.08	0.325	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.08	0.525	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.08	0.317	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.08	1.26	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.08	0.675	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.08	0.271	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.08	1.02	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.08	0.604	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.08	0.838	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.08	0.388	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.08	0.341	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.08	0.258	1
PFOA/PFOS, Total	1.24	J	ng/l	2.08	0.246	1

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-11	Date Collected:	07/24/19 14:45
Client ID:	FIELD BLANK	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	71		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	54		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	41		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932867
Project Number: 18.8090
Report Date: 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-12	Date Collected:	07/24/19 14:50
Client ID:	TRIP BLANK	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	07/30/19 19:30
Analytical Date:	08/01/19 04:30		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.78	0.363	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	0.212	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.78	0.292	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.334	1
Perfluorooctanoic Acid (PFOA)	0.886	J	ng/l	1.78	0.210	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.78	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	0.278	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.78	0.448	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.576	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.872	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.516	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.715	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221	1
PFOA/PFOS, Total	0.886	J	ng/l	1.78	0.210	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867

Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-12	Date Collected:	07/24/19 14:50
Client ID:	TRIP BLANK	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	51		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	54		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	53		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	47		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		33-143

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8270D-SIM	Extraction Method:	EPA 3510C
Analytical Date:	07/27/19 00:49	Extraction Date:	07/26/19 18:55
Analyst:	MA		

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 08,10 Batch: WG1265196-1					
1,4-Dioxane	ND		ng/l	150	33.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	36		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932867
Report Date: 08/02/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/31/19 02:09
Analyst: PS

Extraction Method: EPA 3570
Extraction Date: 07/28/19 09:35

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 01-07,09 Batch: WG1265516-1					
1,4-Dioxane	ND		ug/kg	8.00	2.04

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	77		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 07/31/19 22:42
Analyst: JW

Extraction Method: EPA 537(M)
Extraction Date: 07/30/19 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-07,09 Batch: WG1266199-1					
Perfluorobutanoic Acid (PFBA)	0.098	J	ug/kg	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130
Perfluorodecanoic Acid (PFDA)	0.113	J	ug/kg	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	0.048	J	ug/kg	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 07/31/19 22:42
Analyst: JW

Extraction Method: EPA 537(M)
Extraction Date: 07/30/19 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-07,09 Batch: WG1266199-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	76		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	57		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		26-160

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	122,537(M)	Extraction Method:	EPA 537
Analytical Date:	08/01/19 05:03	Extraction Date:	07/30/19 19:30
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08,10-12 Batch: WG1266495-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	0.876	J	ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	0.876	J	ng/l	2.00	0.236

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	122,537(M)	Extraction Method:	EPA 537
Analytical Date:	08/01/19 05:03	Extraction Date:	07/30/19 19:30
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08,10-12 Batch: WG1266495-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	64		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT

Project Number: 18.8090

Lab Number: L1932867

Report Date: 08/02/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 08,10 Batch: WG1265196-2 WG1265196-3								
1,4-Dioxane	122		119		40-140	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	36		38		15-110

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932867
Project Number: 18.8090
Report Date: 08/02/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 01-07,09 Batch: WG1265516-2 WG1265516-3								
1,4-Dioxane	108		108		40-140	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	80		81		15-110

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932867
Project Number: 18.8090
Report Date: 08/02/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07,09 Batch: WG1266199-2 WG1266199-3								
Perfluorobutanoic Acid (PFBA)	107		107		71-135	0		30
Perfluoropentanoic Acid (PFPeA)	107		107		69-132	0		30
Perfluorobutanesulfonic Acid (PFBS)	100		101		72-128	1		30
Perfluorohexanoic Acid (PFHxA)	115		114		70-132	1		30
Perfluoroheptanoic Acid (PFHpA)	103		104		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	112		112		67-130	0		30
Perfluorooctanoic Acid (PFOA)	107		107		69-133	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	103		120		64-140	15		30
Perfluoroheptanesulfonic Acid (PFHpS)	106		107		70-132	1		30
Perfluorononanoic Acid (PFNA)	111		111		72-129	0		30
Perfluorooctanesulfonic Acid (PFOS)	91		93		68-136	2		30
Perfluorodecanoic Acid (PFDA)	114		114		69-133	0		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	104		98		65-137	6		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	108		115		63-144	6		30
Perfluoroundecanoic Acid (PFUnA)	100		98		64-136	2		30
Perfluorodecanesulfonic Acid (PFDS)	111		110		59-134	1		30
Perfluorooctanesulfonamide (FOSA)	98		133		67-137	30		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	101		103		61-139	2		30
Perfluorododecanoic Acid (PFDoA)	108		104		69-135	4		30
Perfluorotridecanoic Acid (PFTrDA)	102		102		66-139	0		30
Perfluorotetradecanoic Acid (PFTA)	120		123		69-133	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932867
Project Number: 18.8090
Report Date: 08/02/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07,09 Batch: WG1266199-2 WG1266199-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		77		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81		84		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		87		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		80		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		82		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		86		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		85		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	76		67		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		87		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		88		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		84		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	76		83		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		68		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		89		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		67		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		83		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		71		26-160

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08,10-12 Batch: WG1266495-2 WG1266495-3								
Perfluorobutanoic Acid (PFBA)	92		92		67-148	0		30
Perfluoropentanoic Acid (PFPeA)	98		96		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	96		95		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	103		102		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	93		93		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	100		97		69-177	3		30
Perfluorooctanoic Acid (PFOA)	99		95		63-159	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	90		96		49-187	6		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		102		61-179	3		30
Perfluorononanoic Acid (PFNA)	100		99		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	83		82		52-151	1		30
Perfluorodecanoic Acid (PFDA)	101		101		63-171	0		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	92		100		56-173	8		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	88		88		60-166	0		30
Perfluoroundecanoic Acid (PFUnA)	85		87		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	92		94		38-156	2		30
Perfluorooctanesulfonamide (FOSA)	88		92		46-170	4		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	86		86		45-170	0		30
Perfluorododecanoic Acid (PFDoA)	90		92		67-153	2		30
Perfluorotridecanoic Acid (PFTrDA)	94		96		48-158	2		30
Perfluorotetradecanoic Acid (PFTA)	104		106		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932867
Project Number: 18.8090
Report Date: 08/02/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08,10-12 Batch: WG1266495-2 WG1266495-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		89		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		105		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		96		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		86		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		86		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		98		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	64		73		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		93		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		92		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		85		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79		85		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		70		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		87		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		40		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		80		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		81		33-143

Matrix Spike Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090
Lab Number: L1932867
Report Date: 08/02/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1266199-4 QC Sample: L1932867-01 Client ID: OUTFALL-003-S												
Perfluorobutanoic Acid (PFBA)	0.033J	6.05	6.35	105		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	0.098J	6.05	6.61	109		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	6.05	5.98	99		-	-		72-128	-		30
Perfluorohexanoic Acid (PFHxA)	0.083J	6.05	7.14	118		-	-		70-132	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	6.05	6.43	106		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	1.86	6.05	8.64	112		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	0.085J	6.05	6.44	106		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	6.05	6.30	104		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	6.05	6.94	115		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	6.05	6.90	114		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	7.57	6.05	13.1	91		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	6.05	6.72	111		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	6.05	5.92	98		-	-		65-137	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	6.05	7.00	116		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	6.05	5.94	98		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	6.05	6.91	114		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	6.05	6.69	111		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	6.05	6.00	99		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	6.05	6.43	106		-	-		69-135	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	6.05	6.14	101		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	6.05	7.23	120		-	-		69-133	-		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090
Lab Number: L1932867
Report Date: 08/02/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1266199-4 QC Sample: L1932867-01 Client ID: OUTFALL-003-S

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86				25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77				32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59				42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63				45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88				64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81				56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	49				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	86				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91				65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85				62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92				70-151

Matrix Spike Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090
Lab Number: L1932867
Report Date: 08/02/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08,10-12 QC Batch ID: WG1266495-4 QC Sample: L1932867-08 Client ID: FIRE POND-01-W												
Perfluorobutanoic Acid (PFBA)	36.2	37.6	69.1	88		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	107	37.6	146	104		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	6.27	37.6	42.9	97		-	-		65-157	-		30
Perfluorohexanoic Acid (PFHxA)	70.4	37.6	110	105		-	-		69-168	-		30
Perfluoroheptanoic Acid (PFHpA)	24.4	37.6	60.4	96		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	83.4	37.6	126	113		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	26.1	37.6	62.2	96		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	292	37.6	301	**24**	Q	-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	2.70	37.6	39.4	98		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	4.46	37.6	42.2	100		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	214	37.6	225	**29**	Q	-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	0.945J	37.6	40.4	107		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	6.36	37.6	40.7	91		-	-		56-173	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.6	34.1	91		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.6	32.3	86		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	37.6	30.8	82		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.6	33.8	90		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.6	32.1	85		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.6	32.6	87		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	37.6	35.2	94		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.6	39.0	104		-	-		59-182	-		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932867
Project Number: 18.8090
Report Date: 08/02/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08,10-12 QC Batch ID: WG1266495-4 QC Sample: L1932867-08 Client ID: FIRE POND-01-W

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	88				7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	147				1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	47				23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	52				1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71				40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	71				38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63				21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67				30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84				47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	65				24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68				33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	79				2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81				16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28				1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83				42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77				36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79				34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87				31-159

Lab Duplicate Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932867
Report Date: 08/02/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1266199-5 QC Sample: L1932867-02 Client ID: OUTFALL-002-S						
Perfluorobutanoic Acid (PFBA)	0.035J	0.045J	ug/kg	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ug/kg	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ug/kg	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ug/kg	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ug/kg	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ug/kg	NC		30
Perfluorooctanoic Acid (PFOA)	0.109J	0.077J	ug/kg	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ug/kg	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ug/kg	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ug/kg	NC		30
Perfluorooctanesulfonic Acid (PFOS)	1.09J	0.828J	ug/kg	NC		30
Perfluorodecanoic Acid (PFDA)	0.103J	0.085J	ug/kg	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ug/kg	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ug/kg	NC		30
Perfluoroundecanoic Acid (PFUnA)	0.153J	0.148J	ug/kg	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ug/kg	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ug/kg	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ug/kg	NC		30
Perfluorododecanoic Acid (PFDoA)	0.225J	0.204J	ug/kg	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ug/kg	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090
Lab Number: L1932867
Report Date: 08/02/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1266199-5 QC Sample: L1932867-02 Client ID: OUTFALL-002-S						
Perfluorotetradecanoic Acid (PFTA)	0.137J	0.136J	ug/kg	NC		30
PFOA/PFOS, Total	1.20J	0.905J	ug/kg	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		83		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		94		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		88		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		80		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		79		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		85		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		83		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	68		67		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		85		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		92		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		79		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		76		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		67		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		86		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		55		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		79		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		64		26-160

Lab Duplicate Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932867
Report Date: 08/02/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08,10-12 QC Batch ID: WG1266495-5 QC Sample: L1932867-10 Client ID: FIRE POND-02-W						
Perfluorobutanoic Acid (PFBA)	35.1	33.8	ng/l	4		30
Perfluoropentanoic Acid (PFPeA)	99.6	94.1	ng/l	6		30
Perfluorobutanesulfonic Acid (PFBS)	6.39	5.91	ng/l	8		30
Perfluorohexanoic Acid (PFHxA)	65.2	61.7	ng/l	6		30
Perfluoroheptanoic Acid (PFHpA)	22.8	21.3	ng/l	7		30
Perfluorohexanesulfonic Acid (PFHxS)	78.0	74.5	ng/l	5		30
Perfluorooctanoic Acid (PFOA)	23.8	26.8	ng/l	12		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	226	211	ng/l	7		30
Perfluoroheptanesulfonic Acid (PFHpS)	1.79	2.04	ng/l	13		30
Perfluorononanoic Acid (PFNA)	4.26	3.77	ng/l	12		30
Perfluorooctanesulfonic Acid (PFOS)	195	185	ng/l	5		30
Perfluorodecanoic Acid (PFDA)	1.03J	1.00J	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	5.28	4.97	ng/l	6		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090
Lab Number: L1932867
Report Date: 08/02/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08,10-12 QC Batch ID: WG1266495-5 QC Sample: L1932867-10 Client ID: FIRE POND-02-W						
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	219	212	ng/l	0		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		85		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		88		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		89		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		69		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		75		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		94		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		81		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	145		154		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		84		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		79		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66		68		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		82		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	44		46		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64		63		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		23		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	42		42		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60		62		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		67		33-143

INORGANICS
&
MISCELLANEOUS

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932867
Report Date: 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-01
Client ID: OUTFALL-003-S
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 11:30
Date Received: 07/24/19
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 - Mansfield Lab										
Solids, Total	71.1		%	0.100	0.100	1	-	07/26/19 01:15	121,2540G	CC

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932867
Report Date: 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-02
Client ID: OUTFALL-002-S
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 11:50
Date Received: 07/24/19
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 - Mansfield Lab										
Solids, Total	82.3		%	0.100	0.100	1	-	07/26/19 01:15	121,2540G	CC

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-03 Date Collected: 07/24/19 12:10
Client ID: OUTFALL-004-S Date Received: 07/24/19
Sample Location: WAPPINGERS FALLS, NY 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 - Mansfield Lab										
Solids, Total	24.5		%	0.100	0.100	1	-	07/26/19 01:15	121,2540G	CC

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-04	Date Collected:	07/24/19 12:30
Client ID:	OUTFALL-005-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	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 - Mansfield Lab										
Solids, Total	68.2		%	0.100	0.100	1	-	07/26/19 01:15	121,2540G	CC

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-05
Client ID: OUTFALL-006-S
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 07/24/19 13:15
Date Received: 07/24/19
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 - Mansfield Lab										
Solids, Total	80.1		%	0.100	0.100	1	-	07/26/19 01:15	121,2540G	CC

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-06 Date Collected: 07/24/19 13:30
Client ID: OUTFALL-007-S Date Received: 07/24/19
Sample Location: WAPPINGERS FALLS, NY 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 - Mansfield Lab										
Solids, Total	87.6		%	0.100	0.100	1	-	07/26/19 01:15	121,2540G	CC

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-07	Date Collected:	07/24/19 14:00
Client ID:	FIRE POND-01-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	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 - Mansfield Lab										
Solids, Total	72.9		%	0.100	0.100	1	-	07/26/19 01:15	121,2540G	CC

Project Name: HUDSON VALLEY REGIONAL AIRPORT

Lab Number: L1932867

Project Number: 18.8090

Report Date: 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-09
Client ID: FIRE POND-02-S
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 14:25
Date Received: 07/24/19
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 - Mansfield Lab										
Solids, Total	82.3		%	0.100	0.100	1	-	07/26/19 01:15	121,2540G	CC

Lab Duplicate Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932867
Report Date: 08/02/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-07,09 QC Batch ID: WG1264732-1 QC Sample: L1932616-01 Client ID: DUP Sample						
Solids, Total	77.5	77.1	%	1		10

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932867
Report Date: 08/02/19

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(*)
L1932867-01A	Amber 250ml unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)
L1932867-01B	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1932867-01C	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1932867-02A	Amber 250ml unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)
L1932867-02B	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1932867-02C	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1932867-03A	Amber 250ml unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)
L1932867-03B	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1932867-03C	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1932867-04A	Amber 250ml unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)
L1932867-04B	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1932867-04C	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1932867-05A	Amber 250ml unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)
L1932867-05B	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1932867-05C	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1932867-06A	Amber 250ml unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)
L1932867-06B	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1932867-06C	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1932867-07A	Amber 250ml unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)
L1932867-07B	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1932867-07C	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1932867-08A	Amber 250ml unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932867-08A1	Amber 250ml unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)

*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(*)
L1932867-08B	Plastic 250ml Trizma preserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932867-08B1	Plastic 250ml Trizma preserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932867-09A	Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)
L1932867-09B	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1932867-09C	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1932867-10A	Amber 250ml unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932867-10A1	Amber 250ml unpreserved	A	NA		3.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932867-10B	Plastic 250ml Trizma preserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932867-10B1	Plastic 250ml Trizma preserved	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932867-11A	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932867-12A	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.8	Y	Absent		A2-NY-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

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.
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.

Footnotes

Report Format: DU Report with 'J' Qualifiers

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.

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. If a 'Total' result is requested, the results of its individual components will also be reported.

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 Condensation Product".

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.

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.

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

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

LIMITATION OF LIABILITIES

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
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; 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.**

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.

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
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 1 of 2

Date Rec'd in Lab: 7/25/19

ALPHA Job #: L1932867

Project Information
Project Name: Hudson Valley Regional Airport
Project Location: Wappingers Falls, NY
Project #: 18.5090
(Use Project name as Project #) ☐
Project Manager: Dave Lent
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information
Client: C.T. Male Associates
Address: 12 Raymond Avenue, Poughkeepsie, NY 12603
Phone: 845-454-4400
Fax:
Email: d.lent@ctmale.com

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:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Email results to d.lent@ctmale.com

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	PFAS	1,4 dioxane	Total Solids	PFAS						Sample Specific Comments	Total Bottles
932867-01	Outfall-003-S	07/24	1130	Soil	DM	X	X	X								3
-02	Outfall-002-S	07/24	1150	Soil	DM	X	X	X								3
-03	Outfall-004-S	07/24	1210	Soil	DM	X	X	X								3
-04	Outfall-005-S	07/24	1230	Soil	DM	X	X	X								3
-05	Outfall-006-S	07/24	1315	Soil	DM	X	X	X								3
-06	Outfall-007-S	07/24	1330	Soil	DM	X	X	X								3
-07	Fire Pond-01-S	07/24	1400	Soil	DM	X	X	X								3
-08	Fire Pond-01-W	07/24	1410	Water	DM		X		X							4
-09	Fire Pond-02-S	07/24	1425	Soil	DM	X	X	X								3
-10	Fire Pond-02-W	07/24	1435	Water	DM		X		X							4
					Container Type	P	A	P	P							
					Preservative	A	A	A	O							

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
David Mm	07/24/19 1611	Dan Wagner AAL	7/24/19 1611
Dan Wagner	7/24/19 1800	[illegible]	7/25/19 01:10
[illegible]	7/24/19	NACM	7/24/19 1530
MSM	7/25/19 17:5	[illegible]	7/25/19 12:19

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)

NEW YORK CHAIN OF CUSTODY

ALPHA

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

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

Page 2 of 2

Date Rec'd in Lab: 7/25/19

ALPHA Job #: L1932867

Project Information

Project Name: Hudson Valley Regional Airport
Project Location: Wappingers Falls, NY
Project #: 18.8090
(Use Project name as Project #) ☐
Project Manager: Dave Kent
ALPHAQuote #:

Client Information

Client: C.T. Male Associates
Address: 12 Raymond Avenue
Poughkeepsie, NY 12603
Phone: 845-454-4400
Fax:
Email: d.kent@ctmale.com

Turn-Around Time

Standard ☒
Rush (only if pre approved) ☐
Due Date:
# 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:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Email d.kent@ctmale.com with results

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	ANALYSIS: PFAS								Sample Specific Comments	Total Bottles
-11	Field Blank	7/24	1445	W	NJM	X									2
-12	Trip Blank	7/24	1450	W	NJM	X									1

Preservative Code	Container Code
A = None	P = Plastic
B = HCl	A = Amber Glass
C = HNO_3	V = Vial
D = H_2SO_4	G = Glass
E = NaOH	B = Bacteria Cup
F = MeOH	C = Cube
G = $NaHSO_4$	O = Other
H = $Na_2S_2O_3$	E = Encore
K/E = Zn Ac/NaOH	D = BOD Bottle
O = Other	

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

	PFAS
Container Type	P
Preservative	O

Relinquished By:	Date/Time	Received By:	Date/Time
David Mann	07/24/19 1611	Ben Wagner AAL	7/24/19 1611
Ben Wagner	7/24/19 1800	[illegible]	7/25/19 0100
[illegible] AAL	7/24/19	MCM	7/25/19 1537
MCM	7/25/19 1709	[illegible]	7/25/19 17:09

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:	L1932869
Client:	C.T. Male Associates 12 Raymond Avenue Poughkeepsie, NY 12603
ATTN:	David Lent
Phone:	(845) 454-4400
Project Name:	HUDSON VALLEY REGIONAL AIRPORT
Project Number:	18.8090
Report Date:	08/07/19

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: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932869
Report Date: 08/07/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1932869-01	OUTFALL-007-W	WATER	WAPPINGERS FALLS, NY	07/23/19 14:00	07/24/19
L1932869-02	OUTFALL-006-W	WATER	WAPPINGERS FALLS, NY	07/23/19 14:15	07/24/19
L1932869-03	OUTFALL-003-W	WATER	WAPPINGERS FALLS, NY	07/23/19 14:30	07/24/19
L1932869-04	FIELD BLANK	WATER	WAPPINGERS FALLS, NY	07/23/19 14:40	07/24/19
L1932869-05	OUTFALL-002-W	WATER	WAPPINGERS FALLS, NY	07/23/19 15:00	07/24/19
L1932869-06	OUTFALL-004-W	WATER	WAPPINGERS FALLS, NY	07/23/19 15:10	07/24/19
L1932869-07	OUTFALL-005-W	WATER	WAPPINGERS FALLS, NY	07/23/19 15:20	07/24/19
L1932869-08	OUTFALL-001-W	WATER	WAPPINGERS FALLS, NY	07/23/19 15:45	07/24/19
L1932869-09	TRIP BLANK	WATER	WAPPINGERS FALLS, NY	07/23/19 16:00	07/24/19

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.

Case Narrative (continued)

Report Submission

August 07, 2019: This final report includes the results of all requested analyses.

August 01, 2019: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L1932869-09: The Trip Blank has a result for acetone present above the reporting limit. The sample vial was verified as being labeled correctly by the laboratory and the previous analysis showed there was no potential for carry over.

Perfluorinated Alkyl Acids by Isotope Dilution

L1932869-06: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1268635-2/-3 LCS/LCSD RPDs, associated with L1932869-01 through -08, are above the acceptance criteria for perfluoroheptanesulfonic acid (pfhps) (39%), perfluorooctanesulfonic acid (pfos) (38%), and perfluorodecanesulfonic acid (pfds) (33%).

WG1268999-1: The continuing calibration standard had the response for Perfluorooctanesulfonamide (FOSA) outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1268999-5: The continuing calibration standard had the response for Perfluoroctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

WG1268999-5: The continuing calibration standard had the response for 1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS) above the acceptance criteria for the method. The associated samples were non-detect; therefore, no further action was taken.

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Case Narrative (continued)

Total Metals

The WG1264989-3 MS recovery, performed on L1932869-08, is outside the acceptance criteria for potassium (130%). A post digestion spike was performed and yielded an unacceptable recovery of 127%. The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

The WG1264989-3 MS recovery for sodium (167%), performed on L1932869-08, does not apply because the sample concentration is greater than four times the spike amount added.

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: Kelly Stenstrom Kelly Stenstrom

Title: Technical Director/Representative Date: 08/07/19

ORGANICS

VOLATILES

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-08	Date Collected:	07/23/19 15:45
Client ID:	OUTFALL-001-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/29/19 21:56
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
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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-08	Date Collected:	07/23/19 15:45
Client ID:	OUTFALL-001-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	7.5		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	87		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	115		70-130

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-09	Date Collected:	07/23/19 16:00
Client ID:	TRIP BLANK	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/29/19 22:22
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
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	0.92	J	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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID: L1932869-09 Date Collected: 07/23/19 16:00
Client ID: TRIP BLANK Date Received: 07/24/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	5.7		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	113		70-130

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/29/19 19:25
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 08-09 Batch: WG1266319-5					
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
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
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/29/19 19:25
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 08-09 Batch: WG1266319-5					
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23
Cyclohexane	ND		ug/l	10	0.27
1,4-Dioxane	ND		ug/l	250	61.
Freon-113	ND		ug/l	2.5	0.70
Methyl cyclohexane	ND		ug/l	10	0.40

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/29/19 19:25
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 08-09 Batch: WG1266319-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	112		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090
Lab Number: L1932869
Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1266319-3 WG1266319-4								
Methylene chloride	84		82		70-130	2		20
1,1-Dichloroethane	90		86		70-130	5		20
Chloroform	93		89		70-130	4		20
Carbon tetrachloride	120		110		63-132	9		20
1,2-Dichloropropane	84		82		70-130	2		20
Dibromochloromethane	98		96		63-130	2		20
1,1,2-Trichloroethane	79		78		70-130	1		20
Tetrachloroethene	100		97		70-130	3		20
Chlorobenzene	89		86		75-130	3		20
Trichlorofluoromethane	120		100		62-150	18		20
1,2-Dichloroethane	100		100		70-130	0		20
1,1,1-Trichloroethane	110		100		67-130	10		20
Bromodichloromethane	92		89		67-130	3		20
trans-1,3-Dichloropropene	72		70		70-130	3		20
cis-1,3-Dichloropropene	81		79		70-130	3		20
Bromoform	81		80		54-136	1		20
1,1,2,2-Tetrachloroethane	72		72		67-130	0		20
Benzene	86		83		70-130	4		20
Toluene	81		78		70-130	4		20
Ethylbenzene	85		80		70-130	6		20
Chloromethane	100		95		64-130	5		20
Bromomethane	64		63		39-139	2		20
Vinyl chloride	95		88		55-140	8		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1266319-3 WG1266319-4								
Chloroethane	90		82		55-138	9		20
1,1-Dichloroethene	98		93		61-145	5		20
trans-1,2-Dichloroethene	95		90		70-130	5		20
Trichloroethene	94		87		70-130	8		20
1,2-Dichlorobenzene	95		91		70-130	4		20
1,3-Dichlorobenzene	93		90		70-130	3		20
1,4-Dichlorobenzene	93		90		70-130	3		20
Methyl tert butyl ether	94		94		63-130	0		20
p/m-Xylene	90		90		70-130	0		20
o-Xylene	90		90		70-130	0		20
cis-1,2-Dichloroethene	93		90		70-130	3		20
Styrene	90		90		70-130	0		20
Dichlorodifluoromethane	130		120		36-147	8		20
Acetone	96		93		58-148	3		20
Carbon disulfide	86		80		51-130	7		20
2-Butanone	87		88		63-138	1		20
4-Methyl-2-pentanone	78		77		59-130	1		20
2-Hexanone	76		76		57-130	0		20
Bromochloromethane	110		110		70-130	0		20
1,2-Dibromoethane	90		90		70-130	0		20
1,2-Dibromo-3-chloropropane	81		81		41-144	0		20
Isopropylbenzene	90		85		70-130	6		20
1,2,3-Trichlorobenzene	96		94		70-130	2		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932869
Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1266319-3 WG1266319-4								
1,2,4-Trichlorobenzene	90		89		70-130	1		20
Methyl Acetate	96		94		70-130	2		20
Cyclohexane	110		100		70-130	10		20
1,4-Dioxane	98		98		56-162	0		20
Freon-113	120		110		70-130	9		20
Methyl cyclohexane	100		93		70-130	7		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	114		112		70-130
Toluene-d8	90		89		70-130
4-Bromofluorobenzene	86		86		70-130
Dibromofluoromethane	115		113		70-130

SEMIVOLATILES

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-01	Date Collected:	07/23/19 14:00
Client ID:	OUTFALL-007-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	07/29/19 17:05
Analytical Date:	07/30/19 14:40		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	37		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID: L1932869-01
Client ID: OUTFALL-007-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/23/19 14:00
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/07/19 09:48
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/05/19 11:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	9.13		ng/l	1.90	0.388	1
Perfluoropentanoic Acid (PFPeA)	5.05		ng/l	1.90	0.376	1
Perfluorobutanesulfonic Acid (PFBS)	1.09	J	ng/l	1.90	0.226	1
Perfluorohexanoic Acid (PFHxA)	4.67		ng/l	1.90	0.312	1
Perfluoroheptanoic Acid (PFHpA)	3.54		ng/l	1.90	0.214	1
Perfluorohexanesulfonic Acid (PFHxS)	2.90		ng/l	1.90	0.357	1
Perfluorooctanoic Acid (PFOA)	10.5		ng/l	1.90	0.224	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.90	1.27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.90	0.654	1
Perfluorononanoic Acid (PFNA)	1.11	J	ng/l	1.90	0.296	1
Perfluorooctanesulfonic Acid (PFOS)	4.23		ng/l	1.90	0.479	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.90	0.289	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.90	1.15	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.90	0.616	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.90	0.247	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.90	0.932	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.90	0.551	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.90	0.764	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.90	0.354	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.90	0.311	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.90	0.236	1
PFOA/PFOS, Total	14.7		ng/l	1.90	0.224	1

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-01	Date Collected:	07/23/19 14:00
Client ID:	OUTFALL-007-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	71		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	68		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	67		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	59		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	57		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	33		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	53		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		33-143

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-02	Date Collected:	07/23/19 14:15
Client ID:	OUTFALL-006-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	07/29/19 17:05
Analytical Date:	07/30/19 15:17		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	36		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-02	Date Collected:	07/23/19 14:15
Client ID:	OUTFALL-006-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/05/19 11:56
Analytical Date:	08/07/19 10:05		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.64		ng/l	1.96	0.400	1
Perfluoropentanoic Acid (PFPeA)	5.22		ng/l	1.96	0.388	1
Perfluorobutanesulfonic Acid (PFBS)	1.10	J	ng/l	1.96	0.233	1
Perfluorohexanoic Acid (PFHxA)	3.78		ng/l	1.96	0.322	1
Perfluoroheptanoic Acid (PFHpA)	2.80		ng/l	1.96	0.221	1
Perfluorohexanesulfonic Acid (PFHxS)	3.15		ng/l	1.96	0.369	1
Perfluorooctanoic Acid (PFOA)	6.16		ng/l	1.96	0.231	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.96	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.96	0.674	1
Perfluorononanoic Acid (PFNA)	1.14	J	ng/l	1.96	0.306	1
Perfluorooctanesulfonic Acid (PFOS)	2.68		ng/l	1.96	0.494	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.96	0.298	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.96	1.19	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.96	0.635	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.96	0.255	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.96	0.961	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.96	0.569	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.96	0.788	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.96	0.365	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.96	0.321	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.96	0.243	1
PFOA/PFOS, Total	8.84		ng/l	1.96	0.231	1

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-02	Date Collected:	07/23/19 14:15
Client ID:	OUTFALL-006-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	83		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	71		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	45		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	47		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-03	Date Collected:	07/23/19 14:30
Client ID:	OUTFALL-003-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	07/29/19 17:05
Analytical Date:	07/30/19 16:40		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	38		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT | **Lab Number:** L1932869

Project Number: 18.8090 | **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-03	Date Collected:	07/23/19 14:30
Client ID:	OUTFALL-003-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/05/19 11:56
Analytical Date:	08/07/19 10:22		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	10.6		ng/l	1.98	0.405	1
Perfluoropentanoic Acid (PFPeA)	51.4		ng/l	1.98	0.393	1
Perfluorobutanesulfonic Acid (PFBS)	2.04		ng/l	1.98	0.236	1
Perfluorohexanoic Acid (PFHxA)	44.6		ng/l	1.98	0.325	1
Perfluoroheptanoic Acid (PFHpA)	6.29		ng/l	1.98	0.223	1
Perfluorohexanesulfonic Acid (PFHxS)	234		ng/l	1.98	0.373	1
Perfluorooctanoic Acid (PFOA)	8.30		ng/l	1.98	0.234	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	143		ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	4.15		ng/l	1.98	0.682	1
Perfluorononanoic Acid (PFNA)	0.659	J	ng/l	1.98	0.310	1
Perfluorooctanesulfonic Acid (PFOS)	339		ng/l	1.98	0.500	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.302	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.643	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.258	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.972	1
Perfluorooctanesulfonamide (FOSA)	0.647	J	ng/l	1.98	0.575	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.798	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.369	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.325	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.246	1
PFOA/PFOS, Total	347		ng/l	1.98	0.234	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-03	Date Collected:	07/23/19 14:30
Client ID:	OUTFALL-003-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	70		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	60		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	86		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	38		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	55		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	40		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	49		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID: L1932869-04
Client ID: FIELD BLANK
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 07/23/19 14:40
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/06/19 18:50
Analyst: AJ
Extraction Method: EPA 537
Extraction Date: 08/05/19 11:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.80	0.296	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.884	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1
PFOA/PFOS, Total	ND		ng/l	1.80	0.213	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-04	Date Collected:	07/23/19 14:40
Client ID:	FIELD BLANK	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	132		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	129		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	48		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	45		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		33-143

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-05	Date Collected:	07/23/19 15:00
Client ID:	OUTFALL-002-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	07/29/19 17:05
Analytical Date:	07/30/19 17:30		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	144	32.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	40		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID: L1932869-05
Client ID: OUTFALL-002-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/23/19 15:00
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/07/19 10:38
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/05/19 11:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.20		ng/l	1.98	0.403	1
Perfluoropentanoic Acid (PFPeA)	0.877	J	ng/l	1.98	0.391	1
Perfluorobutanesulfonic Acid (PFBS)	1.03	J	ng/l	1.98	0.235	1
Perfluorohexanoic Acid (PFHxA)	1.34	J	ng/l	1.98	0.324	1
Perfluoroheptanoic Acid (PFHpA)	0.893	J	ng/l	1.98	0.222	1
Perfluorohexanesulfonic Acid (PFHxS)	28.1		ng/l	1.98	0.372	1
Perfluorooctanoic Acid (PFOA)	2.39		ng/l	1.98	0.233	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.680	1
Perfluorononanoic Acid (PFNA)	0.427	J	ng/l	1.98	0.308	1
Perfluorooctanesulfonic Acid (PFOS)	13.4		ng/l	1.98	0.498	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.300	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.640	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.257	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.968	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.573	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.794	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.368	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.323	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.245	1
PFOA/PFOS, Total	15.8		ng/l	1.98	0.233	1

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-05	Date Collected:	07/23/19 15:00
Client ID:	OUTFALL-002-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	56		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	59		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	39		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	54		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	38		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	47		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	44		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID: L1932869-06
Client ID: OUTFALL-004-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/23/19 15:10
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 07/30/19 18:10
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 07/29/19 17:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	35		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-06	Date Collected:	07/23/19 15:10
Client ID:	OUTFALL-004-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/05/19 11:56
Analytical Date:	08/07/19 10:55		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	5.92		ng/l	1.98	0.403	1
Perfluoropentanoic Acid (PFPeA)	1.71	J	ng/l	1.98	0.391	1
Perfluorobutanesulfonic Acid (PFBS)	2.54		ng/l	1.98	0.235	1
Perfluorohexanoic Acid (PFHxA)	1.79	J	ng/l	1.98	0.324	1
Perfluoroheptanoic Acid (PFHpA)	1.37	J	ng/l	1.98	0.222	1
Perfluorohexanesulfonic Acid (PFHxS)	14.7		ng/l	1.98	0.372	1
Perfluorooctanoic Acid (PFOA)	2.75		ng/l	1.98	0.233	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.680	1
Perfluorononanoic Acid (PFNA)	0.818	J	ng/l	1.98	0.308	1
Perfluorooctanesulfonic Acid (PFOS)	12.7		ng/l	1.98	0.498	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.300	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.640	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.257	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.968	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.573	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.794	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.368	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.323	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.245	1
PFOA/PFOS, Total	15.5		ng/l	1.98	0.233	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-06	Date Collected:	07/23/19 15:10
Client ID:	OUTFALL-004-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	229		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**199**	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	79		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-07	Date Collected:	07/23/19 15:20
Client ID:	OUTFALL-005-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	07/29/19 17:05
Analytical Date:	07/30/19 18:50		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	38		15-110

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-07	Date Collected:	07/23/19 15:20
Client ID:	OUTFALL-005-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/05/19 11:56
Analytical Date:	08/07/19 11:44		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	104		ng/l	1.87	0.382	1
Perfluoropentanoic Acid (PFPeA)	470		ng/l	1.87	0.371	1
Perfluorobutanesulfonic Acid (PFBS)	4.33		ng/l	1.87	0.223	1
Perfluorohexanoic Acid (PFHxA)	246		ng/l	1.87	0.307	1
Perfluoroheptanoic Acid (PFHpA)	82.5		ng/l	1.87	0.211	1
Perfluorohexanesulfonic Acid (PFHxS)	11.0		ng/l	1.87	0.352	1
Perfluorooctanoic Acid (PFOA)	14.9		ng/l	1.87	0.221	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	114		ng/l	1.87	1.25	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.87	0.644	1
Perfluorononanoic Acid (PFNA)	2.62		ng/l	1.87	0.292	1
Perfluorooctanesulfonic Acid (PFOS)	9.24		ng/l	1.87	0.472	1
Perfluorodecanoic Acid (PFDA)	0.412	J	ng/l	1.87	0.285	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	2.03		ng/l	1.87	1.13	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.87	0.607	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.87	0.243	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.87	0.918	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.87	0.543	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.87	0.753	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.87	0.348	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.87	0.306	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.87	0.232	1
PFOA/PFOS, Total	24.1		ng/l	1.87	0.221	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-07	Date Collected:	07/23/19 15:20
Client ID:	OUTFALL-005-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	72		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	74		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	57		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	54		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	151		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	76		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	88		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	47		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID: L1932869-08
Client ID: OUTFALL-001-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/23/19 15:45
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 07/31/19 13:00
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 07/30/19 22:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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	4.1		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
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

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-08	Date Collected:	07/23/19 15:45
Client ID:	OUTFALL-001-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	52		21-120
Phenol-d6	47		10-120
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	65		15-120
2,4,6-Tribromophenol	43		10-120
4-Terphenyl-d14	68		41-149

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1932869-08
Client ID: OUTFALL-001-W
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 07/23/19 15:45
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 07/30/19 19:29
Analyst: PS
Extraction Method: EPA 3510C
Extraction Date: 07/29/19 17:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	39		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-08	Date Collected:	07/23/19 15:45
Client ID:	OUTFALL-001-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	07/30/19 22:34
Analytical Date:	07/31/19 15:56		
Analyst:	DV		

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	0.06	J	ug/l	0.10	0.02	1
Hexachlorobutadiene	ND		ug/l	0.50	0.05	1
Naphthalene	0.11		ug/l	0.10	0.05	1
Benzo(a)anthracene	0.04	J	ug/l	0.10	0.02	1
Benzo(a)pyrene	0.02	J	ug/l	0.10	0.02	1
Benzo(b)fluoranthene	0.04	J	ug/l	0.10	0.01	1
Benzo(k)fluoranthene	0.02	J	ug/l	0.10	0.01	1
Chrysene	0.04	J	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	0.04	J	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:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-08	Date Collected:	07/23/19 15:45
Client ID:	OUTFALL-001-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	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	44		21-120
Phenol-d6	38		10-120
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	71		15-120
2,4,6-Tribromophenol	69		10-120
4-Terphenyl-d14	80		41-149

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-08	Date Collected:	07/23/19 15:45
Client ID:	OUTFALL-001-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/05/19 11:56
Analytical Date:	08/07/19 11:28		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	29.0		ng/l	2.02	0.413	1
Perfluoropentanoic Acid (PFPeA)	87.2		ng/l	2.02	0.401	1
Perfluorobutanesulfonic Acid (PFBS)	4.19		ng/l	2.02	0.241	1
Perfluorohexanoic Acid (PFHxA)	57.4		ng/l	2.02	0.332	1
Perfluoroheptanoic Acid (PFHpA)	22.6		ng/l	2.02	0.228	1
Perfluorohexanesulfonic Acid (PFHxS)	69.9		ng/l	2.02	0.380	1
Perfluorooctanoic Acid (PFOA)	21.4		ng/l	2.02	0.239	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	214		ng/l	2.02	1.35	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.64	J	ng/l	2.02	0.696	1
Perfluorononanoic Acid (PFNA)	5.65		ng/l	2.02	0.316	1
Perfluorooctanesulfonic Acid (PFOS)	140		ng/l	2.02	0.510	1
Perfluorodecanoic Acid (PFDA)	1.29	J	ng/l	2.02	0.308	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.93	J	ng/l	2.02	1.23	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.02	0.656	1
Perfluoroundecanoic Acid (PFUnA)	0.729	J	ng/l	2.02	0.263	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.02	0.992	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.02	0.587	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.02	0.814	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.02	0.376	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.02	0.331	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.02	0.251	1
PFOA/PFOS, Total	161		ng/l	2.02	0.239	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID: L1932869-08
Client ID: OUTFALL-001-W
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 07/23/19 15:45
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	78		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	56		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	75		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	121		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	73		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	57		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	49		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	63		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/30/19 10:37
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 07/29/19 17:05

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 01-03,05-08 Batch: WG1265862-1					
1,4-Dioxane	ND		ng/l	150	33.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	41		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/01/19 00:24
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 07/30/19 18:35

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 08 Batch: WG1266486-1					
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
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
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
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
Isophorone	ND		ug/l	5.0	1.2
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	2.5	J	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
Dimethyl phthalate	ND		ug/l	5.0	1.8
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
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

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/01/19 00:24
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 07/30/19 18:35

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 08 Batch: WG1266486-1					
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
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
Phenol	ND		ug/l	5.0	0.57
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77
Carbazole	ND		ug/l	2.0	0.49
Atrazine	ND		ug/l	10	0.76
Benzaldehyde	ND		ug/l	5.0	0.53
Caprolactam	ND		ug/l	10	3.3
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	56		21-120
Phenol-d6	47		10-120
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	66		15-120
2,4,6-Tribromophenol	38		10-120
4-Terphenyl-d14	63		41-149

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090
Lab Number: L1932869
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/31/19 15:06
Analyst: DV
Extraction Method: EPA 3510C
Extraction Date: 07/30/19 18:36

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 08 Batch: WG1266487-1					
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: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/31/19 15:06
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 07/30/19 18:36

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 08 Batch: WG1266487-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	52		21-120
Phenol-d6	41		10-120
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	73		15-120
2,4,6-Tribromophenol	95		10-120
4-Terphenyl-d14	88		41-149

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/07/19 05:06
Analyst: AJ
Extraction Method: EPA 537
Extraction Date: 08/05/19 11:56

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-08 Batch: WG1268635-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932869
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/07/19 05:06
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/05/19 11:56

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-08 Batch: WG1268635-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	89		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	53		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 01-03,05-08 Batch: WG1265862-2 WG1265862-3								
1,4-Dioxane	118		118		40-140	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	36		41		15-110

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08 Batch: WG1266486-2 WG1266486-3								
Bis(2-chloroethyl)ether	70		77		40-140	10		30
3,3'-Dichlorobenzidine	64		67		40-140	5		30
2,4-Dinitrotoluene	77		88		48-143	13		30
2,6-Dinitrotoluene	76		86		40-140	12		30
4-Chlorophenyl phenyl ether	67		78		40-140	15		30
4-Bromophenyl phenyl ether	59		63		40-140	7		30
Bis(2-chloroisopropyl)ether	55		58		40-140	5		30
Bis(2-chloroethoxy)methane	74		86		40-140	15		30
Hexachlorocyclopentadiene	56		61		40-140	9		30
Isophorone	76		88		40-140	15		30
Nitrobenzene	71		82		40-140	14		30
NDPA/DPA	72		80		40-140	11		30
n-Nitrosodi-n-propylamine	80		91		29-132	13		30
Bis(2-ethylhexyl)phthalate	71		87		40-140	20		30
Butyl benzyl phthalate	83		97		40-140	16		30
Di-n-butylphthalate	73		86		40-140	16		30
Di-n-octylphthalate	82		97		40-140	17		30
Diethyl phthalate	80		92		40-140	14		30
Dimethyl phthalate	75		90		40-140	18		30
Biphenyl	65		75		40-140	14		30
4-Chloroaniline	60		69		40-140	14		30
2-Nitroaniline	73		86		52-143	16		30
3-Nitroaniline	64		72		25-145	12		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08 Batch: WG1266486-2 WG1266486-3								
4-Nitroaniline	70		83		51-143	17		30
Dibenzofuran	68		76		40-140	11		30
1,2,4,5-Tetrachlorobenzene	57		63		2-134	10		30
Acetophenone	70		78		39-129	11		30
2,4,6-Trichlorophenol	69		77		30-130	11		30
p-Chloro-m-cresol	77		92		23-97	18		30
2-Chlorophenol	73		83		27-123	13		30
2,4-Dichlorophenol	74		84		30-130	13		30
2,4-Dimethylphenol	71		79		30-130	11		30
2-Nitrophenol	74		84		30-130	13		30
4-Nitrophenol	76		**90**	Q	10-80	17		30
2,4-Dinitrophenol	74		81		20-130	9		30
4,6-Dinitro-o-cresol	85		98		20-164	14		30
Phenol	55		66		12-110	18		30
3-Methylphenol/4-Methylphenol	77		91		30-130	17		30
2,4,5-Trichlorophenol	67		80		30-130	18		30
Carbazole	74		87		55-144	16		30
Atrazine	94		105		40-140	11		30
Benzaldehyde	70		77		40-140	10		30
Caprolactam	43		50		10-130	15		30
2,3,4,6-Tetrachlorophenol	64		71		40-140	10		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08 Batch: WG1266486-2 WG1266486-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	63		72		21-120
Phenol-d6	57		67		10-120
Nitrobenzene-d5	83		91		23-120
2-Fluorobiphenyl	69		76		15-120
2,4,6-Tribromophenol	56		62		10-120
4-Terphenyl-d14	66		77		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 08 Batch: WG1266487-2 WG1266487-3								
Acenaphthene	68		78		40-140	14		40
2-Chloronaphthalene	70		84		40-140	18		40
Fluoranthene	79		78		40-140	1		40
Hexachlorobutadiene	57		73		40-140	25		40
Naphthalene	62		79		40-140	24		40
Benzo(a)anthracene	77		73		40-140	5		40
Benzo(a)pyrene	74		71		40-140	4		40
Benzo(b)fluoranthene	78		74		40-140	5		40
Benzo(k)fluoranthene	81		76		40-140	6		40
Chrysene	73		71		40-140	3		40
Acenaphthylene	77		89		40-140	14		40
Anthracene	77		78		40-140	1		40
Benzo(ghi)perylene	68		68		40-140	0		40
Fluorene	73		80		40-140	9		40
Phenanthrene	75		75		40-140	0		40
Dibenzo(a,h)anthracene	83		77		40-140	8		40
Indeno(1,2,3-cd)pyrene	80		75		40-140	6		40
Pyrene	79		77		40-140	3		40
2-Methylnaphthalene	69		83		40-140	18		40
Pentachlorophenol	49		48		40-140	2		40
Hexachlorobenzene	75		77		40-140	3		40
Hexachloroethane	58		80		40-140	32		40

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT

Lab Number: L1932869

Project Number: 18.8090

Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 08 Batch: WG1266487-2 WG1266487-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	49		56		21-120
Phenol-d6	42		46		10-120
Nitrobenzene-d5	67		76		23-120
2-Fluorobiphenyl	69		72		15-120
2,4,6-Tribromophenol	95		82		10-120
4-Terphenyl-d14	89		75		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 Batch: WG1268635-2 WG1268635-3								
Perfluorobutanoic Acid (PFBA)	106		108		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	112		112		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	107		108		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	116		119		69-168	3		30
Perfluoroheptanoic Acid (PFHpA)	106		116		58-159	9		30
Perfluorohexanesulfonic Acid (PFHxS)	101		104		69-177	3		30
Perfluorooctanoic Acid (PFOA)	115		102		63-159	12		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	104		106		49-187	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	108		160		61-179	**39**	Q	30
Perfluorononanoic Acid (PFNA)	116		113		68-171	3		30
Perfluorooctanesulfonic Acid (PFOS)	86		126		52-151	**38**	Q	30
Perfluorodecanoic Acid (PFDA)	111		113		63-171	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	102		93		56-173	9		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	114		138		60-166	19		30
Perfluoroundecanoic Acid (PFUnA)	112		112		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	96		134		38-156	**33**	Q	30
Perfluorooctanesulfonamide (FOSA)	88		98		46-170	11		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	94		96		45-170	2		30
Perfluorododecanoic Acid (PFDoA)	89		86		67-153	3		30
Perfluorotridecanoic Acid (PFTrDA)	92		88		48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	119		98		59-182	19		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 Batch: WG1268635-2 WG1268635-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		98		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		105		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		128		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		95		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		95		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		135		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		98		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		117		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		93		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		86		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		83		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	75		109		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		50		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		76		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	57		53		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71		59		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		78		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		71		33-143

Matrix Spike Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1268635-4 QC Sample: L1932869-06 Client ID: OUTFALL-004-W												
Perfluorobutanoic Acid (PFBA)	5.92	39.5	45.1	99		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	1.71J	39.5	40.7	103		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	2.54	39.5	40.4	96		-	-		65-157	-		30
Perfluorohexanoic Acid (PFHxA)	1.79J	39.5	45.7	116		-	-		69-168	-		30
Perfluoroheptanoic Acid (PFHpA)	1.37J	39.5	42.3	107		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	14.7	39.5	62.3	120		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	2.75	39.5	42.8	101		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	39.5	37.9	96		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	39.5	43.4	110		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.818J	39.5	43.1	109		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	12.7	39.5	51.3	98		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	39.5	41.9	106		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	39.5	35.3	89		-	-		56-173	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	39.5	33.2	84		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	39.5	35.0	89		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	39.5	35.0	89		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	39.5	33.0	84		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	39.5	35.8	91		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	39.5	36.7	93		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	39.5	29.8	75		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	39.5	39.1	99		-	-		59-182	-		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932869
Report Date: 08/07/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1268635-4 QC Sample: L1932869-06 Client ID: OUTFALL-004-W

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	153				7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	209				1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60				23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70				1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75				40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75				38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64				21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	63				30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81				47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63				24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	49				33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82				16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42				1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82				42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89				36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94				34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81				31-159

Lab Duplicate Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932869
Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1268635-5 QC Sample: L1932869-08 Client ID: OUTFALL-001-W						
Perfluorobutanoic Acid (PFBA)	29.0	29.2	ng/l	1		30
Perfluoropentanoic Acid (PFPeA)	87.2	86.0	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	4.19	4.23	ng/l	1		30
Perfluorohexanoic Acid (PFHxA)	57.4	56.2	ng/l	2		30
Perfluoroheptanoic Acid (PFHpA)	22.6	22.3	ng/l	1		30
Perfluorohexanesulfonic Acid (PFHxS)	69.9	69.4	ng/l	1		30
Perfluorooctanoic Acid (PFOA)	21.4	21.6	ng/l	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	214	218	ng/l	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	1.64J	1.32J	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	5.65	5.57	ng/l	1		30
Perfluorooctanesulfonic Acid (PFOS)	140	140	ng/l	0		30
Perfluorodecanoic Acid (PFDA)	1.29J	1.32J	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.93J	1.59J	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	0.729J	0.558J	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090
Lab Number: L1932869
Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1268635-5 QC Sample: L1932869-08 Client ID: OUTFALL-001-W						
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	161	162	ng/l	0		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		90		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		94		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	78		103		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		76		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	56		65		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	75		93		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	121		160		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73		88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	73		91		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66		78		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	57		85		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	49		59		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	63		71		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36		38		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		54		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		64		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		59		33-143

PCBS

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-08	Date Collected:	07/23/19 15:45
Client ID:	OUTFALL-001-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8082A	Extraction Date:	07/27/19 03:59
Analytical Date:	07/31/19 03:02	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	07/27/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	80		30-150	A
Decachlorobiphenyl	90		30-150	A
2,4,5,6-Tetrachloro-m-xylene	80		30-150	B
Decachlorobiphenyl	90		30-150	B

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 07/28/19 15:21
Analyst: AWS

Extraction Method: EPA 3510C
Extraction Date: 07/27/19 02:26
Cleanup Method: EPA 3665A
Cleanup Date: 07/27/19
Cleanup Method: EPA 3660B
Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 08 Batch: WG1265262-1						
Aroclor 1016	ND		ug/l	0.083	0.034	A
Aroclor 1221	ND		ug/l	0.083	0.067	A
Aroclor 1232	ND		ug/l	0.083	0.046	A
Aroclor 1242	ND		ug/l	0.083	0.039	A
Aroclor 1248	ND		ug/l	0.083	0.049	A
Aroclor 1254	ND		ug/l	0.083	0.039	A
Aroclor 1260	ND		ug/l	0.083	0.032	A
Aroclor 1262	ND		ug/l	0.083	0.035	A
Aroclor 1268	ND		ug/l	0.083	0.034	A
PCBs, Total	ND		ug/l	0.083	0.032	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		30-150	A
Decachlorobiphenyl	103		30-150	A
2,4,5,6-Tetrachloro-m-xylene	85		30-150	B
Decachlorobiphenyl	103		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 08 Batch: WG1265262-2 WG1265262-3									
Aroclor 1016	86		87		40-140	2		50	A
Aroclor 1260	87		90		40-140	3		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		86		30-150	A
Decachlorobiphenyl	92		101		30-150	A
2,4,5,6-Tetrachloro-m-xylene	79		83		30-150	B
Decachlorobiphenyl	94		100		30-150	B

PESTICIDES

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 08/07/19

SAMPLE RESULTS

Lab ID: L1932869-08
Client ID: OUTFALL-001-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/23/19 15:45
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 07/28/19 11:54
Analyst: AMC

Extraction Method: EPA 3510C
Extraction Date: 07/27/19 03:56

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:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-08	Date Collected:	07/23/19 15:45
Client ID:	OUTFALL-001-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	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	55		30-150	A
Decachlorobiphenyl	51		30-150	A
2,4,5,6-Tetrachloro-m-xylene	54		30-150	B
Decachlorobiphenyl	66		30-150	B

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 07/27/19 23:50
Analyst: AMC

Extraction Method: EPA 3510C
Extraction Date: 07/27/19 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 08 Batch: WG1265260-1						
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:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8081B	Extraction Method:	EPA 3510C
Analytical Date:	07/27/19 23:50	Extraction Date:	07/27/19 02:24
Analyst:	AMC		

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 08 Batch: WG1265260-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	66		30-150	A
Decachlorobiphenyl	86		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		30-150	B
Decachlorobiphenyl	87		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 08 Batch: WG1265260-2 WG1265260-3									
Delta-BHC	73		69		30-150	5		20	A
Lindane	70		68		30-150	2		20	A
Alpha-BHC	73		73		30-150	1		20	A
Beta-BHC	65		64		30-150	1		20	A
Heptachlor	57		54		30-150	6		20	A
Aldrin	69		62		30-150	10		20	A
Heptachlor epoxide	72		70		30-150	2		20	A
Endrin	73		69		30-150	6		20	A
Endrin aldehyde	65		64		30-150	1		20	A
Endrin ketone	72		70		30-150	3		20	A
Dieldrin	75		73		30-150	3		20	A
4,4'-DDE	74		71		30-150	4		20	A
4,4'-DDD	69		67		30-150	4		20	A
4,4'-DDT	69		66		30-150	4		20	A
Endosulfan I	67		65		30-150	3		20	A
Endosulfan II	69		66		30-150	4		20	A
Endosulfan sulfate	71		68		30-150	5		20	A
Methoxychlor	61		59		30-150	3		20	A
cis-Chlordane	65		62		30-150	4		20	A
trans-Chlordane	68		64		30-150	6		20	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 08 Batch: WG1265260-2 WG1265260-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		59		30-150	A
Decachlorobiphenyl	82		71		30-150	A
2,4,5,6-Tetrachloro-m-xylene	66		56		30-150	B
Decachlorobiphenyl	79		68		30-150	B

METALS

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

SAMPLE RESULTS

Lab ID:	L1932869-08	Date Collected:	07/23/19 15:45
Client ID:	OUTFALL-001-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	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	ND		mg/l	0.100	0.032	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Antimony, Total	0.016	J	mg/l	0.050	0.007	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Arsenic, Total	0.003	J	mg/l	0.005	0.002	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Barium, Total	0.029		mg/l	0.010	0.002	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Beryllium, Total	ND		mg/l	0.005	0.001	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Cadmium, Total	ND		mg/l	0.005	0.001	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Calcium, Total	44.1		mg/l	0.100	0.035	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Chromium, Total	ND		mg/l	0.010	0.002	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Cobalt, Total	ND		mg/l	0.020	0.002	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Copper, Total	ND		mg/l	0.010	0.002	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Iron, Total	0.588		mg/l	0.050	0.009	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Lead, Total	ND		mg/l	0.010	0.003	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Magnesium, Total	10.3		mg/l	0.100	0.015	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Manganese, Total	0.712		mg/l	0.010	0.002	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Mercury, Total	ND		mg/l	0.00020	0.00009	1	07/29/19 13:00	07/29/19 19:30	EPA 7470A	1,7470A	EA
Nickel, Total	ND		mg/l	0.025	0.002	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Potassium, Total	2.40	J	mg/l	2.50	0.237	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Selenium, Total	ND		mg/l	0.010	0.004	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Silver, Total	ND		mg/l	0.007	0.003	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Sodium, Total	81.3		mg/l	2.00	0.120	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Thallium, Total	ND		mg/l	0.020	0.003	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Vanadium, Total	ND		mg/l	0.010	0.002	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB
Zinc, Total	0.002	J	mg/l	0.050	0.002	1	07/26/19 12:24	07/29/19 21:57	EPA 3005A	1,6010D	AB

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

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): 08 Batch: WG1264989-1										
Aluminum, Total	ND		mg/l	0.100	0.032	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Antimony, Total	ND		mg/l	0.050	0.007	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Arsenic, Total	ND		mg/l	0.005	0.002	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Barium, Total	ND		mg/l	0.010	0.002	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Beryllium, Total	ND		mg/l	0.005	0.001	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Cadmium, Total	ND		mg/l	0.005	0.001	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Calcium, Total	ND		mg/l	0.100	0.035	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Chromium, Total	ND		mg/l	0.010	0.002	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Cobalt, Total	ND		mg/l	0.020	0.002	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Copper, Total	ND		mg/l	0.010	0.002	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Iron, Total	ND		mg/l	0.050	0.009	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Lead, Total	ND		mg/l	0.010	0.003	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Magnesium, Total	ND		mg/l	0.100	0.015	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Manganese, Total	ND		mg/l	0.010	0.002	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Nickel, Total	ND		mg/l	0.025	0.002	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Potassium, Total	ND		mg/l	2.50	0.237	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Selenium, Total	ND		mg/l	0.010	0.004	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Silver, Total	ND		mg/l	0.007	0.003	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Sodium, Total	ND		mg/l	2.00	0.120	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Thallium, Total	ND		mg/l	0.020	0.003	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Vanadium, Total	ND		mg/l	0.010	0.002	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB
Zinc, Total	ND		mg/l	0.050	0.002	1	07/26/19 12:24	07/29/19 21:48	1,6010D	AB

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): 08 Batch: WG1265802-1										
Mercury, Total	ND		mg/l	0.00020	0.00009	1	07/29/19 13:00	07/29/19 19:02	1,7470A	EA

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis

Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 08 Batch: WG1264989-2								
Aluminum, Total	102		-		80-120	-		
Antimony, Total	90		-		80-120	-		
Arsenic, Total	116		-		80-120	-		
Barium, Total	100		-		80-120	-		
Beryllium, Total	103		-		80-120	-		
Cadmium, Total	109		-		80-120	-		
Calcium, Total	100		-		80-120	-		
Chromium, Total	100		-		80-120	-		
Cobalt, Total	102		-		80-120	-		
Copper, Total	99		-		80-120	-		
Iron, Total	106		-		80-120	-		
Lead, Total	109		-		80-120	-		
Magnesium, Total	108		-		80-120	-		
Manganese, Total	98		-		80-120	-		
Nickel, Total	102		-		80-120	-		
Potassium, Total	103		-		80-120	-		
Selenium, Total	113		-		80-120	-		
Silver, Total	101		-		80-120	-		
Sodium, Total	101		-		80-120	-		
Thallium, Total	108		-		80-120	-		
Vanadium, Total	103		-		80-120	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 08 Batch: WG1264989-2					
Zinc, Total	107	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 08 Batch: WG1265802-2					
Mercury, Total	97	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

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): 08 QC Batch ID: WG1264989-3 QC Sample: L1932869-08 Client ID: OUTFALL-001-W												
Aluminum, Total	ND	2	2.08	104		-	-		75-125	-		20
Antimony, Total	0.016J	0.5	0.519	104		-	-		75-125	-		20
Arsenic, Total	0.003J	0.12	0.142	118		-	-		75-125	-		20
Barium, Total	0.029	2	2.00	98		-	-		75-125	-		20
Beryllium, Total	ND	0.05	0.050	100		-	-		75-125	-		20
Cadmium, Total	ND	0.051	0.055	107		-	-		75-125	-		20
Calcium, Total	44.1	10	55.5	114		-	-		75-125	-		20
Chromium, Total	ND	0.2	0.199	100		-	-		75-125	-		20
Cobalt, Total	ND	0.5	0.492	98		-	-		75-125	-		20
Copper, Total	ND	0.25	0.257	103		-	-		75-125	-		20
Iron, Total	0.588	1	1.66	107		-	-		75-125	-		20
Lead, Total	ND	0.51	0.524	103		-	-		75-125	-		20
Magnesium, Total	10.3	10	20.3	100		-	-		75-125	-		20
Manganese, Total	0.712	0.5	1.21	100		-	-		75-125	-		20
Nickel, Total	ND	0.5	0.490	98		-	-		75-125	-		20
Potassium, Total	2.40J	10	13.0	**130**	Q	-	-		75-125	-		20
Selenium, Total	ND	0.12	0.138	115		-	-		75-125	-		20
Silver, Total	ND	0.05	0.053	105		-	-		75-125	-		20
Sodium, Total	81.3	10	98.0	**167**	Q	-	-		75-125	-		20
Thallium, Total	ND	0.12	0.119	99		-	-		75-125	-		20
Vanadium, Total	ND	0.5	0.515	103		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

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): 08 QC Batch ID: WG1264989-3 QC Sample: L1932869-08 Client ID: OUTFALL-001-W									
Zinc, Total	0.002J	0.5	0.531	106	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 08 QC Batch ID: WG1265802-3 WG1265802-4 QC Sample: L1932554-02 Client ID: MS Sample									
Mercury, Total	ND	0.005	0.00470	94	0.00476	95	75-125	1	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932869
Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 08 QC Batch ID: WG1264989-4 QC Sample: L1932869-08 Client ID: OUTFALL-001-W						
Aluminum, Total	ND	ND	mg/l	NC		20
Antimony, Total	0.016J	0.008J	mg/l	NC		20
Arsenic, Total	0.003J	0.003J	mg/l	NC		20
Barium, Total	0.029	0.029	mg/l	0		20
Beryllium, Total	ND	ND	mg/l	NC		20
Cadmium, Total	ND	ND	mg/l	NC		20
Calcium, Total	44.1	43.5	mg/l	1		20
Chromium, Total	ND	ND	mg/l	NC		20
Cobalt, Total	ND	ND	mg/l	NC		20
Copper, Total	ND	ND	mg/l	NC		20
Iron, Total	0.588	0.585	mg/l	1		20
Lead, Total	ND	ND	mg/l	NC		20
Magnesium, Total	10.3	10.1	mg/l	2		20
Manganese, Total	0.712	0.708	mg/l	1		20
Nickel, Total	ND	ND	mg/l	NC		20
Potassium, Total	2.40J	2.41J	mg/l	NC		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Sodium, Total	81.3	81.0	mg/l	0		20

Project Name: HUDSON VALLEY REGIONAL AIRPORT

Project Number: 18.8090

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1932869

Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 08 QC Batch ID: WG1264989-4 QC Sample: L1932869-08 Client ID: OUTFALL-001-W					
Thallium, Total	ND	ND	mg/l	NC	20
Vanadium, Total	ND	ND	mg/l	NC	20
Zinc, Total	0.002J	ND	mg/l	NC	20

INORGANICS
&
MISCELLANEOUS

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1932869-08
Client ID: OUTFALL-001-W
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 07/23/19 15:45
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	0.003	J	mg/l	0.005	0.001	1	07/28/19 13:35	07/29/19 11:38	1,9010C/9012B	LH

Project Name: HUDSON VALLEY REGIONAL AIRPOF **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 08/07/19

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): 08 Batch: WG1265560-1										
Cyanide, Total	ND		mg/l	0.005	0.001	1	07/28/19 13:35	07/29/19 11:19	1,9010C/9012B	LH

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT

Lab Number: L1932869

Project Number: 18.8090

Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 08 Batch: WG1265560-2 WG1265560-3								
Cyanide, Total	100		100		85-115	0		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932869
Report Date: 08/07/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 08 QC Batch ID: WG1265560-4 WG1265560-5 QC Sample: L1933427-01 Client ID: MS Sample												
Cyanide, Total	0.002J	0.2	0.168	84		0.175	88		80-120	4		20

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(*)
L1932869-01A	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-01B	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-01C	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-01D	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-02A	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-02B	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-02C	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-02D	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-03A	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-03B	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-03C	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-03D	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-04A	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-05A	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-05B	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-05C	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-05D	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-06A	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-06B	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-06C	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-06D	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-07A	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-07B	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)

*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(*)
L1932869-07C	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-07D	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-08A	Vial HCl preserved	A	NA		5.4	Y	Absent		NYTCL-8260-R2(14)
L1932869-08B	Vial HCl preserved	A	NA		5.4	Y	Absent		NYTCL-8260-R2(14)
L1932869-08C	Vial HCl preserved	A	NA		5.4	Y	Absent		NYTCL-8260-R2(14)
L1932869-08D	Amber 120ml unpreserved	A	7	7	5.4	Y	Absent		NYTCL-8082-LVI(7)
L1932869-08E	Amber 120ml unpreserved	A	7	7	5.4	Y	Absent		NYTCL-8082-LVI(7)
L1932869-08F	Amber 120ml unpreserved	A	7	7	5.4	Y	Absent		NYTCL-8081(7)
L1932869-08G	Amber 120ml unpreserved	A	7	7	5.4	Y	Absent		NYTCL-8081(7)
L1932869-08H	Plastic 250ml NaOH preserved	A	>12	>12	5.4	Y	Absent		TCN-9010(14)
L1932869-08I	Plastic 250ml HNO3 preserved	A	<2	<2	5.4	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1932869-08J	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-08K	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1932869-08L	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-08M	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1932869-08N	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1932869-08O	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1932869-09A	Vial HCl preserved	A	NA		5.4	Y	Absent		NYTCL-8260-R2(14)
L1932869-09B	Vial HCl preserved	A	NA		5.4	Y	Absent		NYTCL-8260-R2(14)
L1932869-09C	Plastic 250ml Trizma preserved	A	NA		5.4	Y	Absent		HOLD-537(14)

*Values in parentheses indicate holding time in days

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

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.
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.

Footnotes

Report Format: DU Report with 'J' Qualifiers

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.

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. If a 'Total' result is requested, the results of its individual components will also be reported.

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 Condensation Product".

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.

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.

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:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

LIMITATION OF LIABILITIES

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
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; 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.**

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.

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
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: 7/25/19

ALPHA Job #: L1932869

Project Information
Project Name: Hudson Valley Regional Airport
Project Location: Wappingers Falls, NY
Project #: 18.8040
(Use Project name as Project #) ☐
Project Manager: Dave Lent
ALPHAQuote #:

Client Information
Client: CT Male Associates
Address: 12 Raymond Avenue, Poughkeepsie, NY 12603
Phone: 845-454-4400
Fax:
Email: d.lent@CTMale.com

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:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Send results to d.lent@CTMale.com

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	PFAS	1,4 Dioxane	TCL VOC	TCL SVOC	TCL PEST.	TCL PCB	TAL Metals + Hg	TCN	Sample Specific Comments	Total Bottles
32869-01	Outfall-007-W	07/23	~~1300~~ 1400	W	DM	X	X								4
02	Outfall-006-W	07/23	1415	W	DM	X	X								4
03	Outfall-003-W	07/23	1430	W	DM	X	X								4
04	Feild Blank	07/23	1440		DM	X									2
05	Outfall-002-W	07/23	1500	W	DM	X	X								4
06	Outfall-004-W	07/23	1510	W	DM	X	X								4
07	Outfall-005-W	07/23	1520	W	DM	X	X								4
08	Outfall-001-W	07/23	1545	W	DM	X	X	X	X	X	X	X	X		15
09	Trip Blank	07/23	1600	W	DM			X							2

	PFAS	1,4 Dioxane	TCL VOC	TCL SVOC	TCL PEST.	TCL PCB	TAL Metals + Hg	TCN
Container Type	P	A	G	A	A	A	P	P
Preservative	O	A	B	A	A	A	C	E

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
David Marz	07/24/19	[signature] AAL	7/24/19 1611
[signature]	7/24/19 1400	[signature]	7/25/19 01:10

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:	L1934423
Client:	C.T. Male Associates 50 Century Hill Drive Latham, NY 12210
ATTN:	Kirk Moline
Phone:	(518) 786-7400
Project Name:	HUDSON VALLEY REGIONAL AIRPORT
Project Number:	18.8090
Report Date:	08/16/19

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).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1934423
Report Date: 08/16/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1934423-01	HVRA-A-215-190731	WATER	WAPPINGERS FALLS	07/31/19 11:40	08/01/19
L1934423-02	HVRA-A-21R-190731	WATER	WAPPINGERS FALLS	07/31/19 11:45	08/01/19
L1934423-03	HVRA-LTB01-190731	WATER	WAPPINGERS FALLS	07/31/19 00:00	08/01/19
L1934423-04	HVRA-FTB01-190731	WATER	WAPPINGERS FALLS	07/31/19 12:15	08/01/19
L1934423-05	HVRA-A-21G-190731	WATER	WAPPINGERS FALLS	07/31/19 14:35	08/01/19
L1934423-06	HVRA-ME-18-190801	WATER	WAPPINGERS FALLS	08/01/19 10:10	08/01/19
L1934423-07	HVRA-MW-6-190801	WATER	WAPPINGERS FALLS	08/01/19 11:00	08/01/19
L1934423-08	HVRA-MW-4-190801	WATER	WAPPINGERS FALLS	08/01/19 13:15	08/01/19
L1934423-09	HVRA-MW-3-190801	WATER	WAPPINGERS FALLS	08/01/19 14:10	08/01/19

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: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

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.

Perfluorinated Alkyl Acids by Isotope Dilution

WG1271799-2: The continuing calibration standard had the response for Perfluoroctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

WG1271799-3: The continuing calibration standard had the response for Perfluoroctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

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: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 08/16/19

ORGANICS

SEMIVOLATILES

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423

Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-01	Date Collected:	07/31/19 11:40
Client ID:	HVRA-A-215-190731	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/05/19 15:15
Analytical Date:	08/06/19 21:47		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	144	32.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	34		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423

Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID: L1934423-01
Client ID: HVRA-A-215-190731
Sample Location: WAPPINGERS FALLS

Date Collected: 07/31/19 11:40
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/15/19 03:19
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	298		ng/l	50.0	10.2	1
Perfluoropentanoic Acid (PFPeA)	1350		ng/l	50.0	9.90	1
Perfluorobutanesulfonic Acid (PFBS)	56.1		ng/l	50.0	5.95	1
Perfluorohexanoic Acid (PFHxA)	777		ng/l	50.0	8.20	1
Perfluoroheptanoic Acid (PFHpA)	282		ng/l	50.0	5.63	1
Perfluorohexanesulfonic Acid (PFHxS)	814		ng/l	50.0	9.40	1
Perfluorooctanoic Acid (PFOA)	184		ng/l	50.0	5.90	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	6870		ng/l	50.0	33.3	1
Perfluoroheptanesulfonic Acid (PFHpS)	23.5	J	ng/l	50.0	17.2	1
Perfluorononanoic Acid (PFNA)	34.5	J	ng/l	50.0	7.80	1
Perfluorooctanesulfonic Acid (PFOS)	2200		ng/l	50.0	12.6	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	7.60	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	91.3		ng/l	50.0	30.3	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	50.0	16.2	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	6.50	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	24.5	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	50.0	14.5	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	50.0	20.1	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	9.30	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	8.18	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	6.20	1
PFOA/PFOS, Total	2380		ng/l	50.0	5.90	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-01	Date Collected:	07/31/19 11:40
Client ID:	HVRA-A-215-190731	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	130		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	76		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	106		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID: L1934423-02
Client ID: HVRA-A-21R-190731
Sample Location: WAPPINGERS FALLS

Date Collected: 07/31/19 11:45
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 08/06/19 22:14
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 08/05/19 15:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	30		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID: L1934423-02
Client ID: HVRA-A-21R-190731
Sample Location: WAPPINGERS FALLS

Date Collected: 07/31/19 11:45
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/15/19 03:36
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	235		ng/l	50.0	10.2	1
Perfluoropentanoic Acid (PFPeA)	1190		ng/l	50.0	9.90	1
Perfluorobutanesulfonic Acid (PFBS)	24.2	J	ng/l	50.0	5.95	1
Perfluorohexanoic Acid (PFHxA)	870		ng/l	50.0	8.20	1
Perfluoroheptanoic Acid (PFHpA)	276		ng/l	50.0	5.63	1
Perfluorohexanesulfonic Acid (PFHxS)	1410		ng/l	50.0	9.40	1
Perfluorooctanoic Acid (PFOA)	371		ng/l	50.0	5.90	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4980		ng/l	50.0	33.3	1
Perfluoroheptanesulfonic Acid (PFHpS)	83.7		ng/l	50.0	17.2	1
Perfluorononanoic Acid (PFNA)	39.7	J	ng/l	50.0	7.80	1
Perfluorooctanesulfonic Acid (PFOS)	3010		ng/l	50.0	12.6	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	7.60	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	117		ng/l	50.0	30.3	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	50.0	16.2	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	6.50	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	24.5	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	50.0	14.5	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	50.0	20.1	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	9.30	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	8.18	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	6.20	1
PFOA/PFOS, Total	3380		ng/l	50.0	5.90	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-02	Date Collected:	07/31/19 11:45
Client ID:	HVRA-A-21R-190731	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	104		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	76		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	95		33-143

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1934423
Project Number:	18.8090	**Report Date:**	08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-03	Date Collected:	07/31/19 00:00
Client ID:	HVRA-LTB01-190731	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/12/19 09:51
Analytical Date:	08/15/19 03:53		
Analyst:	RS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.84	0.375	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.84	0.364	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	0.219	1
Perfluorohexanoic Acid (PFHxA)	0.423	J	ng/l	1.84	0.301	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	0.207	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	0.346	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.84	0.217	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.632	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	0.287	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	0.463	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.279	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.596	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.239	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.901	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.533	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.739	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.342	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.301	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.228	1
PFOA/PFOS, Total	ND		ng/l	1.84	0.217	1

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1934423
Project Number:	18.8090	**Report Date:**	08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-03	Date Collected:	07/31/19 00:00
Client ID:	HVRA-LTB01-190731	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	95		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	54		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID: L1934423-04
Client ID: HVRA-FTB01-190731
Sample Location: WAPPINGERS FALLS

Date Collected: 07/31/19 12:15
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/15/19 04:10
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.86	0.379	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.86	0.368	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.86	0.221	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.86	0.305	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.86	0.209	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.86	0.349	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.86	0.219	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.86	0.639	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.86	0.290	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.86	0.468	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	0.282	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	1.13	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.602	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.242	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	0.911	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	0.539	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	0.747	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.346	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.304	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	0.230	1
PFOA/PFOS, Total	ND		ng/l	1.86	0.219	1

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1934423
Project Number:	18.8090	**Report Date:**	08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-04	Date Collected:	07/31/19 12:15
Client ID:	HVRA-FTB01-190731	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	125		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	136		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	104		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-05	Date Collected:	07/31/19 14:35
Client ID:	HVRA-A-21G-190731	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/05/19 15:15
Analytical Date:	08/06/19 22:41		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	30		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID: L1934423-05
Client ID: HVRA-A-21G-190731
Sample Location: WAPPINGERS FALLS

Date Collected: 07/31/19 14:35
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/15/19 04:27
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	387		ng/l	50.0	10.2	1
Perfluoropentanoic Acid (PFPeA)	1970		ng/l	50.0	9.90	1
Perfluorobutanesulfonic Acid (PFBS)	40.9	J	ng/l	50.0	5.95	1
Perfluorohexanoic Acid (PFHxA)	1360		ng/l	50.0	8.20	1
Perfluoroheptanoic Acid (PFHpA)	405		ng/l	50.0	5.63	1
Perfluorohexanesulfonic Acid (PFHxS)	1440		ng/l	50.0	9.40	1
Perfluorooctanoic Acid (PFOA)	500		ng/l	50.0	5.90	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	8150		ng/l	50.0	33.3	1
Perfluoroheptanesulfonic Acid (PFHpS)	102		ng/l	50.0	17.2	1
Perfluorononanoic Acid (PFNA)	61.9		ng/l	50.0	7.80	1
Perfluorooctanesulfonic Acid (PFOS)	3240		ng/l	50.0	12.6	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	50.0	7.60	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	152		ng/l	50.0	30.3	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	50.0	16.2	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	50.0	6.50	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	50.0	24.5	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	50.0	14.5	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	50.0	20.1	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	50.0	9.30	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	50.0	8.18	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	50.0	6.20	1
PFOA/PFOS, Total	3740		ng/l	50.0	5.90	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-05	Date Collected:	07/31/19 14:35
Client ID:	HVRA-A-21G-190731	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	98		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	74		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	63		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	79		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		33-143

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1934423
Project Number:	18.8090	**Report Date:**	08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-06	Date Collected:	08/01/19 10:10
Client ID:	HVRA-ME-18-190801	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/05/19 15:15
Analytical Date:	08/06/19 23:07		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	144	32.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	31		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423

Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-06	Date Collected:	08/01/19 10:10
Client ID:	HVRA-ME-18-190801	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/12/19 09:51
Analytical Date:	08/15/19 04:44		
Analyst:	RS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	59.7		ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	197		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	39.7		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	184		ng/l	10.0	1.64	1
Perfluoroheptanoic Acid (PFHpA)	84.9		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	959		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	77.5		ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	89.4		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	43.0		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	7.40	J	ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	2030		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	2.82	J	ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	8.76	J	ng/l	10.0	6.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1
PFOA/PFOS, Total	2110		ng/l	10.0	1.18	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-06	Date Collected:	08/01/19 10:10
Client ID:	HVRA-ME-18-190801	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	147		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	139		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	138		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID: L1934423-07
Client ID: HVRA-MW-6-190801
Sample Location: WAPPINGERS FALLS

Date Collected: 08/01/19 11:00
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 08/06/19 23:33
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 08/05/19 15:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	144	32.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	31		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423

Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-07	Date Collected:	08/01/19 11:00
Client ID:	HVRA-MW-6-190801	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/12/19 09:51
Analytical Date:	08/15/19 05:01		
Analyst:	RS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	35.5		ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	93.7		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	18.7		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	93.1		ng/l	10.0	1.64	1
Perfluoroheptanoic Acid (PFHpA)	45.9		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	511		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	47.7		ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	61.4		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	17.3		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	11.5		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	1320		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	4.14	J	ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	63.9		ng/l	10.0	6.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	8.62	J	ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1
PFOA/PFOS, Total	1370		ng/l	10.0	1.18	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-07	Date Collected:	08/01/19 11:00
Client ID:	HVRA-MW-6-190801	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	108		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	71		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	72		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1934423
Project Number: 18.8090
Report Date: 08/16/19

SAMPLE RESULTS

Lab ID: L1934423-08
Client ID: HVRA-MW-4-190801
Sample Location: WAPPINGERS FALLS
Date Collected: 08/01/19 13:15
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 08/07/19 00:00
Analyst: PS
Extraction Method: EPA 3510C
Extraction Date: 08/05/19 15:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	144	32.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	29		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423

Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID: L1934423-08
Client ID: HVRA-MW-4-190801
Sample Location: WAPPINGERS FALLS

Date Collected: 08/01/19 13:15
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/15/19 05:18
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	20.2		ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	58.2		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	20.8		ng/l	10.0	1.19	1
Perfluorohexanoic Acid (PFHxA)	98.0		ng/l	10.0	1.64	1
Perfluoroheptanoic Acid (PFHpA)	22.1		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	318		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	28.5		ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	147		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	21.7		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	3.60	J	ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	1420		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1
PFOA/PFOS, Total	1450		ng/l	10.0	1.18	1

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1934423
Project Number:	18.8090	**Report Date:**	08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-08	Date Collected:	08/01/19 13:15
Client ID:	HVRA-MW-4-190801	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	124		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	111		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	96		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	98		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	101		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-09	Date Collected:	08/01/19 14:10
Client ID:	HVRA-MW-3-190801	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/05/19 15:15
Analytical Date:	08/07/19 00:26		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	144	32.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	31		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423

Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID: L1934423-09
Client ID: HVRA-MW-3-190801
Sample Location: WAPPINGERS FALLS

Date Collected: 08/01/19 14:10
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/15/19 05:35
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.67		ng/l	1.82	0.372	1
Perfluoropentanoic Acid (PFPeA)	1.37	J	ng/l	1.82	0.361	1
Perfluorobutanesulfonic Acid (PFBS)	0.912	J	ng/l	1.82	0.217	1
Perfluorohexanoic Acid (PFHxA)	2.19		ng/l	1.82	0.299	1
Perfluoroheptanoic Acid (PFHpA)	0.555	J	ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	9.75		ng/l	1.82	0.343	1
Perfluorooctanoic Acid (PFOA)	0.777	J	ng/l	1.82	0.215	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.82	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.628	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.285	1
Perfluorooctanesulfonic Acid (PFOS)	12.3		ng/l	1.82	0.460	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.591	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.894	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.529	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.734	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.226	1
PFOA/PFOS, Total	13.1	J	ng/l	1.82	0.215	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

SAMPLE RESULTS

Lab ID: L1934423-09
Client ID: HVRA-MW-3-190801
Sample Location: WAPPINGERS FALLS
Date Collected: 08/01/19 14:10
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	132		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	90		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1934423
Project Number: 18.8090
Report Date: 08/16/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/06/19 15:28
Analyst: PS
Extraction Method: EPA 3510C
Extraction Date: 08/05/19 15:15

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 01-02,05-09 Batch: WG1268717-1					
1,4-Dioxane	ND		ng/l	150	33.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	23		15-110

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/14/19 22:30
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-09 Batch: WG1271287-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.472	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1934423
Project Number: 18.8090
Report Date: 08/16/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/14/19 22:30
Analyst: AJ
Extraction Method: EPA 537
Extraction Date: 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-09 Batch: WG1271287-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	80		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	74		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1934423
Project Number: 18.8090
Report Date: 08/16/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 01-02,05-09 Batch: WG1268717-2 WG1268717-3								
1,4-Dioxane	124		126		40-140	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	22		24		15-110

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1934423
Project Number: 18.8090
Report Date: 08/16/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-09 Batch: WG1271287-2 WG1271287-3								
Perfluorobutanoic Acid (PFBA)	106		108		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	106		108		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	113		112		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	110		109		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	107		110		58-159	3		30
Perfluorohexanesulfonic Acid (PFHxS)	128		115		69-177	11		30
Perfluorooctanoic Acid (PFOA)	109		119		63-159	9		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	132		112		49-187	16		30
Perfluoroheptanesulfonic Acid (PFHpS)	148		137		61-179	8		30
Perfluorononanoic Acid (PFNA)	110		106		68-171	4		30
Perfluorooctanesulfonic Acid (PFOS)	142		136		52-151	4		30
Perfluorodecanoic Acid (PFDA)	94		110		63-171	16		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	111		110		56-173	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	106		115		60-166	8		30
Perfluoroundecanoic Acid (PFUnA)	112		112		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	134		130		38-156	3		30
Perfluorooctanesulfonamide (FOSA)	103		112		46-170	8		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	80		104		45-170	26		30
Perfluorododecanoic Acid (PFDoA)	97		96		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	111		124		48-158	11		30
Perfluorotetradecanoic Acid (PFTA)	99		104		59-182	5		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT

Project Number: 18.8090

Lab Number: L1934423

Report Date: 08/16/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-09 Batch: WG1271287-2 WG1271287-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		84		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		92		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		96		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		84		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		82		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		76		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		105		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		83		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		78		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		79		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		89		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		68		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		76		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		63		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	107		81		33-143

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(*)
L1934423-01A	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-01B	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-01C	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-01D	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-02A	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-02B	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-02C	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-02D	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-03A	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-04A	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-05A	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-05B	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-05C	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-05D	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-06A	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-06B	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-06C	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-06D	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-07A	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-07B	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-07C	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-07D	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)

*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(*)
L1934423-08A	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-08B	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-08C	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-08D	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-09A	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-09B	Amber 250ml unpreserved	B	7	7	2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934423-09C	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934423-09D	2 Plastic/1 Plastic/1 H20 Plastic	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

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.
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.

Footnotes

Report Format: DU Report with 'J' Qualifiers

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.

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. If a 'Total' result is requested, the results of its individual components will also be reported.

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 Condensation Product".

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.

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.

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

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

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
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; 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.**

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.

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

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 1 of 1

Date Rec'd in Lab: 8/2/19

ALPHA Job #: L1934423

Project Information
Project Name: Hudson Valley Regional Airport
Project Location: Wappingers Falls
Project #: 18.8090
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information
Client: CT Male Associates
Address: 50 Century Hill Dr. Latham, NY
Phone: (518) 786-7400
Fax:
Email: K.moline@ctmale.com

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:

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	A2-537 (PFAS)	A2-1,4 Dioxane	Sample Specific Comments	Total Bottles
34423 -01	HVRA-A-215-190731	7/31/19	1140	Groundwater	CB	✓	✓		4
-02	HVRA-A-21R-190731	↓	1145	↓	DPM	✓	✓		4
-03	HVRA-LTB01-190731		—	Water	—	✓			1
-04	HVRA-FTB01-190731	↓	1215	↓	DPM	✓			1
-05	HVRA-A-216-190731	7/31/19	1435	Groundwater	DPM	✓	✓		4
-06	HURA-ME-18-190801	8/1/19	1010		CB	✓	✓		4
-07	HURA-MW-6-190801		1100		DPM	✓	✓		4
-08	HVRA-MW-4-190801		1315		CB	✓	✓		4
-09	HURA-MW-3-190801	↓	1410	↓	DPM	✓	✓		4

	A2-537 (PFAS)	A2-1,4 Dioxane
Container Type	P	A
Preservative	A/O	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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	8/1/19 1500	[signature]	8/1/19 1500
[signature]	8/1/19 1645	[signature] AAL	8/1/19 16:45
[signature]	8/1/19 18:30	[signature] AAC	8/1/19 2000
[signature] AAC	8/2/19 00:40	[signature]	8/2/19 00:40
[signature]	08/02/19 0550	[signature]	8/2/19 05:50

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:	L1934623
Client:	C.T. Male Associates 50 Century Hill Drive Latham, NY 12210
ATTN:	Kirk Moline
Phone:	(518) 786-7400
Project Name:	HVRA
Project Number:	18.8090
Report Date:	08/21/19

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: HVRA
Project Number: 18.8090

Lab Number: L1934623
Report Date: 08/21/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1934623-01	HVRA-BFL-3S-190801	WATER	WAPPINGERS FALLS	08/01/19 16:35	08/02/19
L1934623-02	HVRA-BFL2S-190801	WATER	WAPPINGERS FALLS	08/01/19 16:10	08/02/19
L1934623-03	HVRA-DLMW20-190802	WATER	WAPPINGERS FALLS	08/02/19 11:35	08/02/19
L1934623-04	HVRA-DL-MW-15-190802	WATER	WAPPINGERS FALLS	08/02/19 11:50	08/02/19
L1934623-05	HVRA-DLMW29-190802	WATER	WAPPINGERS FALLS	08/02/19 14:15	08/02/19
L1934623-06	HVRA-FTB01-190802	WATER	WAPPINGERS FALLS	08/02/19 14:30	08/02/19
L1934623-07	HVRA-LTB01-190802	WATER	WAPPINGERS FALLS	08/02/19 00:00	08/02/19

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

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:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

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

L1934623-02: The collection date and time on the chain of custody was 01-AUG-19 16:10; however, the collection date/time on the container label was 01-AUG-19 16:20. At the client's request, the collection date/time is reported as 01-AUG-19 16:10.

L1934623-03: The collection date and time on the chain of custody was 01-AUG-19 11:35; however, the collection date/time on the container label was 01-AUG-19 11:45. At the client's request, the collection date/time is reported as 02-AUG-19 11:35.

Semivolatile Organics by SIM

The WG1269717-1 Method Blank, associated with L1934623-01, -03, -04 and -05, has a concentration above the reporting limit for 2-Methylnaphthalene. Since the samples were non-detect to the RL for this target analyte, no further actions were taken. The results of the original analysis are reported.

The WG1269717-1 Method Blank, associated with L1934623-02, has a concentration above the reporting limits for 2-Methylnaphthalene. The sample was re-extracted with the method required holding time exceeded and both the sample and method blank were non-detect for this target compound. The results of both extractions are reported, along with the re-extract QC. The original sample result is reported with B qualifier.

Perfluorinated Alkyl Acids by Isotope Dilution

L1934623-03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1272733-1: The continuing calibration standard had the response for Perfluoroctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

Case Narrative (continued)

WG1272733-1 through -4: The continuing calibration standards had the response for HFPO-DA above the acceptance criteria for the method. The associated samples were non-detect; therefore, no further action was taken.

WG1272733-1 through -4: The continuing calibration standards had the response for M3HFPO-DA outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1273283-1: The continuing calibration standard had the response for Perfluorohexanesulfonic Acid-Branched (br-PFHxS), outside of acceptance criteria. The response for Perfluorohexanesulfonic Acid (PFHxS) was within acceptance criteria; therefore, no further action was taken.

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: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 08/21/19

ORGANICS

SEMIVOLATILES

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-01	Date Collected:	08/01/19 16:35
Client ID:	HVRA-BFL-3S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D	Extraction Date:	08/07/19 15:30
Analytical Date:	08/08/19 14:46		
Analyst:	SZ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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
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

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-01	Date Collected:	08/01/19 16:35
Client ID:	HVRA-BFL-3S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	63		21-120
Phenol-d6	50		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	86		15-120
2,4,6-Tribromophenol	68		10-120
4-Terphenyl-d14	89		41-149

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-01
Client ID: HVRA-BFL-3S-190801
Sample Location: WAPPINGERS FALLS

Date Collected: 08/01/19 16:35
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 08/07/19 20:36
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 08/06/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	635.		ng/l	139	31.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	28		15-110

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-01	Date Collected:	08/01/19 16:35
Client ID:	HVRA-BFL-3S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/07/19 15:30
Analytical Date:	08/10/19 21:10		
Analyst:	CB		

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	0.06	J	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	0.02	JB	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:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-01	Date Collected:	08/01/19 16:35
Client ID:	HVRA-BFL-3S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	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	54		21-120
Phenol-d6	43		10-120
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	77		15-120
2,4,6-Tribromophenol	90		10-120
4-Terphenyl-d14	80		41-149

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934623
Report Date: 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-01
Client ID: HVRA-BFL-3S-190801
Sample Location: WAPPINGERS FALLS

Date Collected: 08/01/19 16:35
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/16/19 01:01
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/14/19 08:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	13.6		ng/l	1.99	0.406	1
Perfluoropentanoic Acid (PFPeA)	11.2		ng/l	1.99	0.394	1
Perfluorobutanesulfonic Acid (PFBS)	2.31		ng/l	1.99	0.237	1
Perfluorohexanoic Acid (PFHxA)	13.2		ng/l	1.99	0.327	1
Perfluoroheptanoic Acid (PFHpA)	8.99		ng/l	1.99	0.224	1
Perfluorohexanesulfonic Acid (PFHxS)	7.76		ng/l	1.99	0.374	1
Perfluorooctanoic Acid (PFOA)	35.8		ng/l	1.99	0.235	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.99	1.33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.99	0.685	1
Perfluorononanoic Acid (PFNA)	0.916	J	ng/l	1.99	0.311	1
Perfluorooctanesulfonic Acid (PFOS)	21.4		ng/l	1.99	0.502	1
Perfluorodecanoic Acid (PFDA)	0.307	J	ng/l	1.99	0.303	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.99	1.21	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.793	J	ng/l	1.99	0.645	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.99	0.259	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.99	0.976	1
Perfluorooctanesulfonamide (FOSA)	0.741	J	ng/l	1.99	0.578	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.62	J	ng/l	1.99	0.801	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.99	0.370	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.99	0.326	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.99	0.247	1
PFOA/PFOS, Total	57.2		ng/l	1.99	0.235	1

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-01	Date Collected:	08/01/19 16:35
Client ID:	HVRA-BFL-3S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	127		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	88		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	24		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	58		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		33-143

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-02
Client ID: HVRA-BFL2S-190801
Sample Location: WAPPINGERS FALLS

Date Collected: 08/01/19 16:10
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 08/08/19 15:12
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/07/19 15:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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
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

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-02	Date Collected:	08/01/19 16:10
Client ID:	HVRA-BFL2S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	0.72	J	ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	54		21-120
Phenol-d6	43		10-120
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	73		15-120
2,4,6-Tribromophenol	60		10-120
4-Terphenyl-d14	78		41-149

Project Name: HVRA | **Lab Number:** L1934623
Project Number: 18.8090 | **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-02	Date Collected:	08/01/19 16:10
Client ID:	HVRA-BFL2S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/06/19 16:30
Analytical Date:	08/07/19 21:08		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	635.		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	30		15-110

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-02	Date Collected:	08/01/19 16:10
Client ID:	HVRA-BFL2S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/07/19 15:30
Analytical Date:	08/10/19 21:26		
Analyst:	CB		

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	0.05	J	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	0.04	J	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	0.17	B	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: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-02	Date Collected:	08/01/19 16:10
Client ID:	HVRA-BFL2S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	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	52		21-120
Phenol-d6	42		10-120
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	76		15-120
2,4,6-Tribromophenol	85		10-120
4-Terphenyl-d14	81		41-149

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-02	Date Collected:	08/01/19 16:10
Client ID:	HVRA-BFL2S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/14/19 08:35
Analytical Date:	08/16/19 01:17		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	9.43		ng/l	1.97	0.402	1
Perfluoropentanoic Acid (PFPeA)	10.8		ng/l	1.97	0.390	1
Perfluorobutanesulfonic Acid (PFBS)	7.11		ng/l	1.97	0.234	1
Perfluorohexanoic Acid (PFHxA)	58.2		ng/l	1.97	0.323	1
Perfluoroheptanoic Acid (PFHpA)	5.37		ng/l	1.97	0.222	1
Perfluorohexanesulfonic Acid (PFHxS)	663		ng/l	1.97	0.370	1
Perfluorooctanoic Acid (PFOA)	22.5		ng/l	1.97	0.232	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.97	1.31	1
Perfluoroheptanesulfonic Acid (PFHpS)	16.8		ng/l	1.97	0.677	1
Perfluorononanoic Acid (PFNA)	0.547	J	ng/l	1.97	0.307	1
Perfluorooctanesulfonic Acid (PFOS)	932		ng/l	1.97	0.496	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.97	0.299	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.97	1.19	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.97	0.638	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.97	0.256	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.97	0.964	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.97	0.571	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.97	0.791	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.97	0.366	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.97	0.322	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.97	0.244	1
PFOA/PFOS, Total	955		ng/l	1.97	0.232	1

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-02	Date Collected:	08/01/19 16:10
Client ID:	HVRA-BFL2S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	119		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	130		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	119		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	96		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		33-143

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-02 RE
Client ID: HVRA-BFL2S-190801
Sample Location: WAPPINGERS FALLS

Date Collected: 08/01/19 16:10
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 08/21/19 08:36
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/20/19 13:50

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	0.13		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	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:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-02 RE	Date Collected:	08/01/19 16:10
Client ID:	HVRA-BFL2S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	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	63		21-120
Phenol-d6	51		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	85		15-120
2,4,6-Tribromophenol	106		10-120
4-Terphenyl-d14	96		41-149

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-03	Date Collected:	08/02/19 11:35
Client ID:	HVRA-DLMW20-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D	Extraction Date:	08/07/19 15:30
Analytical Date:	08/08/19 15:37		
Analyst:	SZ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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
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

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-03	Date Collected:	08/02/19 11:35
Client ID:	HVRA-DLMW20-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	52		21-120
Phenol-d6	43		10-120
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	75		15-120
2,4,6-Tribromophenol	63		10-120
4-Terphenyl-d14	78		41-149

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-03	Date Collected:	08/02/19 11:35
Client ID:	HVRA-DLMW20-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/06/19 16:30
Analytical Date:	08/07/19 21:38		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	15400		ng/l	139	31.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	28		15-110

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-03
Client ID: HVRA-DLMW20-190802
Sample Location: WAPPINGERS FALLS
Date Collected: 08/02/19 11:35
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 08/10/19 21:43
Analyst: CB
Extraction Method: EPA 3510C
Extraction Date: 08/07/19 15:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	0.24		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	0.35		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	0.02	J	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	0.04	JB	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:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-03	Date Collected:	08/02/19 11:35
Client ID:	HVRA-DLMW20-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	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	53		21-120
Phenol-d6	43		10-120
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	74		15-120
2,4,6-Tribromophenol	90		10-120
4-Terphenyl-d14	79		41-149

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-03
Client ID: HVRA-DLMW20-190802
Sample Location: WAPPINGERS FALLS

Date Collected: 08/02/19 11:35
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/16/19 10:23
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/15/19 07:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	20.4		ng/l	2.05	0.418	1
Perfluoropentanoic Acid (PFPeA)	12.4		ng/l	2.05	0.406	1
Perfluorobutanesulfonic Acid (PFBS)	6.74		ng/l	2.05	0.244	1
Perfluorohexanoic Acid (PFHxA)	46.5		ng/l	2.05	0.336	1
Perfluoroheptanoic Acid (PFHpA)	19.8		ng/l	2.05	0.231	1
Perfluorohexanesulfonic Acid (PFHxS)	20.1		ng/l	2.05	0.385	1
Perfluorooctanoic Acid (PFOA)	76.6		ng/l	2.05	0.242	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.05	1.36	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.41		ng/l	2.05	0.705	1
Perfluorononanoic Acid (PFNA)	0.524	J	ng/l	2.05	0.320	1
Perfluorooctanesulfonic Acid (PFOS)	79.2		ng/l	2.05	0.516	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.05	0.311	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.05	1.24	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	13.5		ng/l	2.05	0.664	1
Perfluoroundecanoic Acid (PFUnA)	0.557	J	ng/l	2.05	0.266	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.05	1.00	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.05	0.594	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	7.32		ng/l	2.05	0.824	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.05	0.381	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.05	0.335	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.05	0.254	1
PFOA/PFOS, Total	156		ng/l	2.05	0.242	1

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-03	Date Collected:	08/02/19 11:35
Client ID:	HVRA-DLMW20-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**275**	Q	1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**209**	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		33-143

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-04	Date Collected:	08/02/19 11:50
Client ID:	HVRA-DL-MW-15-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D	Extraction Date:	08/07/19 15:30
Analytical Date:	08/08/19 16:03		
Analyst:	SZ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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
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

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-04	Date Collected:	08/02/19 11:50
Client ID:	HVRA-DL-MW-15-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	53		21-120
Phenol-d6	43		10-120
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	77		15-120
2,4,6-Tribromophenol	61		10-120
4-Terphenyl-d14	78		41-149

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-04	Date Collected:	08/02/19 11:50
Client ID:	HVRA-DL-MW-15-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/06/19 16:30
Analytical Date:	08/07/19 22:09		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	1920		ng/l	139	31.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	30		15-110

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-04	Date Collected:	08/02/19 11:50
Client ID:	HVRA-DL-MW-15-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/07/19 15:30
Analytical Date:	08/10/19 21:59		
Analyst:	CB		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	0.04	J	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:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-04	Date Collected:	08/02/19 11:50
Client ID:	HVRA-DL-MW-15-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	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	54		21-120
Phenol-d6	43		10-120
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	78		15-120
2,4,6-Tribromophenol	90		10-120
4-Terphenyl-d14	79		41-149

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-04	Date Collected:	08/02/19 11:50
Client ID:	HVRA-DL-MW-15-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 07:10
Analytical Date:	08/16/19 10:40		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	10.1		ng/l	1.82	0.371	1
Perfluoropentanoic Acid (PFPeA)	4.84		ng/l	1.82	0.360	1
Perfluorobutanesulfonic Acid (PFBS)	2.33		ng/l	1.82	0.216	1
Perfluorohexanoic Acid (PFHxA)	10.8		ng/l	1.82	0.298	1
Perfluoroheptanoic Acid (PFHpA)	5.79		ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	6.01		ng/l	1.82	0.342	1
Perfluorooctanoic Acid (PFOA)	31.1		ng/l	1.82	0.214	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.82	1.21	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.12	J	ng/l	1.82	0.625	1
Perfluorononanoic Acid (PFNA)	0.818	J	ng/l	1.82	0.284	1
Perfluorooctanesulfonic Acid (PFOS)	19.7		ng/l	1.82	0.458	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.276	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.589	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.236	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.891	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.527	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.847	J	ng/l	1.82	0.731	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.338	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.297	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.225	1
PFOA/PFOS, Total	50.8		ng/l	1.82	0.214	1

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-04	Date Collected:	08/02/19 11:50
Client ID:	HVRA-DL-MW-15-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	204		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	119		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	7		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		33-143

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-05
Client ID: HVRA-DLMW29-190802
Sample Location: WAPPINGERS FALLS

Date Collected: 08/02/19 14:15
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 08/08/19 16:29
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/07/19 15:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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
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

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-05	Date Collected:	08/02/19 14:15
Client ID:	HVRA-DLMW29-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	61		21-120
Phenol-d6	49		10-120
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	82		15-120
2,4,6-Tribromophenol	62		10-120
4-Terphenyl-d14	82		41-149

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-05
Client ID: HVRA-DLMW29-190802
Sample Location: WAPPINGERS FALLS

Date Collected: 08/02/19 14:15
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 08/08/19 13:50
Analyst: MA

Extraction Method: EPA 3510C
Extraction Date: 08/06/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	40		15-110

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-05	Date Collected:	08/02/19 14:15
Client ID:	HVRA-DLMW29-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/07/19 15:30
Analytical Date:	08/10/19 22:16		
Analyst:	CB		

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:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-05	Date Collected:	08/02/19 14:15
Client ID:	HVRA-DLMW29-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	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	50		21-120
Phenol-d6	44		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	84		15-120
2,4,6-Tribromophenol	66		10-120
4-Terphenyl-d14	90		41-149

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-05
Client ID: HVRA-DLMW29-190802
Sample Location: WAPPINGERS FALLS
Date Collected: 08/02/19 14:15
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/16/19 10:56
Analyst: JW
Extraction Method: EPA 537
Extraction Date: 08/15/19 07:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.01		ng/l	1.86	0.379	1
Perfluoropentanoic Acid (PFPeA)	3.81		ng/l	1.86	0.368	1
Perfluorobutanesulfonic Acid (PFBS)	1.53	J	ng/l	1.86	0.221	1
Perfluorohexanoic Acid (PFHxA)	5.75		ng/l	1.86	0.305	1
Perfluoroheptanoic Acid (PFHpA)	2.49		ng/l	1.86	0.209	1
Perfluorohexanesulfonic Acid (PFHxS)	1.54	J	ng/l	1.86	0.349	1
Perfluorooctanoic Acid (PFOA)	8.71		ng/l	1.86	0.219	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.86	0.639	1
Perfluorononanoic Acid (PFNA)	0.409	J	ng/l	1.86	0.290	1
Perfluorooctanesulfonic Acid (PFOS)	8.86		ng/l	1.86	0.468	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	0.282	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	1.13	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.602	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.242	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	0.911	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	0.539	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.01	J	ng/l	1.86	0.747	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.346	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.304	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	0.230	1
PFOA/PFOS, Total	17.6		ng/l	1.86	0.219	1

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-05	Date Collected:	08/02/19 14:15
Client ID:	HVRA-DLMW29-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	125		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	8		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		33-143

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-06	Date Collected:	08/02/19 14:30
Client ID:	HVRA-FTB01-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 07:10
Analytical Date:	08/16/19 11:13		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.84	0.376	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.84	0.365	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	0.220	1
Perfluorohexanoic Acid (PFHxA)	0.376	J	ng/l	1.84	0.302	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	0.347	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.84	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.635	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	0.288	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	0.465	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.280	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.598	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.240	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.904	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.535	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.742	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.343	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.302	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.229	1
PFOA/PFOS, Total	ND		ng/l	1.84	0.218	1

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-06	Date Collected:	08/02/19 14:30
Client ID:	HVRA-FTB01-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		33-143

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-07	Date Collected:	08/02/19 00:00
Client ID:	HVRA-LTB01-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/14/19 08:35
Analytical Date:	08/16/19 01:34		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.89	0.385	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.89	0.374	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.224	1
Perfluorohexanoic Acid (PFHxA)	0.389	J	ng/l	1.89	0.309	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	0.212	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.355	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.89	0.223	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.649	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	0.294	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.475	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	0.287	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.14	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.611	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.245	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.924	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.547	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.758	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.351	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.309	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.234	1
PFOA/PFOS, Total	ND		ng/l	1.89	0.223	1

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-07	Date Collected:	08/02/19 00:00
Client ID:	HVRA-LTB01-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	124		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	87		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		33-143

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/07/19 11:26
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 08/06/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 01-05 Batch: WG1269260-1					
1,4-Dioxane	ND		ng/l	150	33.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	27		15-110

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/08/19 10:05
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/07/19 15:30

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-05 Batch: WG1269707-1					
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
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
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
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
Isophorone	ND		ug/l	5.0	1.2
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
Dimethyl phthalate	ND		ug/l	5.0	1.8
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
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

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8270D	Extraction Method:	EPA 3510C
Analytical Date:	08/08/19 10:05	Extraction Date:	08/07/19 15:30
Analyst:	SZ		

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-05 Batch: WG1269707-1					
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
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
Phenol	ND		ug/l	5.0	0.57
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77
Carbazole	ND		ug/l	2.0	0.49
Atrazine	ND		ug/l	10	0.76
Benzaldehyde	ND		ug/l	5.0	0.53
Caprolactam	ND		ug/l	10	3.3
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		21-120
Phenol-d6	42		10-120
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	79		15-120
2,4,6-Tribromophenol	64		10-120
4-Terphenyl-d14	98		41-149

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/08/19 13:44
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 08/07/19 15:30

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-05 Batch: WG1269717-1					
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	0.03	J	ug/l	0.10	0.01
Phenanthrene	0.06	J	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	0.32		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:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8270D-SIM	Extraction Method:	EPA 3510C
Analytical Date:	08/08/19 13:44	Extraction Date:	08/07/19 15:30
Analyst:	DV		

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-05 Batch: WG1269717-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	53		21-120
Phenol-d6	43		10-120
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	78		15-120
2,4,6-Tribromophenol	102		10-120
4-Terphenyl-d14	101		41-149

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/15/19 13:25
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/14/19 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02,07 Batch: WG1272147-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.376	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/15/19 13:25
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/14/19 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02,07 Batch: WG1272147-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	80		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	91		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		33-143

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934623
Report Date: 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/16/19 12:19
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/15/19 07:10

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03-06 Batch: WG1272636-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/16/19 12:19
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/15/19 07:10

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03-06 Batch: WG1272636-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		33-143

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/20/19 16:16
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/20/19 07:02

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02 Batch: WG1274374-1					
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	0.03	J	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: HVRA
Project Number: 18.8090

Lab Number: L1934623
Report Date: 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/20/19 16:16
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/20/19 07:02

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02 Batch: WG1274374-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	74		21-120
Phenol-d6	62		10-120
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	96		15-120
2,4,6-Tribromophenol	92		10-120
4-Terphenyl-d14	99		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 01-05 Batch: WG1269260-2 WG1269260-3								
1,4-Dioxane	115		119		40-140	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	29		29		15-110

Lab Control Sample Analysis

Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934623
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05 Batch: WG1269707-2 WG1269707-3								
Bis(2-chloroethyl)ether	73		62		40-140	16		30
3,3'-Dichlorobenzidine	76		75		40-140	1		30
2,4-Dinitrotoluene	89		86		48-143	3		30
2,6-Dinitrotoluene	96		93		40-140	3		30
4-Chlorophenyl phenyl ether	87		83		40-140	5		30
4-Bromophenyl phenyl ether	91		88		40-140	3		30
Bis(2-chloroisopropyl)ether	84		74		40-140	13		30
Bis(2-chloroethoxy)methane	85		80		40-140	6		30
Hexachlorocyclopentadiene	72		64		40-140	12		30
Isophorone	84		80		40-140	5		30
Nitrobenzene	80		71		40-140	12		30
NDPA/DPA	93		92		40-140	1		30
n-Nitrosodi-n-propylamine	90		81		29-132	11		30
Bis(2-ethylhexyl)phthalate	97		97		40-140	0		30
Butyl benzyl phthalate	109		103		40-140	6		30
Di-n-butylphthalate	101		102		40-140	1		30
Di-n-octylphthalate	106		109		40-140	3		30
Diethyl phthalate	95		95		40-140	0		30
Dimethyl phthalate	102		99		40-140	3		30
Biphenyl	79		74		40-140	7		30
4-Chloroaniline	85		66		40-140	25		30
2-Nitroaniline	96		92		52-143	4		30
3-Nitroaniline	77		74		25-145	4		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05 Batch: WG1269707-2 WG1269707-3								
4-Nitroaniline	87		90		51-143	3		30
Dibenzofuran	80		78		40-140	3		30
1,2,4,5-Tetrachlorobenzene	75		67		2-134	11		30
Acetophenone	72		65		39-129	10		30
2,4,6-Trichlorophenol	94		89		30-130	5		30
p-Chloro-m-cresol	**98**	Q	92		23-97	6		30
2-Chlorophenol	75		66		27-123	13		30
2,4-Dichlorophenol	83		77		30-130	8		30
2,4-Dimethylphenol	71		72		30-130	1		30
2-Nitrophenol	85		75		30-130	13		30
4-Nitrophenol	**87**	Q	**82**	Q	10-80	6		30
2,4-Dinitrophenol	93		90		20-130	3		30
4,6-Dinitro-o-cresol	102		100		20-164	2		30
Phenol	58		53		12-110	9		30
3-Methylphenol/4-Methylphenol	82		75		30-130	9		30
2,4,5-Trichlorophenol	93		88		30-130	6		30
Carbazole	100		101		55-144	1		30
Atrazine	138		136		40-140	1		30
Benzaldehyde	72		60		40-140	18		30
Caprolactam	55		54		10-130	2		30
2,3,4,6-Tetrachlorophenol	87		86		40-140	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05 Batch: WG1269707-2 WG1269707-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	58		51		21-120
Phenol-d6	53		47		10-120
Nitrobenzene-d5	83		74		23-120
2-Fluorobiphenyl	87		79		15-120
2,4,6-Tribromophenol	82		79		10-120
4-Terphenyl-d14	105		103		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA | **Lab Number:** L1934623
Project Number: 18.8090 | **Report Date:** 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-05 Batch: WG1269717-2 WG1269717-3								
Acenaphthene	116		91		40-140	24		40
2-Chloronaphthalene	115		87		40-140	28		40
Fluoranthene	115		110		40-140	4		40
Hexachlorobutadiene	98		65		40-140	40		40
Naphthalene	112		77		40-140	37		40
Benzo(a)anthracene	116		109		40-140	6		40
Benzo(a)pyrene	121		113		40-140	7		40
Benzo(b)fluoranthene	116		112		40-140	4		40
Benzo(k)fluoranthene	119		114		40-140	4		40
Chrysene	113		105		40-140	7		40
Acenaphthylene	101		90		40-140	12		40
Anthracene	120		107		40-140	11		40
Benzo(ghi)perylene	128		116		40-140	10		40
Fluorene	118		98		40-140	19		40
Phenanthrene	116		104		40-140	11		40
Dibenzo(a,h)anthracene	133		122		40-140	9		40
Indeno(1,2,3-cd)pyrene	131		119		40-140	10		40
Pyrene	114		109		40-140	4		40
2-Methylnaphthalene	118		86		40-140	31		40
Pentachlorophenol	133		129		40-140	3		40
Hexachlorobenzene	123		105		40-140	16		40
Hexachloroethane	101		67		40-140	40		40

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-05 Batch: WG1269717-2 WG1269717-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	81		53		21-120
Phenol-d6	66		44		10-120
Nitrobenzene-d5	115		81		23-120
2-Fluorobiphenyl	105		80		15-120
2,4,6-Tribromophenol	**128**	Q	116		10-120
4-Terphenyl-d14	115		111		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02,07 Batch: WG1272147-2 WG1272147-3								
Perfluorobutanoic Acid (PFBA)	98		101		67-148	3		30
Perfluoropentanoic Acid (PFPeA)	96		100		63-161	4		30
Perfluorobutanesulfonic Acid (PFBS)	84		85		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	101		102		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	98		101		58-159	4		30
Perfluorohexanesulfonic Acid (PFHxS)	87		87		69-177	1		30
Perfluorooctanoic Acid (PFOA)	100		102		63-159	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	108		113		49-187	5		30
Perfluoroheptanesulfonic Acid (PFHpS)	98		94		61-179	3		30
Perfluorononanoic Acid (PFNA)	97		98		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	97		101		52-151	3		30
Perfluorodecanoic Acid (PFDA)	100		102		63-171	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	89		102		56-173	14		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	93		103		60-166	9		30
Perfluoroundecanoic Acid (PFUnA)	97		102		60-153	6		30
Perfluorodecanesulfonic Acid (PFDS)	98		97		38-156	0		30
Perfluorooctanesulfonamide (FOSA)	95		100		46-170	5		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	159		98		45-170	21		30
Perfluorododecanoic Acid (PFDoA)	102		104		67-153	2		30
Perfluorotridecanoic Acid (PFTrDA)	106		106		48-158	0		30
Perfluorotetradecanoic Acid (PFTA)	104		107		59-182	3		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02,07 Batch: WG1272147-2 WG1272147-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		112		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		90		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		86		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		90		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		94		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		94		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	80		68		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		100		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		88		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	90		70		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		74		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		83		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39		37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		74		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		76		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-06 Batch: WG1272636-2 WG1272636-3								
Perfluorobutanoic Acid (PFBA)	100		99		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	98		97		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	93		90		65-157	3		30
Perfluorohexanoic Acid (PFHxA)	102		102		69-168	0		30
Perfluoroheptanoic Acid (PFHpA)	102		102		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	105		103		69-177	2		30
Perfluorooctanoic Acid (PFOA)	102		102		63-159	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	109		107		49-187	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	109		106		61-179	3		30
Perfluorononanoic Acid (PFNA)	97		100		68-171	3		30
Perfluorooctanesulfonic Acid (PFOS)	109		106		52-151	3		30
Perfluorodecanoic Acid (PFDA)	102		101		63-171	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	83		100		56-173	19		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	110		100		60-166	10		30
Perfluoroundecanoic Acid (PFUnA)	100		98		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	103		103		38-156	0		30
Perfluorooctanesulfonamide (FOSA)	99		102		46-170	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	94		103		45-170	9		30
Perfluorododecanoic Acid (PFDoA)	101		106		67-153	5		30
Perfluorotridecanoic Acid (PFTrDA)	107		107		48-158	0		30
Perfluorotetradecanoic Acid (PFTA)	106		108		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-06 Batch: WG1272636-2 WG1272636-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		95		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		94		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		85		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		90		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		72		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		92		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		87		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		80		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		75		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		69		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		18		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71		65		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		74		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		78		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02 Batch: WG1274374-2 WG1274374-3								
Acenaphthene	95		88		40-140	8		40
2-Chloronaphthalene	92		87		40-140	6		40
Fluoranthene	101		94		40-140	7		40
Hexachlorobutadiene	89		84		40-140	6		40
Naphthalene	93		88		40-140	6		40
Benzo(a)anthracene	103		92		40-140	11		40
Benzo(a)pyrene	100		82		40-140	20		40
Benzo(b)fluoranthene	106		100		40-140	6		40
Benzo(k)fluoranthene	106		98		40-140	8		40
Chrysene	101		94		40-140	7		40
Acenaphthylene	92		88		40-140	4		40
Anthracene	101		92		40-140	9		40
Benzo(ghi)perylene	110		99		40-140	11		40
Fluorene	96		90		40-140	6		40
Phenanthrene	98		92		40-140	6		40
Dibenzo(a,h)anthracene	112		104		40-140	7		40
Indeno(1,2,3-cd)pyrene	107		100		40-140	7		40
Pyrene	102		91		40-140	11		40
2-Methylnaphthalene	93		87		40-140	7		40
Pentachlorophenol	89		79		40-140	12		40
Hexachlorobenzene	96		90		40-140	6		40
Hexachloroethane	86		81		40-140	6		40

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02 Batch: WG1274374-2 WG1274374-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	71		65		21-120
Phenol-d6	61		57		10-120
Nitrobenzene-d5	88		82		23-120
2-Fluorobiphenyl	86		82		15-120
2,4,6-Tribromophenol	79		77		10-120
4-Terphenyl-d14	93		88		41-149

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-06 QC Batch ID: WG1272636-4 QC Sample: L1934623-05 Client ID: HVRA-DLMW29-190802												
Perfluorobutanoic Acid (PFBA)	7.01	37.2	43.1	97		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	3.81	37.2	38.6	94		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	1.53J	32.9	31.6	96		-	-		65-157	-		30
Perfluorohexanoic Acid (PFHxA)	5.75	37.2	41.4	96		-	-		69-168	-		30
Perfluoroheptanoic Acid (PFHpA)	2.49	37.2	38.7	97		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	1.54J	33.9	37.2	110		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	8.71	37.2	45.2	98		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35.3	39.8	113		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.3	39.5	112		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.409J	37.2	37.0	100		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	8.86	34.4	48.8	116		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	37.2	38.2	103		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.7	37.6	105		-	-		56-173	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.2	39.9	107		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.2	38.2	103		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.9	38.7	108		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.2	34.6	93		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.01J	37.2	41.2	111		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.2	39.3	106		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	37.2	42.5	114		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.2	39.8	107		-	-		59-182	-		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934623
Report Date: 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-06 QC Batch ID: WG1272636-4 QC Sample: L1934623-05 Client ID: HVRA-DLMW29-190802

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	89				7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	123				1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68				23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71				1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75				40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75				38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77				21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72				30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98				47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75				24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83				33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114				16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	7				1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82				42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89				36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94				34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99				31-159

PCBS

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-01	Date Collected:	08/01/19 16:35
Client ID:	HVRA-BFL-3S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8082A	Extraction Date:	08/07/19 16:04
Analytical Date:	08/10/19 17:26	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	08/07/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	0.042	J	ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	0.042	J	ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	83		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		30-150	B
Decachlorobiphenyl	85		30-150	B

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-02	Date Collected:	08/01/19 16:10
Client ID:	HVRA-BFL2S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8082A	Extraction Date:	08/07/19 16:04
Analytical Date:	08/10/19 17:39	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	08/07/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	66		30-150	A
Decachlorobiphenyl	74		30-150	A
2,4,5,6-Tetrachloro-m-xylene	63		30-150	B
Decachlorobiphenyl	72		30-150	B

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-03	Date Collected:	08/02/19 11:35
Client ID:	HVRA-DLMW20-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8082A	Extraction Date:	08/07/19 16:04
Analytical Date:	08/10/19 17:53	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	08/07/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	80		30-150	A
2,4,5,6-Tetrachloro-m-xylene	71		30-150	B
Decachlorobiphenyl	78		30-150	B

Project Name: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-04
Client ID: HVRA-DL-MW-15-190802
Sample Location: WAPPINGERS FALLS

Date Collected: 08/02/19 11:50
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8082A
Analytical Date: 08/11/19 13:20
Analyst: HT

Extraction Method: EPA 3510C
Extraction Date: 08/07/19 16:04
Cleanup Method: EPA 3665A
Cleanup Date: 08/07/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	78		30-150	A
2,4,5,6-Tetrachloro-m-xylene	71		30-150	B
Decachlorobiphenyl	82		30-150	B

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-05
Client ID: HVRA-DLMW29-190802
Sample Location: WAPPINGERS FALLS

Date Collected: 08/02/19 14:15
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8082A
Analytical Date: 08/11/19 13:33
Analyst: HT

Extraction Method: EPA 3510C
Extraction Date: 08/07/19 16:04
Cleanup Method: EPA 3665A
Cleanup Date: 08/07/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	78		30-150	A
2,4,5,6-Tetrachloro-m-xylene	76		30-150	B
Decachlorobiphenyl	74		30-150	B

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934623
Report Date: 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/10/19 16:32
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 08/07/19 16:04
Cleanup Method: EPA 3665A
Cleanup Date: 08/07/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01-05 Batch: WG1269725-1						
Aroclor 1016	ND		ug/l	0.083	0.034	A
Aroclor 1221	ND		ug/l	0.083	0.067	A
Aroclor 1232	ND		ug/l	0.083	0.046	A
Aroclor 1242	ND		ug/l	0.083	0.039	A
Aroclor 1248	ND		ug/l	0.083	0.049	A
Aroclor 1254	ND		ug/l	0.083	0.039	A
Aroclor 1260	ND		ug/l	0.083	0.032	A
Aroclor 1262	ND		ug/l	0.083	0.035	A
Aroclor 1268	ND		ug/l	0.083	0.034	A
PCBs, Total	ND		ug/l	0.083	0.032	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	52		30-150	A
Decachlorobiphenyl	87		30-150	A
2,4,5,6-Tetrachloro-m-xylene	52		30-150	B
Decachlorobiphenyl	86		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01-05 Batch: WG1269725-2 WG1269725-3									
Aroclor 1016	77		76		40-140	1		50	A
Aroclor 1260	77		77		40-140	0		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	55		55		30-150	A
Decachlorobiphenyl	90		89		30-150	A
2,4,5,6-Tetrachloro-m-xylene	53		52		30-150	B
Decachlorobiphenyl	88		83		30-150	B

PESTICIDES

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934623-01
Client ID: HVRA-BFL-3S-190801
Sample Location: WAPPINGERS FALLS

Date Collected: 08/01/19 16:35
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 08/16/19 05:11
Analyst: SL

Extraction Method: EPA 3510C
Extraction Date: 08/07/19 19:35

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: HVRA **Lab Number:** L1934623

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-01	Date Collected:	08/01/19 16:35
Client ID:	HVRA-BFL-3S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	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	44		30-150	A
Decachlorobiphenyl	36		30-150	A
2,4,5,6-Tetrachloro-m-xylene	40		30-150	B
Decachlorobiphenyl	39		30-150	B

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-02	Date Collected:	08/01/19 16:10
Client ID:	HVRA-BFL2S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8081B	Extraction Date:	08/07/19 19:35
Analytical Date:	08/16/19 05:23		
Analyst:	SL		

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:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-02	Date Collected:	08/01/19 16:10
Client ID:	HVRA-BFL2S-190801	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	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	69		30-150	A
Decachlorobiphenyl	59		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	66		30-150	B

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-03	Date Collected:	08/02/19 11:35
Client ID:	HVRA-DLMW20-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8081B	Extraction Date:	08/07/19 19:35
Analytical Date:	08/16/19 05:36		
Analyst:	SL		

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: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-03	Date Collected:	08/02/19 11:35
Client ID:	HVRA-DLMW20-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	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	83		30-150	A
Decachlorobiphenyl	80		30-150	A
2,4,5,6-Tetrachloro-m-xylene	68		30-150	B
Decachlorobiphenyl	81		30-150	B

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-04	Date Collected:	08/02/19 11:50
Client ID:	HVRA-DL-MW-15-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8081B	Extraction Date:	08/07/19 19:35
Analytical Date:	08/16/19 05:48		
Analyst:	SL		

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: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-04	Date Collected:	08/02/19 11:50
Client ID:	HVRA-DL-MW-15-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	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	63		30-150	A
Decachlorobiphenyl	65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	58		30-150	B
Decachlorobiphenyl	72		30-150	B

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-05	Date Collected:	08/02/19 14:15
Client ID:	HVRA-DLMW29-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8081B	Extraction Date:	08/07/19 19:35
Analytical Date:	08/16/19 06:39		
Analyst:	AMC		

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:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934623-05	Date Collected:	08/02/19 14:15
Client ID:	HVRA-DLMW29-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	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	75		30-150	A
Decachlorobiphenyl	80		30-150	A
2,4,5,6-Tetrachloro-m-xylene	71		30-150	B
Decachlorobiphenyl	90		30-150	B

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934623
Report Date: 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/16/19 04:58
Analyst: SL

Extraction Method: EPA 3510C
Extraction Date: 08/07/19 19:35

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 01-05 Batch: WG1269788-1						
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: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/16/19 04:58
Analyst: SL

Extraction Method: EPA 3510C
Extraction Date: 08/07/19 19:35

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 01-05 Batch: WG1269788-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	76		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		30-150	B
Decachlorobiphenyl	86		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934623
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01-05 Batch: WG1269788-2 WG1269788-3									
Delta-BHC	78		80		30-150	2		20	A
Lindane	82		84		30-150	3		20	A
Alpha-BHC	82		83		30-150	2		20	A
Beta-BHC	82		84		30-150	2		20	A
Heptachlor	78		79		30-150	2		20	A
Aldrin	73		73		30-150	0		20	A
Heptachlor epoxide	84		86		30-150	3		20	A
Endrin	89		90		30-150	2		20	A
Endrin aldehyde	76		77		30-150	1		20	A
Endrin ketone	90		93		30-150	3		20	A
Dieldrin	86		88		30-150	2		20	A
4,4'-DDE	85		87		30-150	3		20	A
4,4'-DDD	92		94		30-150	2		20	A
4,4'-DDT	89		92		30-150	3		20	A
Endosulfan I	76		77		30-150	1		20	A
Endosulfan II	82		83		30-150	1		20	A
Endosulfan sulfate	78		80		30-150	3		20	A
Methoxychlor	85		96		30-150	12		20	A
cis-Chlordane	82		83		30-150	1		20	A
trans-Chlordane	79		81		30-150	2		20	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01-05 Batch: WG1269788-2 WG1269788-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	69		71		30-150	A
Decachlorobiphenyl	79		84		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		67		30-150	B
Decachlorobiphenyl	90		94		30-150	B

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1934623-01A	Amber 120ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8082-LVI(7)
L1934623-01B	Amber 120ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8082-LVI(7)
L1934623-01C	Amber 120ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8081(7)
L1934623-01D	Amber 120ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8081(7)
L1934623-01E	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934623-01F	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934623-01G	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1934623-01H	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1934623-01I	Plastic 250ml Trizma preserved	C	NA		3.3	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934623-01J	Plastic 250ml Trizma preserved	C	NA		3.3	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934623-02A	Amber 120ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8082-LVI(7)
L1934623-02B	Amber 120ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8082-LVI(7)
L1934623-02C	Amber 120ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8081(7)
L1934623-02D	Amber 120ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8081(7)
L1934623-02E	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934623-02F	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934623-02G	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1934623-02H	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1934623-02I	Plastic 250ml Trizma preserved	C	NA		3.3	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934623-02J	Plastic 250ml Trizma preserved	C	NA		3.3	Y	Absent		A2-NY-537-ISOTOPE(14)

*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(*)
L1934623-03A	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8082-LVI(7)
L1934623-03B	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8082-LVI(7)
L1934623-03C	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8081(7)
L1934623-03D	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8081(7)
L1934623-03E	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934623-03F	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934623-03G	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1934623-03H	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1934623-03I	Plastic 250ml Trizma preserved	D	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934623-03J	Plastic 250ml Trizma preserved	D	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934623-04A	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8082-LVI(7)
L1934623-04B	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8082-LVI(7)
L1934623-04C	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8081(7)
L1934623-04D	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8081(7)
L1934623-04E	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934623-04F	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934623-04G	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1934623-04H	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1934623-04I	Plastic 250ml Trizma preserved	D	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934623-04J	Plastic 250ml Trizma preserved	D	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934623-05A	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8082-LVI(7)
L1934623-05B	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8082-LVI(7)
L1934623-05C	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8081(7)
L1934623-05D	Amber 120ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8081(7)
L1934623-05E	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934623-05F	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1934623-05G	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1934623-05H	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)

*Values in parentheses indicate holding time in days

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934623
Report Date: 08/21/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1934623-05I	Plastic 250ml Trizma preserved	D	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934623-05J	Plastic 250ml Trizma preserved	D	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934623-06I	Plastic 250ml Trizma preserved	D	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934623-07I	Plastic 250ml Trizma preserved	D	NA		5.0	Y	Absent		A2-NY-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

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.
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.

Footnotes

Report Format: DU Report with 'J' Qualifiers

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.

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. If a 'Total' result is requested, the results of its individual components will also be reported.

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 using acetone as a solvent.

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.

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.

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.

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

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
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; 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.**

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.

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

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

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

Page 1 of 1

Date Rec'd in Lab: 8/2/19

ALPHA Job #: L1934623

Project Information
Project Name: HVRA
Project Location: Wappingers Falls
Project #: 18.8090
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
ALPHAQuote #:

Client Information
Client: CT Male Associates
Address: 50 Century Hill Dr. Latham, NY
Phone: (518) 786-7400
Fax:
Email: K.moline@ctmale.com

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:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
BFL = Balefill Landfill   FTB = Field Trip Blank   ★ On bottle labeled 190208 not 190802 ★
DL = Dutchess Landfill   LTB = Lab Trip Blank

Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ANALYSIS: A2-537 (PFAS) | NYTCL-8270-LVI | NYTCL-8081 | NYTCL-8082-LVI | A2-1,4Dioxane

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	A2-537 (PFAS)	NYTCL-8270-LVI	NYTCL-8081	NYTCL-8082-LVI	A2-1,4Dioxane				Sample Specific Comments	Total Bottles
34623-01	HVRA-BFL-~~MW~~-3S-190801	8/1/19	1635	Ground water	CB	✓	✓	✓	✓	✓				~~BFL-3~~ (CB)	10
02★	HVRA-BFL2S-190801	↓	1610		DM	✓	✓	✓	✓	✓					10
03	HVRA-DLMW20-190802	8/2/19	1135		DM	✓	✓	✓	✓	✓					10
04	HVRA-DL-MW-15-190802		1150		CB	✓	✓	✓	✓	✓					10
05	HVRA-DLMW29-190802		1415	↓	DM	✓	✓	✓	✓	✓					10
06	HVRA-FTB01-190802		1430	water	DM	✓	~~✓~~ (CB)								1
07	HVRA-LTB01-190802	↓	—	↓	—	✓									1

	A2-537 (PFAS)	NYTCL-8270-LVI	NYTCL-8081	NYTCL-8082-LVI	A2-1,4Dioxane
Container Type	P	A	A	A	A
Preservative	A/O	A	A	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

Relinquished By:	Date/Time	Received By:	Date/Time
Cliff Bund	8/2/19 1500	[signature] AAL	8-2-19 1600
[signature]	8-2-19 1900	PS. AAL	8/2/19 19:30
P.S.	8/2/19 23:00	[signature]	8/3/19 23:00

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:	L1934860
Client:	C.T. Male Associates 50 Century Hill Drive Latham, NY 12210
ATTN:	Kirk Moline
Phone:	(518) 786-7400
Project Name:	HVRA
Project Number:	18.8090
Report Date:	08/21/19

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:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1934860-01	HVRA-MW100-6.0	SOIL	WAPPINGER'S FALLS, NY	08/05/19 13:00	08/05/19
L1934860-02	HVRA-FTB01-191805	WATER	WAPPINGER'S FALLS, NY	08/05/19 13:40	08/05/19
L1934860-03	HVRA-LTB01-190805	WATER	WAPPINGER'S FALLS, NY	08/05/19 00:00	08/05/19
L1934860-04	HVRA-RB01-190805	WATER	WAPPINGER'S FALLS, NY	08/05/19 14:25	08/05/19
L1934860-05	HVRA-MW101-8.0	SOIL	WAPPINGER'S FALLS, NY	08/05/19 15:00	08/05/19

Project Name:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

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.

Case Narrative (continued)

Report Submission

August 21, 2019: This final report includes the results of all requested analyses.

August 14, 2019: This is a preliminary report.

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.

L1934860-05: The sample identified as "HVRA-MW101-8.5" on the chain of custody was identified as "HVRA-MW101-8.0" on the container label. At the client's request, the sample is reported as "HVRA-MW101-8.0".

Perfluorinated Alkyl Acids by Isotope Dilution

L1934860-01 and -05: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1271296-1: The continuing calibration standard had the response for 8:2FTS and PFDoS outside the acceptance criteria for the method. These values represent less than 10% of all compounds; therefore, the calibration was accepted.

WG1271296-3: The continuing calibration standard had the response for NEtFOSAA outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1273283-1: The continuing calibration standard had the response for Perfluorohexanesulfonic Acid-Branched (br-PFHxS), outside of acceptance criteria. The response for Perfluorohexanesulfonic Acid (PFHxS) was within acceptance criteria; therefore, no further action was taken.

WG1273283-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Project Name:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

Case Narrative (continued)

The WG1270274-4/-5 MS/MSD recoveries, performed on L1934860-01, are outside the acceptance criteria for perfluorooctanesulfonamide (fosa) (51%/51%).
WG1270274-4 and WG1270274-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Total Metals
L1934860-01 and -05: 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 WG1270290-3/-4 MS/MSD recoveries, performed on L1934860-01, are outside the acceptance criteria for cadmium (MS at 73%), chromium (55%/65%) and copper (0%/0%). A post digestion spike was performed and was within acceptance criteria.
The WG1270290-3/-4 MS/MSD recoveries, performed on L1934860-01, are outside the acceptance criteria for lead (64%/190%) and zinc (43%/153%). A post digestion spike was performed and yielded unacceptable recoveries for lead (78%) and zinc (79%). The serial dilution recovery was acceptable; therefore, the matrix test passed for the sample matrix.
The WG1270290-3/-4 MS/MSD recoveries for aluminum (42%/1110%), calcium (1030%/351%), iron (0%/ 0%), magnesium (622%/283%) and manganese (0%/1520%), performed on L1934860-01, do not apply because the sample concentrations are greater than four times the spike amounts added.
The WG1270290-3/-4 MS/MSD RPDs for calcium (60%), lead (43%), magnesium (31%), manganese (77%) and zinc (26%), performed on L1934860-01, are above the acceptance criteria.
The WG1270413-3 MS recovery, performed on L1934860-01, is outside the acceptance criteria for mercury (74%). A post digestion spike was performed and was within acceptance criteria.

Cyanide, Total
The WG1269984-2/-3 LCS/LCSD recoveries (58%/62%), associated with L1934860-01 and -05, are outside our in-house acceptance criteria, but within the vendor-certified acceptance limits. The results of the original analyses are 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: Cristin Walker Cristin Walker

Title: Technical Director/Representative Date: 08/21/19

ORGANICS

VOLATILES

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-01	Date Collected:	08/05/19 13:00
Client ID:	HVRA-MW100-6.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 08/10/19 16:13
Analyst: MV
Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.9	2.2	1
1,1-Dichloroethane	ND		ug/kg	0.97	0.14	1
Chloroform	ND		ug/kg	1.5	0.14	1
Carbon tetrachloride	ND		ug/kg	0.97	0.22	1
1,2-Dichloropropane	ND		ug/kg	0.97	0.12	1
Dibromochloromethane	ND		ug/kg	0.97	0.14	1
1,1,2-Trichloroethane	ND		ug/kg	0.97	0.26	1
Tetrachloroethene	ND		ug/kg	0.49	0.19	1
Chlorobenzene	ND		ug/kg	0.49	0.12	1
Trichlorofluoromethane	ND		ug/kg	3.9	0.68	1
1,2-Dichloroethane	ND		ug/kg	0.97	0.25	1
1,1,1-Trichloroethane	ND		ug/kg	0.49	0.16	1
Bromodichloromethane	ND		ug/kg	0.49	0.11	1
trans-1,3-Dichloropropene	ND		ug/kg	0.97	0.26	1
cis-1,3-Dichloropropene	ND		ug/kg	0.49	0.15	1
Bromoform	ND		ug/kg	3.9	0.24	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.49	0.16	1
Benzene	ND		ug/kg	0.49	0.16	1
Toluene	ND		ug/kg	0.97	0.53	1
Ethylbenzene	ND		ug/kg	0.97	0.14	1
Chloromethane	ND		ug/kg	3.9	0.91	1
Bromomethane	ND		ug/kg	1.9	0.57	1
Vinyl chloride	ND		ug/kg	0.97	0.33	1
Chloroethane	ND		ug/kg	1.9	0.44	1
1,1-Dichloroethene	ND		ug/kg	0.97	0.23	1
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.13	1
Trichloroethene	ND		ug/kg	0.49	0.13	1
1,2-Dichlorobenzene	ND		ug/kg	1.9	0.14	1

Project Name:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-01	Date Collected:	08/05/19 13:00
Client ID:	HVRA-MW100-6.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	1.9	0.14	1
1,4-Dichlorobenzene	ND		ug/kg	1.9	0.17	1
Methyl tert butyl ether	ND		ug/kg	1.9	0.20	1
p/m-Xylene	ND		ug/kg	1.9	0.54	1
o-Xylene	ND		ug/kg	0.97	0.28	1
cis-1,2-Dichloroethene	ND		ug/kg	0.97	0.17	1
Styrene	ND		ug/kg	0.97	0.19	1
Dichlorodifluoromethane	ND		ug/kg	9.7	0.89	1
Acetone	8.2	J	ug/kg	9.7	4.7	1
Carbon disulfide	ND		ug/kg	9.7	4.4	1
2-Butanone	ND		ug/kg	9.7	2.2	1
4-Methyl-2-pentanone	ND		ug/kg	9.7	1.2	1
2-Hexanone	ND		ug/kg	9.7	1.1	1
Bromochloromethane	ND		ug/kg	1.9	0.20	1
1,2-Dibromoethane	ND		ug/kg	0.97	0.27	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.9	0.97	1
Isopropylbenzene	ND		ug/kg	0.97	0.11	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.9	0.31	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.9	0.26	1
Methyl Acetate	ND		ug/kg	3.9	0.92	1
Cyclohexane	ND		ug/kg	9.7	0.53	1
1,4-Dioxane	ND		ug/kg	78	34.	1
Freon-113	ND		ug/kg	3.9	0.68	1
Methyl cyclohexane	ND		ug/kg	3.9	0.59	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	103		70-130

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/10/19 08:51
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1271219-5					
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
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
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/10/19 08:51
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1271219-5					
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
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
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
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Isopropylbenzene	ND		ug/kg	1.0	0.11
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
Methyl Acetate	ND		ug/kg	4.0	0.95
Cyclohexane	ND		ug/kg	10	0.54
1,4-Dioxane	ND		ug/kg	80	35.
Freon-113	ND		ug/kg	4.0	0.69
Methyl cyclohexane	ND		ug/kg	4.0	0.60

Project Name:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/10/19 08:51
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1271219-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	103		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

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: WG1271219-3 WG1271219-4								
Methylene chloride	114		112		70-130	2		30
1,1-Dichloroethane	108		107		70-130	1		30
Chloroform	110		110		70-130	0		30
Carbon tetrachloride	100		100		70-130	0		30
1,2-Dichloropropane	110		110		70-130	0		30
Dibromochloromethane	83		84		70-130	1		30
1,1,2-Trichloroethane	90		90		70-130	0		30
Tetrachloroethene	86		84		70-130	2		30
Chlorobenzene	90		90		70-130	0		30
Trichlorofluoromethane	102		100		70-139	2		30
1,2-Dichloroethane	103		104		70-130	1		30
1,1,1-Trichloroethane	108		106		70-130	2		30
Bromodichloromethane	108		109		70-130	1		30
trans-1,3-Dichloropropene	86		85		70-130	1		30
cis-1,3-Dichloropropene	109		110		70-130	1		30
Bromoform	73		74		70-130	1		30
1,1,2,2-Tetrachloroethane	83		83		70-130	0		30
Benzene	110		110		70-130	0		30
Toluene	88		86		70-130	2		30
Ethylbenzene	92		91		70-130	1		30
Chloromethane	83		82		52-130	1		30
Bromomethane	118		114		57-147	3		30
Vinyl chloride	92		91		67-130	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

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: WG1271219-3 WG1271219-4								
Chloroethane	105		104		50-151	1		30
1,1-Dichloroethene	108		105		65-135	3		30
trans-1,2-Dichloroethene	108		109		70-130	1		30
Trichloroethene	110		109		70-130	1		30
1,2-Dichlorobenzene	80		80		70-130	0		30
1,3-Dichlorobenzene	82		80		70-130	2		30
1,4-Dichlorobenzene	81		80		70-130	1		30
Methyl tert butyl ether	107		111		66-130	4		30
p/m-Xylene	90		89		70-130	1		30
o-Xylene	91		90		70-130	1		30
cis-1,2-Dichloroethene	108		109		70-130	1		30
Styrene	91		91		70-130	0		30
Dichlorodifluoromethane	69		69		30-146	0		30
Acetone	71		66		54-140	7		30
Carbon disulfide	91		91		59-130	0		30
2-Butanone	97		101		70-130	4		30
4-Methyl-2-pentanone	84		86		70-130	2		30
2-Hexanone	82		85		70-130	4		30
Bromochloromethane	104		106		70-130	2		30
1,2-Dibromoethane	85		86		70-130	1		30
1,2-Dibromo-3-chloropropane	70		73		68-130	4		30
Isopropylbenzene	86		84		70-130	2		30
1,2,3-Trichlorobenzene	80		82		70-130	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

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: WG1271219-3 WG1271219-4								
1,2,4-Trichlorobenzene	83		82		70-130	1		30
Methyl Acetate	93		94		51-146	1		30
Cyclohexane	101		100		59-142	1		30
1,4-Dioxane	98		100		65-136	2		30
Freon-113	102		103		50-139	1		30
Methyl cyclohexane	106		104		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		95		70-130
Toluene-d8	91		90		70-130
4-Bromofluorobenzene	103		103		70-130
Dibromofluoromethane	101		101		70-130

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1271219-6 WG1271219-7 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Methylene chloride	ND	87.9	79	90		100	106		70-130	23		30
1,1-Dichloroethane	ND	87.9	86	98		110	115		70-130	23		30
Chloroform	ND	87.9	82	93		100	110		70-130	24		30
Carbon tetrachloride	ND	87.9	80	91		100	107		70-130	23		30
1,2-Dichloropropane	ND	87.9	79	89		100	107		70-130	25		30
Dibromochloromethane	ND	87.9	51	**58**	Q	69	74		70-130	**31**	Q	30
1,1,2-Trichloroethane	ND	87.9	56	**63**	Q	75	80		70-130	30		30
Tetrachloroethene	ND	87.9	42	**47**	Q	58	**62**	Q	70-130	**33**	Q	30
Chlorobenzene	ND	87.9	38	**44**	Q	54	**57**	Q	70-130	**34**	Q	30
Trichlorofluoromethane	ND	87.9	90	102		110	117		70-139	20		30
1,2-Dichloroethane	ND	87.9	71	81		91	97		70-130	25		30
1,1,1-Trichloroethane	ND	87.9	86	98		110	115		70-130	22		30
Bromodichloromethane	ND	87.9	75	85		97	103		70-130	26		30
trans-1,3-Dichloropropene	ND	87.9	45	**51**	Q	61	**65**	Q	70-130	**31**	Q	30
cis-1,3-Dichloropropene	ND	87.9	66	75		86	91		70-130	27		30
Bromoform	ND	87.9	40	**46**	Q	60	**63**	Q	70-130	**40**	Q	30
1,1,2,2-Tetrachloroethane	ND	87.9	44	**50**	Q	65	**69**	Q	70-130	**38**	Q	30
Benzene	ND	87.9	79	90		100	106		70-130	23		30
Toluene	ND	87.9	49	**56**	Q	66	70		70-130	30		30
Ethylbenzene	ND	87.9	40	**45**	Q	57	**60**	Q	70-130	**35**	Q	30
Chloromethane	ND	87.9	70	80		91	96		52-130	25		30
Bromomethane	ND	87.9	94	107		120	128		57-147	25		30
Vinyl chloride	ND	87.9	85	96		100	108		67-130	19		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1271219-6 WG1271219-7 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Chloroethane	ND	87.9	89	101		110	117		50-151	21		30
1,1-Dichloroethene	ND	87.9	89	102		110	118		65-135	22		30
trans-1,2-Dichloroethene	ND	87.9	79	90		99	105		70-130	22		30
Trichloroethene	ND	87.9	70	79		89	95		70-130	24		30
1,2-Dichlorobenzene	ND	87.9	20	**23**	Q	35	**37**	Q	70-130	**55**	Q	30
1,3-Dichlorobenzene	ND	87.9	19	**22**	Q	33	**35**	Q	70-130	**55**	Q	30
1,4-Dichlorobenzene	ND	87.9	18	**20**	Q	31	**33**	Q	70-130	**55**	Q	30
Methyl tert butyl ether	ND	87.9	81	92		110	112		66-130	26		30
p/m-Xylene	ND	176	71	**41**	Q	100	**55**	Q	70-130	**37**	Q	30
o-Xylene	ND	176	76	**43**	Q	110	**58**	Q	70-130	**36**	Q	30
cis-1,2-Dichloroethene	ND	87.9	77	88		97	103		70-130	23		30
Styrene	ND	176	67	**38**	Q	97	**51**	Q	70-130	**37**	Q	30
Dichlorodifluoromethane	ND	87.9	63	72		79	84		30-146	22		30
Acetone	8.2J	87.9	67	76		99	105		54-140	**38**	Q	30
Carbon disulfide	ND	87.9	77	88		97	103		59-130	22		30
2-Butanone	ND	87.9	65	74		81	86		70-130	22		30
4-Methyl-2-pentanone	ND	87.9	55	**62**	Q	74	79		70-130	30		30
2-Hexanone	ND	87.9	51	**58**	Q	68	72		70-130	29		30
Bromochloromethane	ND	87.9	72	82		92	98		70-130	24		30
1,2-Dibromoethane	ND	87.9	48	**54**	Q	64	**68**	Q	70-130	30		30
1,2-Dibromo-3-chloropropane	ND	87.9	34	**39**	Q	51	**54**	Q	68-130	**39**	Q	30
Isopropylbenzene	ND	87.9	32	**36**	Q	52	**55**	Q	70-130	**48**	Q	30
1,2,3-Trichlorobenzene	ND	87.9	11	**12**	Q	22	**23**	Q	70-130	**69**	Q	30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1271219-6 WG1271219-7 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
1,2,4-Trichlorobenzene	ND	87.9	11	**12**	Q	22	**23**	Q	70-130	**67**	Q	30
Methyl Acetate	ND	87.9	100	118		140	**150**	Q	51-146	30		30
Cyclohexane	ND	87.9	82	93		100	110		59-142	24		30
1,4-Dioxane	ND	4400	4100	94		4900	103		65-136	16		30
Freon-113	ND	87.9	90	102		110	117		50-139	20		30
Methyl cyclohexane	ND	87.9	75	85		100	107		70-130	30		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		93		70-130
4-Bromofluorobenzene	103		109		70-130
Dibromofluoromethane	104		103		70-130
Toluene-d8	90		93		70-130

SEMIVOLATILES

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934860-01
Client ID: HVRA-MW100-6.0
Sample Location: WAPPINGER'S FALLS, NY

Date Collected: 08/05/19 13:00
Date Received: 08/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 08/12/19 17:47
Analyst: IM
Percent Solids: 94%

Extraction Method: EPA 3546
Extraction Date: 08/11/19 09:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	140	18.	1
Hexachlorobenzene	ND		ug/kg	100	20.	1
Bis(2-chloroethyl)ether	ND		ug/kg	160	24.	1
2-Chloronaphthalene	ND		ug/kg	180	17.	1
3,3'-Dichlorobenzidine	ND		ug/kg	180	47.	1
2,4-Dinitrotoluene	ND		ug/kg	180	35.	1
2,6-Dinitrotoluene	ND		ug/kg	180	30.	1
Fluoranthene	130		ug/kg	100	20.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	19.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	27.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	210	30.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	190	18.	1
Hexachlorobutadiene	ND		ug/kg	180	26.	1
Hexachlorocyclopentadiene	ND		ug/kg	500	160	1
Hexachloroethane	ND		ug/kg	140	28.	1
Isophorone	ND		ug/kg	160	23.	1
Naphthalene	ND		ug/kg	180	21.	1
Nitrobenzene	ND		ug/kg	160	26.	1
NDPA/DPA	ND		ug/kg	140	20.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	27.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	61.	1
Butyl benzyl phthalate	ND		ug/kg	180	44.	1
Di-n-butylphthalate	ND		ug/kg	180	33.	1
Di-n-octylphthalate	ND		ug/kg	180	60.	1
Diethyl phthalate	ND		ug/kg	180	16.	1
Dimethyl phthalate	ND		ug/kg	180	37.	1
Benzo(a)anthracene	69	J	ug/kg	100	20.	1
Benzo(a)pyrene	53	J	ug/kg	140	43.	1

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-01	Date Collected:	08/05/19 13:00
Client ID:	HVRA-MW100-6.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	97	J	ug/kg	100	30.	1
Benzo(k)fluoranthene	28	J	ug/kg	100	28.	1
Chrysene	76	J	ug/kg	100	18.	1
Acenaphthylene	ND		ug/kg	140	27.	1
Anthracene	ND		ug/kg	100	34.	1
Benzo(ghi)perylene	56	J	ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	17.	1
Phenanthrene	46	J	ug/kg	100	21.	1
Dibenzo(a,h)anthracene	ND		ug/kg	100	20.	1
Indeno(1,2,3-cd)pyrene	55	J	ug/kg	140	24.	1
Pyrene	120		ug/kg	100	18.	1
Biphenyl	ND		ug/kg	400	41.	1
4-Chloroaniline	ND		ug/kg	180	32.	1
2-Nitroaniline	ND		ug/kg	180	34.	1
3-Nitroaniline	ND		ug/kg	180	33.	1
4-Nitroaniline	ND		ug/kg	180	73.	1
Dibenzofuran	ND		ug/kg	180	17.	1
2-Methylnaphthalene	ND		ug/kg	210	21.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	18.	1
Acetophenone	ND		ug/kg	180	22.	1
2,4,6-Trichlorophenol	ND		ug/kg	100	33.	1
p-Chloro-m-cresol	ND		ug/kg	180	26.	1
2-Chlorophenol	ND		ug/kg	180	21.	1
2,4-Dichlorophenol	ND		ug/kg	160	28.	1
2,4-Dimethylphenol	ND		ug/kg	180	58.	1
2-Nitrophenol	ND		ug/kg	380	66.	1
4-Nitrophenol	ND		ug/kg	250	72.	1
2,4-Dinitrophenol	ND		ug/kg	840	82.	1
4,6-Dinitro-o-cresol	ND		ug/kg	460	84.	1
Pentachlorophenol	ND		ug/kg	140	39.	1
Phenol	ND		ug/kg	180	27.	1
2-Methylphenol	ND		ug/kg	180	27.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	250	28.	1
2,4,5-Trichlorophenol	ND		ug/kg	180	34.	1
Carbazole	ND		ug/kg	180	17.	1
Atrazine	ND		ug/kg	140	62.	1
Benzaldehyde	ND		ug/kg	230	48.	1

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-01	Date Collected:	08/05/19 13:00
Client ID:	HVRA-MW100-6.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	180	54.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	180	36.	1
1,4-Dioxane	ND		ug/kg	26	8.1	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	77		25-120
Phenol-d6	82		10-120
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	81		30-120
2,4,6-Tribromophenol	85		10-136
4-Terphenyl-d14	71		18-120

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-01	Date Collected:	08/05/19 13:00
Client ID:	HVRA-MW100-6.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/09/19 00:15
Analytical Date:	08/14/19 10:43		
Analyst:	JW		
Percent Solids:	94%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.138	J	ug/kg	0.956	0.022	1
Perfluoropentanoic Acid (PFPeA)	0.416	J	ug/kg	0.956	0.044	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	0.956	0.037	1
Perfluorohexanoic Acid (PFHxA)	0.442	J	ug/kg	0.956	0.050	1
Perfluoroheptanoic Acid (PFHpA)	0.275	J	ug/kg	0.956	0.043	1
Perfluorohexanesulfonic Acid (PFHxS)	1.64		ug/kg	0.956	0.058	1
Perfluorooctanoic Acid (PFOA)	0.287	J	ug/kg	0.956	0.040	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	0.956	0.172	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.143	J	ug/kg	0.956	0.130	1
Perfluorononanoic Acid (PFNA)	0.182	J	ug/kg	0.956	0.072	1
Perfluorooctanesulfonic Acid (PFOS)	36.8		ug/kg	0.956	0.124	1
Perfluorodecanoic Acid (PFDA)	0.164	J	ug/kg	0.956	0.064	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	0.956	0.274	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	0.956	0.193	1
Perfluoroundecanoic Acid (PFUnA)	0.088	J	ug/kg	0.956	0.045	1
Perfluorodecanesulfonic Acid (PFDS)	0.190	J	ug/kg	0.956	0.146	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	0.956	0.094	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	0.956	0.081	1
Perfluorododecanoic Acid (PFDoA)	0.124	J	ug/kg	0.956	0.067	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	0.956	0.196	1
Perfluorotetradecanoic Acid (PFTA)	0.074	J	ug/kg	0.956	0.052	1
PFOA/PFOS, Total	37.1	J	ug/kg	0.956	0.040	1

Project Name:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-01	Date Collected:	08/05/19 13:00
Client ID:	HVRA-MW100-6.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**43**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	45		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	54		26-160

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-02	Date Collected:	08/05/19 13:40
Client ID:	HVRA-FTB01-191805	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 07:11
Analytical Date:	08/16/19 16:24		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.99	0.406	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.99	0.394	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.99	0.237	1
Perfluorohexanoic Acid (PFHxA)	0.370	J	ng/l	1.99	0.327	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.99	0.224	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.99	0.374	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.99	0.235	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.99	1.33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.99	0.685	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.99	0.311	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.99	0.502	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.99	0.303	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.99	1.21	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.99	0.645	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.99	0.259	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.99	0.976	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.99	0.578	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.99	0.801	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.99	0.370	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.99	0.326	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.99	0.247	1
PFOA/PFOS, Total	ND		ng/l	1.99	0.235	1

Project Name:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-02	Date Collected:	08/05/19 13:40
Client ID:	HVRA-FTB01-191805	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	79		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	75		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	8		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	62		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		33-143

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-03	Date Collected:	08/05/19 00:00
Client ID:	HVRA-LTB01-190805	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 07:11
Analytical Date:	08/16/19 16:41		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.84	0.376	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.84	0.365	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	0.220	1
Perfluorohexanoic Acid (PFHxA)	0.321	J	ng/l	1.84	0.302	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	0.439	J	ng/l	1.84	0.347	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.84	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.635	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	0.288	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	0.465	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.280	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.598	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.240	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.904	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.535	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.742	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.343	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.302	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.229	1
PFOA/PFOS, Total	ND		ng/l	1.84	0.218	1

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-03	Date Collected:	08/05/19 00:00
Client ID:	HVRA-LTB01-190805	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	81		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	74		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	3		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		33-143

Project Name: HVRA | **Lab Number:** L1934860
Project Number: 18.8090 | **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-04	Date Collected:	08/05/19 14:25
Client ID:	HVRA-RB01-190805	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 07:11
Analytical Date:	08/16/19 16:57		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.959	J	ng/l	2.26	0.462	1
Perfluoropentanoic Acid (PFPeA)	0.665	J	ng/l	2.26	0.448	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.26	0.269	1
Perfluorohexanoic Acid (PFHxA)	1.66	J	ng/l	2.26	0.371	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.26	0.255	1
Perfluorohexanesulfonic Acid (PFHxS)	1.22	J	ng/l	2.26	0.425	1
Perfluorooctanoic Acid (PFOA)	0.792	J	ng/l	2.26	0.267	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.26	1.51	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.26	0.778	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.26	0.353	1
Perfluorooctanesulfonic Acid (PFOS)	3.72		ng/l	2.26	0.570	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.26	0.344	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.39	J	ng/l	2.26	1.37	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.26	0.733	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.26	0.294	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.26	1.11	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.26	0.656	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.26	0.910	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.26	0.421	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.26	0.370	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.26	0.280	1
PFOA/PFOS, Total	4.51	J	ng/l	2.26	0.267	1

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-04	Date Collected:	08/05/19 14:25
Client ID:	HVRA-RB01-190805	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	94		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	90		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	98		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		33-143

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-05	Date Collected:	08/05/19 15:00
Client ID:	HVRA-MW101-8.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8270D	Extraction Date:	08/11/19 09:13
Analytical Date:	08/12/19 17:22		
Analyst:	IM		
Percent Solids:	95%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
1,4-Dioxane	ND		ug/kg	26	7.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	76		25-120
Phenol-d6	77		10-120
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	84		30-120
2,4,6-Tribromophenol	91		10-136
4-Terphenyl-d14	77		18-120

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1934860

Report Date: 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-05
Client ID:	HVRA-MW101-8.0
Sample Location:	WAPPINGER'S FALLS, NY
Sample Depth:	
Matrix:	Soil
Analytical Method:	122,537(M)
Analytical Date:	08/14/19 10:59
Analyst:	JW
Percent Solids:	95%

Date Collected:	08/05/19 15:00
Date Received:	08/05/19
Field Prep:	Not Specified
Extraction Method:	EPA 537(M)
Extraction Date:	08/09/19 00:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ug/kg	0.977	0.022	1
Perfluoropentanoic Acid (PFPeA)	0.047	J	ug/kg	0.977	0.045	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	0.977	0.038	1
Perfluorohexanoic Acid (PFHxA)	0.070	J	ug/kg	0.977	0.051	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	0.977	0.044	1
Perfluorohexanesulfonic Acid (PFHxS)	0.10	J	ug/kg	0.977	0.059	1
Perfluorooctanoic Acid (PFOA)	0.057	J	ug/kg	0.977	0.041	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	0.977	0.175	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	0.977	0.133	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	0.977	0.073	1
Perfluorooctanesulfonic Acid (PFOS)	1.12		ug/kg	0.977	0.127	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	0.977	0.065	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	0.977	0.280	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	0.977	0.197	1
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	0.977	0.046	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	0.977	0.149	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	0.977	0.096	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	0.977	0.083	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	0.977	0.068	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	0.977	0.200	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	0.977	0.053	1
PFOA/PFOS, Total	1.18	J	ug/kg	0.977	0.041	1

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-05	Date Collected:	08/05/19 15:00
Client ID:	HVRA-MW101-8.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	61		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	66		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	78		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	69		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	55		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	69		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	69		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	63		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**27**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**62**	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**25**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**50**	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**16**	Q	26-160

Project Name:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	122,537(M)	Extraction Method:	EPA 537(M)
Analytical Date:	08/13/19 16:05	Extraction Date:	08/09/19 00:15
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,05 Batch: WG1270274-1					
Perfluorobutanoic Acid (PFBA)	0.097	J	ug/kg	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/13/19 16:05
Analyst: JW

Extraction Method: EPA 537(M)
Extraction Date: 08/09/19 00:15

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,05 Batch: WG1270274-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	67		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	76		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		26-160

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/12/19 14:09
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 08/11/19 09:13

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,05 Batch: WG1271080-1					
Acenaphthene	ND		ug/kg	130	17.
Hexachlorobenzene	ND		ug/kg	99	18.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	160	16.
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.
Dimethyl phthalate	ND		ug/kg	160	35.
Benzo(a)anthracene	ND		ug/kg	99	18.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	99	28.

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/12/19 14:09
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 08/11/19 09:13

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,05 Batch: WG1271080-1					
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	20.
2,4-Dichlorophenol	ND		ug/kg	150	26.
2,4-Dimethylphenol	ND		ug/kg	160	54.
2-Nitrophenol	ND		ug/kg	360	62.
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.

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/12/19 14:09
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 08/11/19 09:13

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,05 Batch: WG1271080-1					
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.
Carbazole	ND		ug/kg	160	16.
Atrazine	ND		ug/kg	130	58.
Benzaldehyde	ND		ug/kg	220	44.
Caprolactam	ND		ug/kg	160	50.
2,3,4,6-Tetrachlorophenol	ND		ug/kg	160	33.
1,4-Dioxane	ND		ug/kg	25	7.6

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	74		25-120
Phenol-d6	73		10-120
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	73		30-120
2,4,6-Tribromophenol	72		10-136
4-Terphenyl-d14	71		18-120

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/16/19 12:19
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/15/19 07:10

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-04 Batch: WG1272636-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	122,537(M)	Extraction Method:	EPA 537
Analytical Date:	08/16/19 12:19	Extraction Date:	08/15/19 07:10
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-04 Batch: WG1272636-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,05 Batch: WG1270274-2 WG1270274-3								
Perfluorobutanoic Acid (PFBA)	101		102		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	94		94		69-132	0		30
Perfluorobutanesulfonic Acid (PFBS)	79		82		72-128	4		30
Perfluorohexanoic Acid (PFHxA)	100		101		70-132	1		30
Perfluoroheptanoic Acid (PFHpA)	100		99		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	91		90		67-130	1		30
Perfluorooctanoic Acid (PFOA)	97		100		69-133	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	100		98		64-140	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		105		70-132	14		30
Perfluorononanoic Acid (PFNA)	95		96		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	88		98		68-136	11		30
Perfluorodecanoic Acid (PFDA)	98		102		69-133	4		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	91		90		65-137	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	101		94		63-144	7		30
Perfluoroundecanoic Acid (PFUnA)	99		99		64-136	0		30
Perfluorodecanesulfonic Acid (PFDS)	96		109		59-134	13		30
Perfluorooctanesulfonamide (FOSA)	101		81		67-137	22		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	84		90		61-139	7		30
Perfluorododecanoic Acid (PFDoA)	102		102		69-135	0		30
Perfluorotridecanoic Acid (PFTrDA)	96		98		66-139	2		30
Perfluorotetradecanoic Acid (PFTA)	105		106		69-133	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1934860

Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,05 Batch: WG1270274-2 WG1270274-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		90		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	120		104		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	113		100		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		89		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		92		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		105		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	111		96		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	98		89		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	114		98		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		95		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	109		97		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		95		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		86		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		94		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45		7		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		84		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		87		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		72		26-160

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 Batch: WG1271080-2 WG1271080-3								
Acenaphthene	90		53		31-137	**52**	Q	50
Hexachlorobenzene	94		55		40-140	**52**	Q	50
Bis(2-chloroethyl)ether	78		49		40-140	46		50
2-Chloronaphthalene	97		58		40-140	50		50
3,3'-Dichlorobenzidine	59		**39**	Q	40-140	41		50
2,4-Dinitrotoluene	115		68		40-132	**51**	Q	50
2,6-Dinitrotoluene	117		69		40-140	**52**	Q	50
Fluoranthene	98		57		40-140	**53**	Q	50
4-Chlorophenyl phenyl ether	96		56		40-140	**53**	Q	50
4-Bromophenyl phenyl ether	94		55		40-140	**52**	Q	50
Bis(2-chloroisopropyl)ether	68		44		40-140	43		50
Bis(2-chloroethoxy)methane	82		52		40-117	45		50
Hexachlorobutadiene	90		58		40-140	43		50
Hexachlorocyclopentadiene	74		42		40-140	**55**	Q	50
Hexachloroethane	81		56		40-140	36		50
Isophorone	86		53		40-140	47		50
Naphthalene	87		53		40-140	49		50
Nitrobenzene	92		56		40-140	49		50
NDPA/DPA	97		58		36-157	50		50
n-Nitrosodi-n-propylamine	89		52		32-121	**52**	Q	50
Bis(2-ethylhexyl)phthalate	107		66		40-140	47		50
Butyl benzyl phthalate	109		66		40-140	49		50
Di-n-butylphthalate	102		61		40-140	50		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1934860

Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 Batch: WG1271080-2 WG1271080-3								
Di-n-octylphthalate	108		65		40-140	50		50
Diethyl phthalate	102		60		40-140	**52**	Q	50
Dimethyl phthalate	103		61		40-140	**51**	Q	50
Benzo(a)anthracene	99		58		40-140	**52**	Q	50
Benzo(a)pyrene	94		56		40-140	**51**	Q	50
Benzo(b)fluoranthene	100		58		40-140	**53**	Q	50
Benzo(k)fluoranthene	96		60		40-140	46		50
Chrysene	93		56		40-140	50		50
Acenaphthylene	101		60		40-140	**51**	Q	50
Anthracene	96		55		40-140	**54**	Q	50
Benzo(ghi)perylene	100		60		40-140	50		50
Fluorene	94		56		40-140	**51**	Q	50
Phenanthrene	90		53		40-140	**52**	Q	50
Dibenzo(a,h)anthracene	94		57		40-140	49		50
Indeno(1,2,3-cd)pyrene	96		58		40-140	49		50
Pyrene	98		57		35-142	**53**	Q	50
Biphenyl	99		58		37-127	**52**	Q	50
4-Chloroaniline	63		43		40-140	38		50
2-Nitroaniline	124		73		47-134	**52**	Q	50
3-Nitroaniline	82		56		26-129	38		50
4-Nitroaniline	101		60		41-125	**51**	Q	50
Dibenzofuran	96		58		40-140	49		50
2-Methylnaphthalene	90		54		40-140	50		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 Batch: WG1271080-2 WG1271080-3								
1,2,4,5-Tetrachlorobenzene	94		55		40-117	**52**	Q	50
Acetophenone	87		55		14-144	45		50
2,4,6-Trichlorophenol	102		61		30-130	50		50
p-Chloro-m-cresol	**108**	Q	63		26-103	**53**	Q	50
2-Chlorophenol	87		56		25-102	43		50
2,4-Dichlorophenol	97		60		30-130	47		50
2,4-Dimethylphenol	102		62		30-130	49		50
2-Nitrophenol	114		74		30-130	43		50
4-Nitrophenol	**120**	Q	70		11-114	**53**	Q	50
2,4-Dinitrophenol	105		56		4-130	**61**	Q	50
4,6-Dinitro-o-cresol	125		73		10-130	**53**	Q	50
Pentachlorophenol	91		50		17-109	**58**	Q	50
Phenol	86		53		26-90	47		50
2-Methylphenol	88		56		30-130.	44		50
3-Methylphenol/4-Methylphenol	97		59		30-130	49		50
2,4,5-Trichlorophenol	111		63		30-130	**55**	Q	50
Carbazole	96		56		54-128	**53**	Q	50
Atrazine	102		62		40-140	49		50
Benzaldehyde	86		56		40-140	42		50
Caprolactam	97		58		15-130	50		50
2,3,4,6-Tetrachlorophenol	101		57		40-140	**56**	Q	50
1,4-Dioxane	56		**39**	Q	40-140	36		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1934860

Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 Batch: WG1271080-2 WG1271080-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	82		52		25-120
Phenol-d6	86		52		10-120
Nitrobenzene-d5	90		57		23-120
2-Fluorobiphenyl	92		54		30-120
2,4,6-Tribromophenol	96		53		10-136
4-Terphenyl-d14	88		52		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 Batch: WG1272636-2 WG1272636-3								
Perfluorobutanoic Acid (PFBA)	100		99		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	98		97		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	93		90		65-157	3		30
Perfluorohexanoic Acid (PFHxA)	102		102		69-168	0		30
Perfluoroheptanoic Acid (PFHpA)	102		102		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	105		103		69-177	2		30
Perfluorooctanoic Acid (PFOA)	102		102		63-159	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	109		107		49-187	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	109		106		61-179	3		30
Perfluorononanoic Acid (PFNA)	97		100		68-171	3		30
Perfluorooctanesulfonic Acid (PFOS)	109		106		52-151	3		30
Perfluorodecanoic Acid (PFDA)	102		101		63-171	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	83		100		56-173	19		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	110		100		60-166	10		30
Perfluoroundecanoic Acid (PFUnA)	100		98		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	103		103		38-156	0		30
Perfluorooctanesulfonamide (FOSA)	99		102		46-170	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	94		103		45-170	9		30
Perfluorododecanoic Acid (PFDoA)	101		106		67-153	5		30
Perfluorotridecanoic Acid (PFTrDA)	107		107		48-158	0		30
Perfluorotetradecanoic Acid (PFTA)	106		108		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 Batch: WG1272636-2 WG1272636-3

Surrogate (Extracted Internal Standard)	*LCS %Recovery*	*Qual*	*LCSD %Recovery*	*Qual*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		95		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		94		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		85		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		90		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		72		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		92		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		87		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		80		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		75		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		69		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		18		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71		65		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		74		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		78		33-143

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,05 QC Batch ID: WG1270274-4 WG1270274-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Perfluorobutanoic Acid (PFBA)	0.138J	5.1	5.22	102		5.38	105		71-135	3		30
Perfluoropentanoic Acid (PFPeA)	0.416J	5.1	5.23	103		5.32	104		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	ND	4.52	4.27	95		4.32	95		72-128	1		30
Perfluorohexanoic Acid (PFHxA)	0.442J	5.1	5.62	110		5.59	109		70-132	1		30
Perfluoroheptanoic Acid (PFHpA)	0.275J	5.1	5.43	106		5.54	108		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	1.64	4.65	6.84	112		6.93	113		67-130	1		30
Perfluorooctanoic Acid (PFOA)	0.287J	5.1	5.40	106		5.65	110		69-133	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	4.85	5.15	106		5.67	116		64-140	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	0.143J	4.85	5.83	120		5.50	113		70-132	6		30
Perfluorononanoic Acid (PFNA)	0.182J	5.1	5.09	100		5.34	104		72-129	5		30
Perfluorooctanesulfonic Acid (PFOS)	36.8	4.72	41.6	102		42.5	120		68-136	2		30
Perfluorodecanoic Acid (PFDA)	0.164J	5.1	5.44	107		5.49	107		69-133	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	4.9	4.80	98		5.16	105		65-137	7		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	5.1	5.78	113		5.93	116		63-144	3		30
Perfluoroundecanoic Acid (PFUnA)	0.088J	5.1	5.18	102		5.34	104		64-136	3		30
Perfluorodecanesulfonic Acid (PFDS)	0.190J	4.93	5.74	116		5.45	110		59-134	5		30
Perfluorooctanesulfonamide (FOSA)	ND	5.1	2.58	**51**	Q	2.61	**51**	Q	67-137	1		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	5.1	4.96	97		5.23	102		61-139	5		30
Perfluorododecanoic Acid (PFDoA)	0.124J	5.1	5.50	108		5.62	110		69-135	2		30
Perfluorotridecanoic Acid (PFTrDA)	ND	5.1	5.27	103		5.67	111		66-139	7		30
Perfluorotetradecanoic Acid (PFTA)	0.074J	5.1	5.30	104		5.56	108		69-133	5		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,05 QC Batch ID: WG1270274-4 WG1270274-5 QC Sample: L1934860-01
Client ID: HVRA-MW100-6.0

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		96		25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		89		32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	48		48		42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**44**	Q	**37**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		82		64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		83		65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		76		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		78		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		101		63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		75		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		71		26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	62		74		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	75		86		65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		**0**	Q	1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		98		65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		80		62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		84		61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		105		70-151

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 QC Batch ID: WG1271080-4 WG1271080-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Acenaphthene	ND	1420	1200	85		1100	78		31-137	9		50
Hexachlorobenzene	ND	1420	1200	85		1000	71		40-140	18		50
Bis(2-chloroethyl)ether	ND	1420	1200	85		1000	71		40-140	18		50
2-Chloronaphthalene	ND	1420	1300	92		1200	85		40-140	8		50
3,3'-Dichlorobenzidine	ND	1420	550	**39**	Q	530	**37**	Q	40-140	4		50
2,4-Dinitrotoluene	ND	1420	1500	110		1300	92		40-132	14		50
2,6-Dinitrotoluene	ND	1420	1500	110		1300	92		40-140	14		50
Fluoranthene	130	1420	1200	76		1200	75		40-140	0		50
4-Chlorophenyl phenyl ether	ND	1420	1200	85		1100	78		40-140	9		50
4-Bromophenyl phenyl ether	ND	1420	1200	85		1100	78		40-140	9		50
Bis(2-chloroisopropyl)ether	ND	1420	1000	71		990	70		40-140	1		50
Bis(2-chloroethoxy)methane	ND	1420	1200	85		1100	78		40-117	9		50
Hexachlorobutadiene	ND	1420	1200	85		1100	78		40-140	9		50
Hexachlorocyclopentadiene	ND	1420	610	43		330J	**23**	Q	40-140	**60**	Q	50
Hexachloroethane	ND	1420	1200	85		1000	71		40-140	18		50
Isophorone	ND	1420	1200	85		1200	85		40-140	0		50
Naphthalene	ND	1420	1200	85		1100	78		40-140	9		50
Nitrobenzene	ND	1420	1300	92		1300	92		40-140	0		50
NDPA/DPA	ND	1420	1300	92		1200	85		36-157	8		50
n-Nitrosodi-n-propylamine	ND	1420	1200	85		1200	85		32-121	0		50
Bis(2-ethylhexyl)phthalate	ND	1420	1400	99		1300	92		40-140	7		50
Butyl benzyl phthalate	ND	1420	1300	92		1200	85		40-140	8		50
Di-n-butylphthalate	ND	1420	1200	85		1200	85		40-140	0		50

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 QC Batch ID: WG1271080-4 WG1271080-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Di-n-octylphthalate	ND	1420	1400	99		1300	92		40-140	7		50
Diethyl phthalate	ND	1420	1300	92		1200	85		40-140	8		50
Dimethyl phthalate	ND	1420	1300	92		1200	85		40-140	8		50
Benzo(a)anthracene	69J	1420	1300	92		1200	85		40-140	8		50
Benzo(a)pyrene	53J	1420	1100	78		1000	71		40-140	10		50
Benzo(b)fluoranthene	97J	1420	1200	85		1100	78		40-140	9		50
Benzo(k)fluoranthene	28J	1420	1100	78		1000	71		40-140	10		50
Chrysene	76J	1420	1200	85		1100	78		40-140	9		50
Acenaphthylene	ND	1420	1400	99		1200	85		40-140	15		50
Anthracene	ND	1420	1200	85		1100	78		40-140	9		50
Benzo(ghi)perylene	56J	1420	1200	85		1100	78		40-140	9		50
Fluorene	ND	1420	1200	85		1200	85		40-140	0		50
Phenanthrene	46J	1420	1200	85		1100	78		40-140	9		50
Dibenzo(a,h)anthracene	ND	1420	1100	78		1000	71		40-140	10		50
Indeno(1,2,3-cd)pyrene	55J	1420	1200	85		1000	71		40-140	18		50
Pyrene	120	1420	1200	76		1100	69		35-142	9		50
Biphenyl	ND	1420	1300	92		1200	85		37-127	8		50
4-Chloroaniline	ND	1420	1000	71		740	52		40-140	30		50
2-Nitroaniline	ND	1420	1700	120		1600	110		47-134	6		50
3-Nitroaniline	ND	1420	1200	85		1200	85		26-129	0		50
4-Nitroaniline	ND	1420	1300	92		1200	85		41-125	8		50
Dibenzofuran	ND	1420	1300	92		1200	85		40-140	8		50
2-Methylnaphthalene	ND	1420	1200	85		1200	85		40-140	0		50

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 QC Batch ID: WG1271080-4 WG1271080-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
1,2,4,5-Tetrachlorobenzene	ND	1420	1300	92		1200	85		40-117	8		50
Acetophenone	ND	1420	1200	85		1200	85		14-144	0		50
2,4,6-Trichlorophenol	ND	1420	1500	110		1400	99		30-130	7		50
p-Chloro-m-cresol	ND	1420	1500	**110**	Q	1300	92		26-103	14		50
2-Chlorophenol	ND	1420	1300	92		1200	85		25-102	8		50
2,4-Dichlorophenol	ND	1420	1400	99		1300	92		30-130	7		50
2,4-Dimethylphenol	ND	1420	1300	92		1300	92		30-130	0		50
2-Nitrophenol	ND	1420	1600	110		1400	99		30-130	13		50
4-Nitrophenol	ND	1420	1500	110		1400	99		11-114	7		50
2,4-Dinitrophenol	ND	1420	330J	23		ND	**0**	Q	4-130	NC		50
4,6-Dinitro-o-cresol	ND	1420	470	33		160J	11		10-130	**98**	Q	50
Pentachlorophenol	ND	1420	1400	99		1200	85		17-109	15		50
Phenol	ND	1420	1100	78		1100	78		26-90	0		50
2-Methylphenol	ND	1420	1200	85		1200	85		30-130.	0		50
3-Methylphenol/4-Methylphenol	ND	1420	1300	92		1200	85		30-130	8		50
2,4,5-Trichlorophenol	ND	1420	1600	110		1400	99		30-130	13		50
Carbazole	ND	1420	1200	85		1100	78		54-128	9		50
Atrazine	ND	1420	1400	99		1200	85		40-140	15		50
Benzaldehyde	ND	1420	1300	92		1200	85		40-140	8		50
Caprolactam	ND	1420	1200	85		1200	85		15-130	0		50
2,3,4,6-Tetrachlorophenol	ND	1420	1400	99		1300	92		40-140	7		50
1,4-Dioxane	ND	1420	700	49		660	47		40-140	6		50

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 QC Batch ID: WG1271080-4 WG1271080-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2,4,6-Tribromophenol	88		79		10-136
2-Fluorobiphenyl	85		76		30-120
2-Fluorophenol	84		77		25-120
4-Terphenyl-d14	69		61		18-120
Nitrobenzene-d5	95		89		23-120
Phenol-d6	85		79		10-120

PCBS

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934860-01
Client ID: HVRA-MW100-6.0
Sample Location: WAPPINGER'S FALLS, NY

Date Collected: 08/05/19 13:00
Date Received: 08/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 08/14/19 08:18
Analyst: KB
Percent Solids: 94%

Extraction Method: EPA 3546
Extraction Date: 08/11/19 15:37
Cleanup Method: EPA 3660B
Cleanup Date: 08/12/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/12/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	34.9	3.10	1	A
Aroclor 1221	ND		ug/kg	34.9	3.49	1	A
Aroclor 1232	ND		ug/kg	34.9	7.39	1	A
Aroclor 1242	ND		ug/kg	34.9	4.70	1	A
Aroclor 1248	ND		ug/kg	34.9	5.23	1	A
Aroclor 1254	ND		ug/kg	34.9	3.82	1	A
Aroclor 1260	ND		ug/kg	34.9	6.44	1	A
Aroclor 1262	ND		ug/kg	34.9	4.43	1	A
Aroclor 1268	ND		ug/kg	34.9	3.61	1	A
PCBs, Total	ND		ug/kg	34.9	3.10	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	79		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		30-150	B
Decachlorobiphenyl	100		30-150	B

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934860-05
Client ID: HVRA-MW101-8.0
Sample Location: WAPPINGER'S FALLS, NY

Date Collected: 08/05/19 15:00
Date Received: 08/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 08/14/19 01:38
Analyst: KB
Percent Solids: 95%

Extraction Method: EPA 3546
Extraction Date: 08/11/19 15:37
Cleanup Method: EPA 3660B
Cleanup Date: 08/12/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/12/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	33.2	2.94	1	A
Aroclor 1221	ND		ug/kg	33.2	3.32	1	A
Aroclor 1232	ND		ug/kg	33.2	7.03	1	A
Aroclor 1242	ND		ug/kg	33.2	4.47	1	A
Aroclor 1248	ND		ug/kg	33.2	4.98	1	A
Aroclor 1254	ND		ug/kg	33.2	3.63	1	A
Aroclor 1260	ND		ug/kg	33.2	6.13	1	A
Aroclor 1262	ND		ug/kg	33.2	4.21	1	A
Aroclor 1268	ND		ug/kg	33.2	3.44	1	A
PCBs, Total	ND		ug/kg	33.2	2.94	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	59		30-150	A
Decachlorobiphenyl	74		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	92		30-150	B

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/13/19 14:40
Analyst: HT

Extraction Method: EPA 3546
Extraction Date: 08/11/19 15:37
Cleanup Method: EPA 3660B
Cleanup Date: 08/12/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/12/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01,05 Batch: WG1271150-1						
Aroclor 1016	ND		ug/kg	31.4	2.79	A
Aroclor 1221	ND		ug/kg	31.4	3.15	A
Aroclor 1232	ND		ug/kg	31.4	6.67	A
Aroclor 1242	ND		ug/kg	31.4	4.24	A
Aroclor 1248	ND		ug/kg	31.4	4.72	A
Aroclor 1254	ND		ug/kg	31.4	3.44	A
Aroclor 1260	ND		ug/kg	31.4	5.81	A
Aroclor 1262	ND		ug/kg	31.4	3.99	A
Aroclor 1268	ND		ug/kg	31.4	3.26	A
PCBs, Total	ND		ug/kg	31.4	2.79	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	87		30-150	A
2,4,5,6-Tetrachloro-m-xylene	64		30-150	B
Decachlorobiphenyl	72		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01,05 Batch: WG1271150-2 WG1271150-3									
Aroclor 1016	80		70		40-140	13		50	A
Aroclor 1260	88		76		40-140	15		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	79		70		30-150	A
Decachlorobiphenyl	89		79		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		65		30-150	B
Decachlorobiphenyl	80		72		30-150	B

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01,05 QC Batch ID: WG1271150-4 WG1271150-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0													
Aroclor 1016	ND	218	127	58		135	62		40-140	6		50	A
Aroclor 1260	ND	218	126	58		150	69		40-140	17		50	A

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	61		65		30-150	A
Decachlorobiphenyl	70		76		30-150	A
2,4,5,6-Tetrachloro-m-xylene	66		71		30-150	B
Decachlorobiphenyl	89		96		30-150	B

PESTICIDES

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-01	Date Collected:	08/05/19 13:00
Client ID:	HVRA-MW100-6.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8081B	Extraction Date:	08/11/19 22:38
Analytical Date:	08/14/19 17:04	Cleanup Method:	EPA 3620B
Analyst:	SL	Cleanup Date:	08/14/19
Percent Solids:	94%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.61	0.316	1	A
Lindane	ND		ug/kg	0.672	0.300	1	A
Alpha-BHC	ND		ug/kg	0.672	0.191	1	A
Beta-BHC	ND		ug/kg	1.61	0.611	1	A
Heptachlor	ND		ug/kg	0.806	0.361	1	A
Aldrin	ND		ug/kg	1.61	0.568	1	A
Heptachlor epoxide	ND		ug/kg	3.02	0.907	1	A
Endrin	ND		ug/kg	0.672	0.275	1	A
Endrin aldehyde	ND		ug/kg	2.01	0.705	1	A
Endrin ketone	ND		ug/kg	1.61	0.415	1	A
Dieldrin	ND		ug/kg	1.01	0.504	1	A
4,4'-DDE	1.13	J	ug/kg	1.61	0.373	1	B
4,4'-DDD	ND		ug/kg	1.61	0.575	1	B
4,4'-DDT	2.85	JP	ug/kg	3.02	1.30	1	B
Endosulfan I	ND		ug/kg	1.61	0.381	1	A
Endosulfan II	ND		ug/kg	1.61	0.539	1	A
Endosulfan sulfate	ND		ug/kg	0.672	0.320	1	A
Methoxychlor	ND		ug/kg	3.02	0.940	1	A
Toxaphene	ND		ug/kg	30.2	8.46	1	A
cis-Chlordane	ND		ug/kg	2.01	0.561	1	A
trans-Chlordane	ND		ug/kg	2.01	0.532	1	A
Chlordane	ND		ug/kg	13.1	5.34	1	A

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-01	Date Collected:	08/05/19 13:00
Client ID:	HVRA-MW100-6.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	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	108		30-150	B
Decachlorobiphenyl	102		30-150	B
2,4,5,6-Tetrachloro-m-xylene	107		30-150	A
Decachlorobiphenyl	80		30-150	A

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-05	Date Collected:	08/05/19 15:00
Client ID:	HVRA-MW101-8.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8081B	Extraction Date:	08/11/19 22:38
Analytical Date:	08/14/19 16:51	Cleanup Method:	EPA 3620B
Analyst:	SL	Cleanup Date:	08/14/19
Percent Solids:	95%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.66	0.325	1	A
Lindane	ND		ug/kg	0.691	0.309	1	A
Alpha-BHC	ND		ug/kg	0.691	0.196	1	A
Beta-BHC	ND		ug/kg	1.66	0.629	1	A
Heptachlor	ND		ug/kg	0.830	0.372	1	A
Aldrin	ND		ug/kg	1.66	0.584	1	A
Heptachlor epoxide	ND		ug/kg	3.11	0.933	1	A
Endrin	ND		ug/kg	0.691	0.283	1	A
Endrin aldehyde	ND		ug/kg	2.07	0.726	1	A
Endrin ketone	ND		ug/kg	1.66	0.427	1	A
Dieldrin	ND		ug/kg	1.04	0.518	1	A
4,4'-DDE	ND		ug/kg	1.66	0.384	1	A
4,4'-DDD	ND		ug/kg	1.66	0.592	1	A
4,4'-DDT	ND		ug/kg	3.11	1.33	1	A
Endosulfan I	ND		ug/kg	1.66	0.392	1	A
Endosulfan II	ND		ug/kg	1.66	0.554	1	A
Endosulfan sulfate	ND		ug/kg	0.691	0.329	1	A
Methoxychlor	ND		ug/kg	3.11	0.968	1	A
Toxaphene	ND		ug/kg	31.1	8.71	1	A
cis-Chlordane	ND		ug/kg	2.07	0.578	1	A
trans-Chlordane	ND		ug/kg	2.07	0.547	1	A
Chlordane	ND		ug/kg	13.5	5.50	1	A

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-05	Date Collected:	08/05/19 15:00
Client ID:	HVRA-MW101-8.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	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	B
Decachlorobiphenyl	67		30-150	B
2,4,5,6-Tetrachloro-m-xylene	69		30-150	A
Decachlorobiphenyl	62		30-150	A

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/14/19 16:14
Analyst: BM

Extraction Method: EPA 3546
Extraction Date: 08/11/19 22:38
Cleanup Method: EPA 3620B
Cleanup Date: 08/14/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 01,05 Batch: WG1271177-1						
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	12.4	5.04	A

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/14/19 16:14
Analyst: BM

Extraction Method: EPA 3546
Extraction Date: 08/11/19 22:38
Cleanup Method: EPA 3620B
Cleanup Date: 08/14/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 01,05 Batch: WG1271177-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	82		30-150	B
Decachlorobiphenyl	106		30-150	B
2,4,5,6-Tetrachloro-m-xylene	80		30-150	A
Decachlorobiphenyl	87		30-150	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1934860

Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01,05 Batch: WG1271177-2 WG1271177-3									
Delta-BHC	138		112		30-150	21		30	A
Lindane	133		111		30-150	18		30	A
Alpha-BHC	142		117		30-150	19		30	A
Beta-BHC	125		107		30-150	16		30	A
Heptachlor	138		116		30-150	17		30	A
Aldrin	127		105		30-150	19		30	A
Heptachlor epoxide	133		111		30-150	18		30	A
Endrin	139		118		30-150	16		30	A
Endrin aldehyde	125		102		30-150	20		30	A
Endrin ketone	142		120		30-150	17		30	A
Dieldrin	142		119		30-150	18		30	A
4,4'-DDE	126		108		30-150	15		30	A
4,4'-DDD	140		118		30-150	17		30	A
4,4'-DDT	142		120		30-150	17		30	A
Endosulfan I	114		99		30-150	14		30	A
Endosulfan II	130		111		30-150	16		30	A
Endosulfan sulfate	150		129		30-150	15		30	A
Methoxychlor	130		111		30-150	16		30	A
cis-Chlordane	100		84		30-150	17		30	A
trans-Chlordane	117		100		30-150	16		30	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01,05 Batch: WG1271177-2 WG1271177-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	134		124		30-150	B
Decachlorobiphenyl	123		122		30-150	B
2,4,5,6-Tetrachloro-m-xylene	138		127		30-150	A
Decachlorobiphenyl	114		118		30-150	A

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01,05 QC Batch ID: WG1271177-4 WG1271177-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0													
Delta-BHC	ND	35.3	32.8	93		32.8	97		30-150	0		50	A
Lindane	ND	35.3	33.1	94		32.3	96		30-150	2		50	A
Alpha-BHC	ND	35.3	33.7	95		34.1	101		30-150	1		50	A
Beta-BHC	ND	35.3	32.5	92		32.8	97		30-150	1		50	A
Heptachlor	ND	35.3	29.2	83		28.2	83		30-150	3		50	A
Aldrin	ND	35.3	27.5	78		27.0	80		30-150	2		50	A
Heptachlor epoxide	ND	35.3	27.3	77		26.9	80		30-150	1		50	A
Endrin	ND	35.3	26.5	75		26.3	78		30-150	1		50	A
Endrin aldehyde	ND	35.3	18.0	51		21.2	63		30-150	16		50	A
Endrin ketone	ND	35.3	23.3	66		24.1	71		30-150	3		50	A
Dieldrin	ND	35.3	26.9	76		27.0	80		30-150	0		50	A
4,4'-DDE	1.13J	35.3	28.3	80		28.0	83		30-150	1		50	B
4,4'-DDD	ND	35.3	27.7	78		26.6	79		30-150	4		50	B
4,4'-DDT	2.85JP	35.3	31.0	88		30.5	90		30-150	2		50	B
Endosulfan I	ND	35.3	23.0	65		23.6	70		30-150	3		50	A
Endosulfan II	ND	35.3	24.2	69		23.9	71		30-150	1		50	A
Endosulfan sulfate	ND	35.3	20.0	57		20.6	61		30-150	3		50	A
Methoxychlor	ND	35.3	21.4	61		22.3	66		30-150	4		50	A
cis-Chlordane	ND	35.3	23.7	67		24.4	72		30-150	3		50	A
trans-Chlordane	ND	35.3	29.3	83		29.5	87		30-150	1		50	A

Matrix Spike Analysis
Batch Quality Control

Project Name:	HVRA	***Lab Number:***	L1934860
Project Number:	18.8090	***Report Date:***	08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01,05 QC Batch ID: WG1271177-4 WG1271177-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	93		99		30-150	B
Decachlorobiphenyl	88		102		30-150	B
2,4,5,6-Tetrachloro-m-xylene	92		100		30-150	A
Decachlorobiphenyl	68		71		30-150	A

METALS

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934860-01 Date Collected: 08/05/19 13:00
Client ID: HVRA-MW100-6.0 Date Received: 08/05/19
Sample Location: WAPPINGER'S FALLS, NY Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	9240		mg/kg	8.06	2.18	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Antimony, Total	1.18	J	mg/kg	4.03	0.306	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Arsenic, Total	3.38		mg/kg	0.806	0.168	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Barium, Total	39.3		mg/kg	0.806	0.140	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Beryllium, Total	0.346	J	mg/kg	0.403	0.027	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Cadmium, Total	1.73		mg/kg	0.806	0.079	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Calcium, Total	3720		mg/kg	8.06	2.82	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Chromium, Total	17.8		mg/kg	0.806	0.077	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Cobalt, Total	8.24		mg/kg	1.61	0.134	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Copper, Total	66.8		mg/kg	0.806	0.208	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Iron, Total	51300		mg/kg	40.3	7.28	20	08/08/19 20:25	08/09/19 17:46	EPA 3050B	1,6010D	LC
Lead, Total	70.0		mg/kg	4.03	0.216	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Magnesium, Total	5480		mg/kg	8.06	1.24	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Manganese, Total	721		mg/kg	0.806	0.128	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Mercury, Total	0.178		mg/kg	0.067	0.044	1	08/09/19 05:00	08/12/19 12:53	EPA 7471B	1,7471B	GD
Nickel, Total	19.2		mg/kg	2.01	0.195	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Potassium, Total	225		mg/kg	201	11.6	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Selenium, Total	0.806	J	mg/kg	1.61	0.208	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Silver, Total	ND		mg/kg	0.806	0.228	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Sodium, Total	76.7	J	mg/kg	161	2.54	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Thallium, Total	0.572	J	mg/kg	1.61	0.254	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Vanadium, Total	12.8		mg/kg	0.806	0.164	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC
Zinc, Total	138		mg/kg	4.03	0.236	2	08/08/19 20:25	08/09/19 14:48	EPA 3050B	1,6010D	LC

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934860-05 Date Collected: 08/05/19 15:00
Client ID: HVRA-MW101-8.0 Date Received: 08/05/19
Sample Location: WAPPINGER'S FALLS, NY Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	12500		mg/kg	8.32	2.25	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Antimony, Total	ND		mg/kg	4.16	0.316	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Arsenic, Total	1.46		mg/kg	0.832	0.173	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Barium, Total	33.7		mg/kg	0.832	0.145	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Beryllium, Total	0.416		mg/kg	0.416	0.028	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Cadmium, Total	0.791	J	mg/kg	0.832	0.082	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Calcium, Total	7480		mg/kg	8.32	2.91	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Chromium, Total	16.1		mg/kg	0.832	0.080	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Cobalt, Total	8.44		mg/kg	1.66	0.138	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Copper, Total	15.2		mg/kg	0.832	0.215	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Iron, Total	24100		mg/kg	4.16	0.752	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Lead, Total	11.9		mg/kg	4.16	0.223	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Magnesium, Total	9340		mg/kg	8.32	1.28	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Manganese, Total	479		mg/kg	0.832	0.132	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Mercury, Total	ND		mg/kg	0.066	0.043	1	08/09/19 05:00	08/12/19 13:59	EPA 7471B	1,7471B	GD
Nickel, Total	18.3		mg/kg	2.08	0.201	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Potassium, Total	362		mg/kg	208	12.0	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Selenium, Total	0.716	J	mg/kg	1.66	0.215	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Silver, Total	ND		mg/kg	0.832	0.236	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Sodium, Total	30.8	J	mg/kg	166	2.62	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Thallium, Total	ND		mg/kg	1.66	0.262	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Vanadium, Total	13.9		mg/kg	0.832	0.169	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC
Zinc, Total	55.3		mg/kg	4.16	0.244	2	08/08/19 20:25	08/09/19 16:59	EPA 3050B	1,6010D	LC

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

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): 01,05 Batch: WG1270290-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Antimony, Total	ND		mg/kg	2.00	0.152	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Arsenic, Total	0.148	J	mg/kg	0.400	0.083	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Barium, Total	ND		mg/kg	0.400	0.070	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Beryllium, Total	ND		mg/kg	0.200	0.013	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Cadmium, Total	ND		mg/kg	0.400	0.039	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Calcium, Total	ND		mg/kg	4.00	1.40	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Chromium, Total	ND		mg/kg	0.400	0.038	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Cobalt, Total	ND		mg/kg	0.800	0.066	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Copper, Total	ND		mg/kg	0.400	0.103	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Iron, Total	ND		mg/kg	2.00	0.361	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Lead, Total	ND		mg/kg	2.00	0.107	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Magnesium, Total	ND		mg/kg	4.00	0.616	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Manganese, Total	ND		mg/kg	0.400	0.064	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Nickel, Total	ND		mg/kg	1.00	0.097	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Potassium, Total	ND		mg/kg	100	5.76	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Selenium, Total	ND		mg/kg	0.800	0.103	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Silver, Total	ND		mg/kg	0.400	0.113	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Sodium, Total	1.42	J	mg/kg	80.0	1.26	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Thallium, Total	ND		mg/kg	0.800	0.126	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Vanadium, Total	ND		mg/kg	0.400	0.081	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Zinc, Total	ND		mg/kg	2.00	0.117	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC

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): 01,05 Batch: WG1270413-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	08/09/19 05:00	08/12/19 12:49	1,7471B	GD

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,05 Batch: WG1270290-2 SRM Lot Number: D105-540								
Aluminum, Total	58		-		51-149	-		
Antimony, Total	134		-		19-249	-		
Arsenic, Total	93		-		70-130	-		
Barium, Total	83		-		75-125	-		
Beryllium, Total	86		-		75-125	-		
Cadmium, Total	89		-		75-125	-		
Calcium, Total	81		-		73-127	-		
Chromium, Total	84		-		70-130	-		
Cobalt, Total	91		-		75-125	-		
Copper, Total	86		-		75-125	-		
Iron, Total	78		-		38-162	-		
Lead, Total	87		-		71-128	-		
Magnesium, Total	76		-		63-137	-		
Manganese, Total	82		-		76-124	-		
Nickel, Total	91		-		70-131	-		
Potassium, Total	69		-		60-140	-		
Selenium, Total	92		-		63-137	-		
Silver, Total	85		-		69-131	-		
Sodium, Total	89		-		37-162	-		
Thallium, Total	87		-		68-132	-		
Vanadium, Total	87		-		65-135	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,05 Batch: WG1270290-2 SRM Lot Number: D105-540					
Zinc, Total	88	-	70-130	-	
Total Metals - Mansfield Lab Associated sample(s): 01,05 Batch: WG1270413-2 SRM Lot Number: D105-540					
Mercury, Total	99	-	60-141	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

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): 01,05 QC Batch ID: WG1270290-3 WG1270290-4 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Aluminum, Total	9240	168	9310	**42**	Q	11100	**1110**	Q	75-125	18		20
Antimony, Total	1.18J	41.9	39.2	93		38.2	91		75-125	3		20
Arsenic, Total	3.38	10.1	12.7	92		12.3	89		75-125	3		20
Barium, Total	39.3	168	195	93		213	104		75-125	9		20
Beryllium, Total	0.346J	4.19	4.15	99		4.14	99		75-125	0		20
Cadmium, Total	1.73	4.28	4.85	**73**	Q	5.24	82		75-125	8		20
Calcium, Total	3720	839	12400	**1030**	Q	6660	**351**	Q	75-125	**60**	Q	20
Chromium, Total	17.8	16.8	27.0	**55**	Q	28.7	**65**	Q	75-125	6		20
Cobalt, Total	8.24	41.9	42.9	83		44.7	87		75-125	4		20
Copper, Total	66.8	21	42.1	**0**	Q	49.5	**0**	Q	75-125	16		20
Iron, Total	51300	83.9	24300	**0**	Q	36500	**0**	Q	75-125	**40**	Q	20
Lead, Total	70.0	42.8	97.2	**64**	Q	151	**190**	Q	75-125	**43**	Q	20
Magnesium, Total	5480	839	10700	**622**	Q	7850	**283**	Q	75-125	**31**	Q	20
Manganese, Total	721	41.9	607	**0**	Q	1360	**1520**	Q	75-125	**77**	Q	20
Nickel, Total	19.2	41.9	53.0	80		57.3	91		75-125	8		20
Potassium, Total	225	839	1010	94		1010	94		75-125	0		20
Selenium, Total	0.806J	10.1	10.0	99		10.1	100		75-125	1		20
Silver, Total	ND	25.2	24.7	98		24.2	96		75-125	2		20
Sodium, Total	76.7J	839	871	104		848	101		75-125	3		20
Thallium, Total	0.572J	10.1	8.30	82		8.55	85		75-125	3		20
Vanadium, Total	12.8	41.9	52.4	94		54.4	99		75-125	4		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

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): 01,05 QC Batch ID: WG1270290-3 WG1270290-4 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Zinc, Total	138	41.9	156	**43**	Q	202	**153**	Q	75-125	**26**	Q	20
Total Metals - Mansfield Lab Associated sample(s): 01,05 QC Batch ID: WG1270413-3 WG1270413-4 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Mercury, Total	0.178	0.134	0.277	**74**	Q	0.337	119		80-120	20		20

INORGANICS
&
MISCELLANEOUS

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934860-01 Date Collected: 08/05/19 13:00
Client ID: HVRA-MW100-6.0 Date Received: 08/05/19
Sample Location: WAPPINGER'S FALLS, NY 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	94.0		%	0.100	NA	1	-	08/07/19 14:01	121,2540G	RI
Cyanide, Total	ND		mg/kg	1.0	0.22	1	08/08/19 13:40	08/09/19 14:01	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934860-05
Client ID: HVRA-MW101-8.0
Sample Location: WAPPINGER'S FALLS, NY
Date Collected: 08/05/19 15:00
Date Received: 08/05/19
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	94.8		%	0.100	NA	1	-	08/07/19 14:01	121,2540G	RI
Cyanide, Total	ND		mg/kg	0.96	0.20	1	08/08/19 13:40	08/09/19 14:06	1,9010C/9012B	LH

Project Name: HVRA　　**Lab Number:** L1934860

Project Number: 18.8090　　**Report Date:** 08/21/19

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): 01,05 Batch: WG1269984-1										
Cyanide, Total	ND		mg/kg	0.88	0.18	1	08/08/19 13:40	08/09/19 13:54	1,9010C/9012B	LH

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,05 Batch: WG1269984-2 WG1269984-3								
Cyanide, Total	**58**	Q	**62**	Q	80-120	15		35

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,05 QC Batch ID: WG1269984-4 WG1269984-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Cyanide, Total	ND	10	10	97		9.9	100		75-125	1		35

Lab Duplicate Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,05 QC Batch ID: WG1269661-1 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0						
Solids, Total	94.0	92.7	%	1		20

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

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(*)
L1934860-01A	Vial MeOH preserved	A	NA		3.1	Y	Absent		NYTCL-8260HLW-R2(14)
L1934860-01A1	Vial MeOH preserved	A	NA		3.1	Y	Absent		NYTCL-8260HLW-R2(14)
L1934860-01A2	Vial MeOH preserved	A	NA		3.1	Y	Absent		NYTCL-8260HLW-R2(14)
L1934860-01B	Vial water preserved	A	NA		3.1	Y	Absent	06-AUG-19 08:08	NYTCL-8260HLW-R2(14)
L1934860-01B1	Vial water preserved	A	NA		3.1	Y	Absent	06-AUG-19 08:08	NYTCL-8260HLW-R2(14)
L1934860-01B2	Vial water preserved	A	NA		3.1	Y	Absent	06-AUG-19 08:08	NYTCL-8260HLW-R2(14)
L1934860-01C	Vial water preserved	A	NA		3.1	Y	Absent	06-AUG-19 08:08	NYTCL-8260HLW-R2(14)
L1934860-01C1	Vial water preserved	A	NA		3.1	Y	Absent	06-AUG-19 08:08	NYTCL-8260HLW-R2(14)
L1934860-01C2	Vial water preserved	A	NA		3.1	Y	Absent	06-AUG-19 08:08	NYTCL-8260HLW-R2(14)
L1934860-01D	Plastic 2oz unpreserved for TS	A	NA		3.1	Y	Absent		TS(7)
L1934860-01D1	Plastic 2oz unpreserved for TS	A	NA		3.1	Y	Absent		TS(7)
L1934860-01D2	Plastic 2oz unpreserved for TS	A	NA		3.1	Y	Absent		TS(7)
L1934860-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1934860-01E1	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1934860-01E2	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)

*Values in parentheses indicate holding time in days

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1934860-01F	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1934860-01F1	Glass 250ml/8oz unpreserved	A	NA		3.1	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1934860-01F2	Glass 250ml/8oz unpreserved	A	NA		3.1	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1934860-01G	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1934860-01H	Plastic 8oz unpreserved	B	NA		3.6	Y	Absent		A2-NY-537-ISOTOPE(28)
L1934860-01H1	Plastic 8oz unpreserved	B	NA		3.6	Y	Absent		A2-NY-537-ISOTOPE(28)
L1934860-01H2	Plastic 8oz unpreserved	B	NA		3.6	Y	Absent		A2-NY-537-ISOTOPE(28)
L1934860-02A	Plastic 250ml unpreserved	B	NA		3.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934860-03A	Plastic 250ml unpreserved	B	NA		3.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934860-04A	Plastic 250ml unpreserved	B	NA		3.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1934860-05A	Plastic 2oz unpreserved for TS	B	NA		3.6	Y	Absent		TS(7)
L1934860-05B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1934860-05C	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1934860-05D	Plastic 8oz unpreserved	B	NA		3.6	Y	Absent		A2-NY-537-ISOTOPE(28)

*Values in parentheses indicate holding time in days

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

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.
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.

Footnotes

Report Format: DU Report with 'J' Qualifiers

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.

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. If a 'Total' result is requested, the results of its individual components will also be reported.

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 using acetone as a solvent.

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.

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.

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.

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

LIMITATION OF LIABILITIES

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
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; 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.**

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.

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

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 1 of 1

Date Rec'd in Lab 08/06/19

ALPHA Job # L1934860

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

Project Information

Project Name: HVRA
Project Location: Wappinger's Falls, NY
Project # 18.8090
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
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 #

Client Information

Client: C.T. Male Associates
Address: 50 Century Hill Dr.
Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

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:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

*Confirm analyses w/ D.Lent - d.lent@ctmale.com *

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	TCL VOCs	TCL PCBs	TCL SVOCs	TCL Pest.	TAL Metals	PFAS, moisture	1,4-Dioxane	CN	Sample Specific Comments	Total Bottles
34860-01	HVRA-MW100-6.0	8/5/19	1300	Soil	CB	✓	✓	✓	✓	✓	✓	✓	✓	MS/MSD HERE	22
-02	HVRA-FTB01-190805	↓	1340	Water	CB						✓				1
-03	HVRA-LTB01-190805	↓	—	Water	CB						✓				1
-04	HVRA-RB01-190805	↓	14:25	Water	CB						✓				1
-05	HVRA-MW101-8.5	↓	15:00	Soil	CB		✓		✓	✓	✓	✓	✓		4

	TCL VOCs	TCL PCBs	TCL SVOCs	TCL Pest.	TAL Metals	PFAS, moisture	1,4-Dioxane	CN
Container Type	G	A	A	A	A	P	A	A
Preservative	F	A	A	A	A	A	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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	16:40 8/5/19	GJAC (AAL)	8/5/19@16:40
GJAC / [signature]	8/5/19@ 18:40	[signature]	8/5/19 19:35
[signature]	8/6/19 00:15	[signature]	8/6/19 00:15

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.)

ANALYTICAL REPORT

Lab Number:	L1935085
Client:	C.T. Male Associates 50 Century Hill Drive Latham, NY 12210
ATTN:	Kirk Moline
Phone:	(518) 786-7400
Project Name:	HVRA
Project Number:	18.8090
Report Date:	08/20/19

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: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1935085-01	HVRA-FTB01-190806	WATER	WAPPINGERS FALLS, NY	08/06/19 10:00	08/06/19
L1935085-02	HVRA-LTB01-190806	WATER	WAPPINGERS FALLS, NY	08/06/19 00:00	08/06/19
L1935085-03	HVRA-RB01-190806	WATER	WAPPINGERS FALLS, NY	08/06/19 08:35	08/06/19
L1935085-04	HVRA-MW102-4.5	SOIL	WAPPINGERS FALLS, NY	08/06/19 09:45	08/06/19
L1935085-05	HVRA-FD01-190806	SOIL	WAPPINGERS FALLS, NY	08/06/19 00:00	08/06/19
L1935085-06	HVRA-MW103-10.0	SOIL	WAPPINGERS FALLS, NY	08/06/19 11:45	08/06/19
L1935085-07	HVRA-RB02-190806	WATER	WAPPINGERS FALLS, NY	08/06/19 11:30	08/06/19
L1935085-08	HVRA-RB03-190806	WATER	WAPPINGERS FALLS, NY	08/06/19 12:50	08/06/19
L1935085-09	HVRA-MW104-9.5	SOIL	WAPPINGERS FALLS, NY	08/06/19 13:25	08/06/19
L1935085-10	HVRA-EB01-190806	WATER	WAPPINGERS FALLS, NY	08/06/19 13:20	08/06/19
L1935085-11	HVRA-RB04-190806	WATER	WAPPINGERS FALLS, NY	08/06/19 14:45	08/06/19
L1935085-12	HVRA-MW105-4.0	SOIL	WAPPINGERS FALLS, NY	08/06/19 15:50	08/06/19
L1935085-13	TRIP BLANK	WATER	WAPPINGERS FALLS, NY	08/06/19 00:00	08/06/19

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

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.

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

L1935085-13: A sample identified as "TRIP BLANK" was received, but not listed on the Chain of Custody and was not analyzed.

Volatile Organics

L1935085-02: The Trip Blank has a result for acetone present above the reporting limit. The sample was verified as being labeled correctly by the laboratory and the previous analysis showed there was no potential for carry over.

Perfluorinated Alkyl Acids by Isotope Dilution

L1935085-04, -05, -09, and -12: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1270181-2/-3 LCS/LCSD RPD, associated with L1935085-04, -05, -06, -09, and -12, is above the acceptance criteria for perfluorooctanesulfonamide (fosa) (34%).

WG1271296-1: The continuing calibration standard had the response for 1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS) outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

Total Metals

L1935085-04, -05, 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.

Cyanide, Total

Case Narrative (continued)

The WG1269546-2/-3 LCS/LCSD recoveries (73%/72%), associated with L1935085-04, -05, and -06, are outside our in-house acceptance criteria, but within the vendor-certified acceptance limits. The results of the original analyses are 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: Kelly Stenstrom Kelly Stenstrom

Title: Technical Director/Representative Date: 08/20/19

ORGANICS

VOLATILES

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-02	Date Collected:	08/06/19 00:00
Client ID:	HVRA-LTB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 08/14/19 08:25
Analyst: MM

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
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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-02	Date Collected:	08/06/19 00:00
Client ID:	HVRA-LTB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	7.0		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	111		70-130

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-04	Date Collected:	08/06/19 09:45
Client ID:	HVRA-MW102-4.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 08/15/19 21:51
Analyst: AD
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.7	2.2	1
1,1-Dichloroethane	ND		ug/kg	0.95	0.14	1
Chloroform	ND		ug/kg	1.4	0.13	1
Carbon tetrachloride	ND		ug/kg	0.95	0.22	1
1,2-Dichloropropane	ND		ug/kg	0.95	0.12	1
Dibromochloromethane	ND		ug/kg	0.95	0.13	1
1,1,2-Trichloroethane	ND		ug/kg	0.95	0.25	1
Tetrachloroethene	ND		ug/kg	0.47	0.18	1
Chlorobenzene	ND		ug/kg	0.47	0.12	1
Trichlorofluoromethane	ND		ug/kg	3.8	0.66	1
1,2-Dichloroethane	ND		ug/kg	0.95	0.24	1
1,1,1-Trichloroethane	ND		ug/kg	0.47	0.16	1
Bromodichloromethane	ND		ug/kg	0.47	0.10	1
trans-1,3-Dichloropropene	ND		ug/kg	0.95	0.26	1
cis-1,3-Dichloropropene	ND		ug/kg	0.47	0.15	1
Bromoform	ND		ug/kg	3.8	0.23	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.47	0.16	1
Benzene	ND		ug/kg	0.47	0.16	1
Toluene	ND		ug/kg	0.95	0.51	1
Ethylbenzene	ND		ug/kg	0.95	0.13	1
Chloromethane	ND		ug/kg	3.8	0.88	1
Bromomethane	ND		ug/kg	1.9	0.55	1
Vinyl chloride	ND		ug/kg	0.95	0.32	1
Chloroethane	ND		ug/kg	1.9	0.43	1
1,1-Dichloroethene	ND		ug/kg	0.95	0.22	1
trans-1,2-Dichloroethene	ND		ug/kg	1.4	0.13	1
Trichloroethene	ND		ug/kg	0.47	0.13	1
1,2-Dichlorobenzene	ND		ug/kg	1.9	0.14	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-04	Date Collected:	08/06/19 09:45
Client ID:	HVRA-MW102-4.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	1.9	0.14	1
1,4-Dichlorobenzene	ND		ug/kg	1.9	0.16	1
Methyl tert butyl ether	ND		ug/kg	1.9	0.19	1
p/m-Xylene	ND		ug/kg	1.9	0.53	1
o-Xylene	ND		ug/kg	0.95	0.28	1
cis-1,2-Dichloroethene	ND		ug/kg	0.95	0.16	1
Styrene	ND		ug/kg	0.95	0.18	1
Dichlorodifluoromethane	ND		ug/kg	9.5	0.87	1
Acetone	13		ug/kg	9.5	4.6	1
Carbon disulfide	ND		ug/kg	9.5	4.3	1
2-Butanone	ND		ug/kg	9.5	2.1	1
4-Methyl-2-pentanone	ND		ug/kg	9.5	1.2	1
2-Hexanone	ND		ug/kg	9.5	1.1	1
Bromochloromethane	ND		ug/kg	1.9	0.19	1
1,2-Dibromoethane	ND		ug/kg	0.95	0.26	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.8	0.95	1
Isopropylbenzene	ND		ug/kg	0.95	0.10	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.9	0.30	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.9	0.26	1
Methyl Acetate	ND		ug/kg	3.8	0.90	1
Cyclohexane	ND		ug/kg	9.5	0.52	1
1,4-Dioxane	ND		ug/kg	76	33.	1
Freon-113	ND		ug/kg	3.8	0.66	1
Methyl cyclohexane	ND		ug/kg	3.8	0.57	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	99		70-130

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-05
Client ID: HVRA-FD01-190806
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 00:00
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 08/15/19 22:31
Analyst: AD
Percent Solids: 89%

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	0.15	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
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	0.55	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	0.46	1
1,1-Dichloroethene	ND		ug/kg	1.0	0.24	1
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14	1
Trichloroethene	ND		ug/kg	0.50	0.14	1
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14	1

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-05	Date Collected:	08/06/19 00:00
Client ID:	HVRA-FD01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18	1
Styrene	ND		ug/kg	1.0	0.20	1
Dichlorodifluoromethane	ND		ug/kg	10	0.92	1
Acetone	54		ug/kg	10	4.8	1
Carbon disulfide	ND		ug/kg	10	4.6	1
2-Butanone	ND		ug/kg	10	2.2	1
4-Methyl-2-pentanone	ND		ug/kg	10	1.3	1
2-Hexanone	ND		ug/kg	10	1.2	1
Bromochloromethane	ND		ug/kg	2.0	0.21	1
1,2-Dibromoethane	ND		ug/kg	1.0	0.28	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0	1
Isopropylbenzene	ND		ug/kg	1.0	0.11	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
Methyl Acetate	38		ug/kg	4.0	0.96	1
Cyclohexane	ND		ug/kg	10	0.55	1
1,4-Dioxane	ND		ug/kg	80	35.	1
Freon-113	ND		ug/kg	4.0	0.70	1
Methyl cyclohexane	ND		ug/kg	4.0	0.61	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	99		70-130

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-06	Date Collected:	08/06/19 11:45
Client ID:	HVRA-MW103-10.0	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 08/15/19 23:10
Analyst: AD
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.8	2.2	1
1,1-Dichloroethane	ND		ug/kg	0.96	0.14	1
Chloroform	ND		ug/kg	1.4	0.13	1
Carbon tetrachloride	ND		ug/kg	0.96	0.22	1
1,2-Dichloropropane	ND		ug/kg	0.96	0.12	1
Dibromochloromethane	ND		ug/kg	0.96	0.13	1
1,1,2-Trichloroethane	ND		ug/kg	0.96	0.26	1
Tetrachloroethene	ND		ug/kg	0.48	0.19	1
Chlorobenzene	ND		ug/kg	0.48	0.12	1
Trichlorofluoromethane	ND		ug/kg	3.8	0.67	1
1,2-Dichloroethane	ND		ug/kg	0.96	0.25	1
1,1,1-Trichloroethane	ND		ug/kg	0.48	0.16	1
Bromodichloromethane	ND		ug/kg	0.48	0.10	1
trans-1,3-Dichloropropene	ND		ug/kg	0.96	0.26	1
cis-1,3-Dichloropropene	ND		ug/kg	0.48	0.15	1
Bromoform	ND		ug/kg	3.8	0.24	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.48	0.16	1
Benzene	ND		ug/kg	0.48	0.16	1
Toluene	ND		ug/kg	0.96	0.52	1
Ethylbenzene	ND		ug/kg	0.96	0.14	1
Chloromethane	ND		ug/kg	3.8	0.89	1
Bromomethane	ND		ug/kg	1.9	0.56	1
Vinyl chloride	ND		ug/kg	0.96	0.32	1
Chloroethane	ND		ug/kg	1.9	0.43	1
1,1-Dichloroethene	ND		ug/kg	0.96	0.23	1
trans-1,2-Dichloroethene	ND		ug/kg	1.4	0.13	1
Trichloroethene	ND		ug/kg	0.48	0.13	1
1,2-Dichlorobenzene	ND		ug/kg	1.9	0.14	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-06 Date Collected: 08/06/19 11:45

Client ID: HVRA-MW103-10.0 Date Received: 08/06/19

Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	1.9	0.14	1
1,4-Dichlorobenzene	ND		ug/kg	1.9	0.16	1
Methyl tert butyl ether	ND		ug/kg	1.9	0.19	1
p/m-Xylene	ND		ug/kg	1.9	0.54	1
o-Xylene	ND		ug/kg	0.96	0.28	1
cis-1,2-Dichloroethene	ND		ug/kg	0.96	0.17	1
Styrene	ND		ug/kg	0.96	0.19	1
Dichlorodifluoromethane	ND		ug/kg	9.6	0.88	1
Acetone	ND		ug/kg	9.6	4.6	1
Carbon disulfide	ND		ug/kg	9.6	4.4	1
2-Butanone	ND		ug/kg	9.6	2.1	1
4-Methyl-2-pentanone	ND		ug/kg	9.6	1.2	1
2-Hexanone	ND		ug/kg	9.6	1.1	1
Bromochloromethane	ND		ug/kg	1.9	0.20	1
1,2-Dibromoethane	ND		ug/kg	0.96	0.27	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.9	0.96	1
Isopropylbenzene	ND		ug/kg	0.96	0.10	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.9	0.31	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.9	0.26	1
Methyl Acetate	ND		ug/kg	3.8	0.91	1
Cyclohexane	ND		ug/kg	9.6	0.52	1
1,4-Dioxane	ND		ug/kg	77	34.	1
Freon-113	ND		ug/kg	3.8	0.66	1
Methyl cyclohexane	ND		ug/kg	3.8	0.58	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	99		70-130

Project Name: HVRA | **Lab Number:** L1935085

Project Number: 18.8090 | **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 08/14/19 08:50
Analyst: MM

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
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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	4.6	J	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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	111		70-130

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/14/19 06:00
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02,10 Batch: WG1272181-5					
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
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
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/14/19 06:00
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02,10 Batch: WG1272181-5					
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23
Cyclohexane	ND		ug/l	10	0.27
1,4-Dioxane	ND		ug/l	250	61.
Freon-113	ND		ug/l	2.5	0.70
Methyl cyclohexane	ND		ug/l	10	0.40

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/14/19 06:00
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02,10 Batch: WG1272181-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	106		70-130

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/15/19 18:33
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 04-06 Batch: WG1273158-5					
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
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
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/15/19 18:33
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 04-06 Batch: WG1273158-5					
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
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
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
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Isopropylbenzene	ND		ug/kg	1.0	0.11
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
Methyl Acetate	ND		ug/kg	4.0	0.95
Cyclohexane	ND		ug/kg	10	0.54
1,4-Dioxane	ND		ug/kg	80	35.
Freon-113	ND		ug/kg	4.0	0.69
Methyl cyclohexane	ND		ug/kg	4.0	0.60

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/15/19 18:33
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 04-06 Batch: WG1273158-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,10 Batch: WG1272181-3 WG1272181-4								
Methylene chloride	98		98		70-130	0		20
1,1-Dichloroethane	97		98		70-130	1		20
Chloroform	95		94		70-130	1		20
Carbon tetrachloride	94		99		63-132	5		20
1,2-Dichloropropane	96		96		70-130	0		20
Dibromochloromethane	92		90		63-130	2		20
1,1,2-Trichloroethane	97		90		70-130	7		20
Tetrachloroethene	93		98		70-130	5		20
Chlorobenzene	94		93		75-130	1		20
Trichlorofluoromethane	87		96		62-150	10		20
1,2-Dichloroethane	83		83		70-130	0		20
1,1,1-Trichloroethane	89		93		67-130	4		20
Bromodichloromethane	88		89		67-130	1		20
trans-1,3-Dichloropropene	89		88		70-130	1		20
cis-1,3-Dichloropropene	95		94		70-130	1		20
Bromoform	82		81		54-136	1		20
1,1,2,2-Tetrachloroethane	91		87		67-130	4		20
Benzene	96		98		70-130	2		20
Toluene	94		93		70-130	1		20
Ethylbenzene	90		90		70-130	0		20
Chloromethane	93		98		64-130	5		20
Bromomethane	71		71		39-139	0		20
Vinyl chloride	86		94		55-140	9		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,10 Batch: WG1272181-3 WG1272181-4								
Chloroethane	70		74		55-138	6		20
1,1-Dichloroethene	98		100		61-145	2		20
trans-1,2-Dichloroethene	98		100		70-130	2		20
Trichloroethene	94		98		70-130	4		20
1,2-Dichlorobenzene	88		88		70-130	0		20
1,3-Dichlorobenzene	90		89		70-130	1		20
1,4-Dichlorobenzene	88		88		70-130	0		20
Methyl tert butyl ether	83		80		63-130	4		20
p/m-Xylene	90		90		70-130	0		20
o-Xylene	90		90		70-130	0		20
cis-1,2-Dichloroethene	96		96		70-130	0		20
Styrene	90		90		70-130	0		20
Dichlorodifluoromethane	93		100		36-147	7		20
Acetone	110		98		58-148	12		20
Carbon disulfide	99		100		51-130	1		20
2-Butanone	100		98		63-138	2		20
4-Methyl-2-pentanone	84		80		59-130	5		20
2-Hexanone	88		76		57-130	15		20
Bromochloromethane	110		110		70-130	0		20
1,2-Dibromoethane	94		90		70-130	4		20
1,2-Dibromo-3-chloropropane	82		78		41-144	5		20
Isopropylbenzene	81		84		70-130	4		20
1,2,3-Trichlorobenzene	84		82		70-130	2		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,10 Batch: WG1272181-3 WG1272181-4								
1,2,4-Trichlorobenzene	83		82		70-130	1		20
Methyl Acetate	120		110		70-130	9		20
Cyclohexane	100		120		70-130	18		20
1,4-Dioxane	100		80		56-162	**22**	Q	20
Freon-113	100		120		70-130	18		20
Methyl cyclohexane	92		100		70-130	8		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		90		70-130
Toluene-d8	107		106		70-130
4-Bromofluorobenzene	88		91		70-130
Dibromofluoromethane	106		108		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-06 Batch: WG1273158-3 WG1273158-4								
Methylene chloride	90		92		70-130	2		30
1,1-Dichloroethane	91		94		70-130	3		30
Chloroform	92		94		70-130	2		30
Carbon tetrachloride	82		84		70-130	2		30
1,2-Dichloropropane	92		94		70-130	2		30
Dibromochloromethane	81		84		70-130	4		30
1,1,2-Trichloroethane	92		92		70-130	0		30
Tetrachloroethene	86		87		70-130	1		30
Chlorobenzene	91		94		70-130	3		30
Trichlorofluoromethane	84		86		70-139	2		30
1,2-Dichloroethane	86		88		70-130	2		30
1,1,1-Trichloroethane	88		90		70-130	2		30
Bromodichloromethane	89		92		70-130	3		30
trans-1,3-Dichloropropene	84		86		70-130	2		30
cis-1,3-Dichloropropene	87		90		70-130	3		30
Bromoform	78		78		70-130	0		30
1,1,2,2-Tetrachloroethane	93		91		70-130	2		30
Benzene	93		94		70-130	1		30
Toluene	91		91		70-130	0		30
Ethylbenzene	94		96		70-130	2		30
Chloromethane	74		75		52-130	1		30
Bromomethane	100		99		57-147	1		30
Vinyl chloride	80		81		67-130	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-06 Batch: WG1273158-3 WG1273158-4								
Chloroethane	92		93		50-151	1		30
1,1-Dichloroethene	88		91		65-135	3		30
trans-1,2-Dichloroethene	91		93		70-130	2		30
Trichloroethene	90		92		70-130	2		30
1,2-Dichlorobenzene	88		89		70-130	1		30
1,3-Dichlorobenzene	89		91		70-130	2		30
1,4-Dichlorobenzene	89		90		70-130	1		30
Methyl tert butyl ether	87		88		66-130	1		30
p/m-Xylene	92		94		70-130	2		30
o-Xylene	92		95		70-130	3		30
cis-1,2-Dichloroethene	90		92		70-130	2		30
Styrene	93		95		70-130	2		30
Dichlorodifluoromethane	60		61		30-146	2		30
Acetone	66		**51**	Q	54-140	26		30
Carbon disulfide	77		80		59-130	4		30
2-Butanone	86		80		70-130	7		30
4-Methyl-2-pentanone	89		83		70-130	7		30
2-Hexanone	89		83		70-130	7		30
Bromochloromethane	86		86		70-130	0		30
1,2-Dibromoethane	84		85		70-130	1		30
1,2-Dibromo-3-chloropropane	73		72		68-130	1		30
Isopropylbenzene	96		97		70-130	1		30
1,2,3-Trichlorobenzene	83		85		70-130	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-06 Batch: WG1273158-3 WG1273158-4								
1,2,4-Trichlorobenzene	85		87		70-130	2		30
Methyl Acetate	79		78		51-146	1		30
Cyclohexane	84		86		59-142	2		30
1,4-Dioxane	81		76		65-136	6		30
Freon-113	84		86		50-139	2		30
Methyl cyclohexane	85		89		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		98		70-130
Toluene-d8	105		104		70-130
4-Bromofluorobenzene	108		107		70-130
Dibromofluoromethane	95		97		70-130

SEMIVOLATILES

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-01	Date Collected:	08/06/19 10:00
Client ID:	HVRA-FTB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 11:17
Analytical Date:	08/19/19 12:34		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.02	0.413	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.02	0.401	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.02	0.241	1
Perfluorohexanoic Acid (PFHxA)	0.364	J	ng/l	2.02	0.332	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.02	0.228	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.02	0.380	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.02	0.239	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.02	1.35	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.02	0.696	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.02	0.316	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.02	0.510	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.02	0.308	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.02	1.23	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.02	0.656	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.02	0.263	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.02	0.992	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.02	0.587	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.02	0.814	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.02	0.376	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.02	0.331	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.02	0.251	1
PFOA/PFOS, Total	ND		ng/l	2.02	0.239	1

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-01	Date Collected:	08/06/19 10:00
Client ID:	HVRA-FTB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	78		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	57		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		33-143

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-02	Date Collected:	08/06/19 00:00
Client ID:	HVRA-LTB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 11:17
Analytical Date:	08/19/19 12:51		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.96	0.400	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.96	0.388	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.96	0.233	1
Perfluorohexanoic Acid (PFHxA)	0.396	J	ng/l	1.96	0.322	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.96	0.221	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.96	0.369	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.96	0.231	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.96	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.96	0.674	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.96	0.306	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.96	0.494	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.96	0.298	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.96	1.19	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.96	0.635	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.96	0.255	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.96	0.961	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.96	0.569	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.96	0.788	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.96	0.365	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.96	0.321	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.96	0.243	1
PFOA/PFOS, Total	ND		ng/l	1.96	0.231	1

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-02
Client ID: HVRA-LTB01-190806
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/06/19 00:00
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	66		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	60		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	135		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		33-143

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-03
Client ID: HVRA-RB01-190806
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/06/19 08:35
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/19/19 13:25
Analyst: AJ
Extraction Method: EPA 537
Extraction Date: 08/15/19 11:17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.97	0.402	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.97	0.390	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.97	0.234	1
Perfluorohexanoic Acid (PFHxA)	0.583	J	ng/l	1.97	0.323	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.97	0.222	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.97	0.370	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.97	0.232	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.97	1.31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.97	0.677	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.97	0.307	1
Perfluorooctanesulfonic Acid (PFOS)	0.524	J	ng/l	1.97	0.496	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.97	0.299	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.97	1.19	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.97	0.638	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.97	0.256	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.97	0.964	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.97	0.571	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.97	0.791	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.97	0.366	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.97	0.322	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.97	0.244	1
PFOA/PFOS, Total	0.524	J	ng/l	1.97	0.232	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-03	Date Collected:	08/06/19 08:35
Client ID:	HVRA-RB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	119		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	86		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	72		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	108		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	145		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	111		33-143

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-04	Date Collected:	08/06/19 09:45
Client ID:	HVRA-MW102-4.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8270D	Extraction Date:	08/16/19 04:15
Analytical Date:	08/17/19 16:02		
Analyst:	RC		
Percent Solids:	89%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	150	19.	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
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	62.	1
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

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-04	Date Collected:	08/06/19 09:45
Client ID:	HVRA-MW102-4.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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	33.	1
2-Nitroaniline	ND		ug/kg	180	35.	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
2,4,5-Trichlorophenol	ND		ug/kg	180	35.	1
Carbazole	ND		ug/kg	180	18.	1
Atrazine	ND		ug/kg	150	64.	1
Benzaldehyde	ND		ug/kg	240	50.	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-04	Date Collected:	08/06/19 09:45
Client ID:	HVRA-MW102-4.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	180	56.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	180	37.	1
1,4-Dioxane	ND		ug/kg	28	8.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	71		25-120
Phenol-d6	75		10-120
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	65		30-120
2,4,6-Tribromophenol	65		10-136
4-Terphenyl-d14	65		18-120

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-04	Date Collected:	08/06/19 09:45
Client ID:	HVRA-MW102-4.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/08/19 15:12
Analytical Date:	08/13/19 14:43		
Analyst:	JW		
Percent Solids:	89%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ug/kg	1.00	0.023	1
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039	1
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061	1
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.137	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.00	0.067	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.288	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202	1
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.00	0.047	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.205	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054	1
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042	1

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-04	Date Collected:	08/06/19 09:45
Client ID:	HVRA-MW102-4.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	69		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	51		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	69		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	69		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	57		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**36**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**61**	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	61		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**33**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**54**	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34		26-160

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-05	Date Collected:	08/06/19 00:00
Client ID:	HVRA-FD01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8270D	Extraction Date:	08/16/19 04:15
Analytical Date:	08/17/19 02:53		
Analyst:	RC		
Percent Solids:	89%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	150	19.	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
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
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

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-05	Date Collected:	08/06/19 00:00
Client ID:	HVRA-FD01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
2,4,5-Trichlorophenol	ND		ug/kg	180	35.	1
Carbazole	ND		ug/kg	180	18.	1
Atrazine	ND		ug/kg	150	64.	1
Benzaldehyde	ND		ug/kg	240	50.	1

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-05	Date Collected:	08/06/19 00:00
Client ID:	HVRA-FD01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	180	56.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	180	37.	1
1,4-Dioxane	ND		ug/kg	28	8.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	78		25-120
Phenol-d6	82		10-120
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	68		30-120
2,4,6-Tribromophenol	73		10-136
4-Terphenyl-d14	59		18-120

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-05	Date Collected:	08/06/19 00:00
Client ID:	HVRA-FD01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/08/19 15:12
Analytical Date:	08/13/19 14:59		
Analyst:	JW		
Percent Solids:	89%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ug/kg	1.09	0.025	1
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.09	0.050	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.09	0.043	1
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.09	0.057	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.09	0.049	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.09	0.066	1
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.09	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.09	0.196	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.09	0.149	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.09	0.082	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.09	0.142	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.09	0.073	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.09	0.313	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.09	0.220	1
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.09	0.051	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.09	0.167	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.09	0.107	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.09	0.092	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.09	0.076	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.09	0.223	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.09	0.059	1
PFOA/PFOS, Total	ND		ug/kg	1.09	0.046	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-05	Date Collected:	08/06/19 00:00
Client ID:	HVRA-FD01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	82		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	61		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	69		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**42**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	67		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	48		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		26-160

Project Name: HVRA | **Lab Number:** L1935085

Project Number: 18.8090 | **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-06
Client ID: HVRA-MW103-10.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 11:45
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 08/20/19 02:02
Analyst: IM
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 08/19/19 08:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	140	18.	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
3,3'-Dichlorobenzidine	ND		ug/kg	180	47.	1
2,4-Dinitrotoluene	ND		ug/kg	180	36.	1
2,6-Dinitrotoluene	ND		ug/kg	180	30.	1
Fluoranthene	ND		ug/kg	110	20.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	19.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	27.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	210	30.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	190	18.	1
Hexachlorobutadiene	ND		ug/kg	180	26.	1
Hexachlorocyclopentadiene	ND		ug/kg	510	160	1
Hexachloroethane	ND		ug/kg	140	29.	1
Isophorone	ND		ug/kg	160	23.	1
Naphthalene	ND		ug/kg	180	22.	1
Nitrobenzene	ND		ug/kg	160	26.	1
NDPA/DPA	ND		ug/kg	140	20.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	27.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	61.	1
Butyl benzyl phthalate	ND		ug/kg	180	45.	1
Di-n-butylphthalate	ND		ug/kg	180	34.	1
Di-n-octylphthalate	ND		ug/kg	180	60.	1
Diethyl phthalate	ND		ug/kg	180	16.	1
Dimethyl phthalate	ND		ug/kg	180	37.	1
Benzo(a)anthracene	ND		ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-06	Date Collected:	08/06/19 11:45
Client ID:	HVRA-MW103-10.0	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	ND		ug/kg	110	30.	1
Benzo(k)fluoranthene	ND		ug/kg	110	28.	1
Chrysene	ND		ug/kg	110	18.	1
Acenaphthylene	ND		ug/kg	140	27.	1
Anthracene	ND		ug/kg	110	35.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	17.	1
Phenanthrene	ND		ug/kg	110	22.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	20.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	140	25.	1
Pyrene	ND		ug/kg	110	18.	1
Biphenyl	ND		ug/kg	400	41.	1
4-Chloroaniline	ND		ug/kg	180	32.	1
2-Nitroaniline	ND		ug/kg	180	34.	1
3-Nitroaniline	ND		ug/kg	180	34.	1
4-Nitroaniline	ND		ug/kg	180	74.	1
Dibenzofuran	ND		ug/kg	180	17.	1
2-Methylnaphthalene	ND		ug/kg	210	21.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	18.	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	26.	1
2-Chlorophenol	ND		ug/kg	180	21.	1
2,4-Dichlorophenol	ND		ug/kg	160	28.	1
2,4-Dimethylphenol	ND		ug/kg	180	59.	1
2-Nitrophenol	ND		ug/kg	380	67.	1
4-Nitrophenol	ND		ug/kg	250	72.	1
2,4-Dinitrophenol	ND		ug/kg	850	83.	1
4,6-Dinitro-o-cresol	ND		ug/kg	460	85.	1
Pentachlorophenol	ND		ug/kg	140	39.	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
2,4,5-Trichlorophenol	ND		ug/kg	180	34.	1
Carbazole	ND		ug/kg	180	17.	1
Atrazine	ND		ug/kg	140	62.	1
Benzaldehyde	ND		ug/kg	230	48.	1

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-06	Date Collected:	08/06/19 11:45
Client ID:	HVRA-MW103-10.0	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	180	54.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	180	36.	1
1,4-Dioxane	ND		ug/kg	27	8.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	59		25-120
Phenol-d6	66		10-120
Nitrobenzene-d5	47		23-120
2-Fluorobiphenyl	56		30-120
2,4,6-Tribromophenol	81		10-136
4-Terphenyl-d14	68		18-120

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-06
Client ID: HVRA-MW103-10.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 11:45
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/13/19 15:16
Analyst: JW
Percent Solids: 91%

Extraction Method: EPA 537(M)
Extraction Date: 08/08/19 15:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ug/kg	0.989	0.022	1
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	0.989	0.046	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	0.989	0.039	1
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	0.989	0.052	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	0.989	0.045	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	0.989	0.060	1
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	0.989	0.041	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	8.28		ug/kg	0.989	0.178	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	0.989	0.135	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	0.989	0.074	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	0.989	0.128	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	0.989	0.066	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	0.989	0.284	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	0.989	0.199	1
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	0.989	0.046	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	0.989	0.151	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	0.989	0.097	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	0.989	0.084	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	0.989	0.069	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	0.989	0.202	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	0.989	0.053	1
PFOA/PFOS, Total	ND		ug/kg	0.989	0.041	1

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-06	Date Collected:	08/06/19 11:45
Client ID:	HVRA-MW103-10.0	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		26-160

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-07	Date Collected:	08/06/19 11:30
Client ID:	HVRA-RB02-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 11:17
Analytical Date:	08/19/19 13:42		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
Perfluorohexanoic Acid (PFHxA)	0.404	J	ng/l	1.80	0.296	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	0.960	J	ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.884	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1
PFOA/PFOS, Total	0.960	J	ng/l	1.80	0.213	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-07	Date Collected:	08/06/19 11:30
Client ID:	HVRA-RB02-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	126		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	135		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	130		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	121		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	121		33-143

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-08	Date Collected:	08/06/19 12:50
Client ID:	HVRA-RB03-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 11:17
Analytical Date:	08/19/19 13:59		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.86	0.379	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.86	0.368	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.86	0.221	1
Perfluorohexanoic Acid (PFHxA)	0.416	J	ng/l	1.86	0.305	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.86	0.209	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.86	0.349	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.86	0.219	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.86	0.639	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.86	0.290	1
Perfluorooctanesulfonic Acid (PFOS)	2.23		ng/l	1.86	0.468	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	0.282	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	1.13	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.602	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.242	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	0.911	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	0.539	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	0.747	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.346	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.304	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	0.230	1
PFOA/PFOS, Total	2.23		ng/l	1.86	0.219	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-08	Date Collected:	08/06/19 12:50
Client ID:	HVRA-RB03-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	116		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	76		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	72		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	33		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	104		33-143

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-09	Date Collected:	08/06/19 13:25
Client ID:	HVRA-MW104-9.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8270D	Extraction Date:	08/17/19 01:31
Analytical Date:	08/18/19 18:37		
Analyst:	RC		
Percent Solids:	95%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
1,4-Dioxane	ND		ug/kg	26	8.1	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	87		25-120
Phenol-d6	95		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	78		30-120
2,4,6-Tribromophenol	87		10-136
4-Terphenyl-d14	78		18-120

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-09	Date Collected:	08/06/19 13:25
Client ID:	HVRA-MW104-9.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/08/19 15:12
Analytical Date:	08/13/19 15:32		
Analyst:	JW		
Percent Solids:	95%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ug/kg	1.02	0.023	1
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.02	0.047	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.02	0.040	1
Perfluorohexanoic Acid (PFHxA)	0.138	J	ug/kg	1.02	0.054	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.02	0.046	1
Perfluorohexanesulfonic Acid (PFHxS)	3.65		ug/kg	1.02	0.062	1
Perfluorooctanoic Acid (PFOA)	0.142	J	ug/kg	1.02	0.043	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.36		ug/kg	1.02	0.184	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.02	0.140	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.02	0.077	1
Perfluorooctanesulfonic Acid (PFOS)	43.8		ug/kg	1.02	0.133	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.02	0.069	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.02	0.294	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.02	0.206	1
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.02	0.048	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.02	0.157	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.02	0.100	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.02	0.087	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.02	0.072	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.02	0.210	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.02	0.055	1
PFOA/PFOS, Total	43.9	J	ug/kg	1.02	0.043	1

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-09	Date Collected:	08/06/19 13:25
Client ID:	HVRA-MW104-9.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	64		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**60**	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	62		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	74		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	64		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	54		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	65		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**63**	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	61		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**27**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**61**	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**29**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**52**	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	32		26-160

Project Name: HVRA
Lab Number: L1935085
Project Number: 18.8090
Report Date: 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-10
Client ID: HVRA-EB01-190806
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 13:20
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 08/14/19 14:25
Analyst: RC

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 15:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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	1.7	J	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
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

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	56		21-120
Phenol-d6	44		10-120
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	70		15-120
2,4,6-Tribromophenol	54		10-120
4-Terphenyl-d14	76		41-149

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/08/19 17:30
Analytical Date:	08/09/19 15:18		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	37		15-110

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/11/19 15:37
Analytical Date:	08/12/19 13:29		
Analyst:	CB		

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	0.06	J	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	0.03	J	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	0.03	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:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	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	55		21-120
Phenol-d6	42		10-120
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	70		15-120
2,4,6-Tribromophenol	77		10-120
4-Terphenyl-d14	72		41-149

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 11:17
Analytical Date:	08/19/19 13:08		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.89	0.386	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.89	0.375	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.225	1
Perfluorohexanoic Acid (PFHxA)	0.409	J	ng/l	1.89	0.311	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	0.213	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.356	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.89	0.223	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.652	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	0.295	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.477	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	0.288	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.15	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.614	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.246	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.928	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.549	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.761	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.352	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.310	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.235	1
PFOA/PFOS, Total	ND		ng/l	1.89	0.223	1

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	75		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	67		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	63		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	134		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	110		33-143

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-11	Date Collected:	08/06/19 14:45
Client ID:	HVRA-RB04-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 11:17
Analytical Date:	08/19/19 14:16		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.93	0.394	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.93	0.382	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.93	0.230	1
Perfluorohexanoic Acid (PFHxA)	0.448	J	ng/l	1.93	0.317	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.93	0.217	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.93	0.363	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.93	0.228	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.93	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.93	0.664	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.93	0.301	1
Perfluorooctanesulfonic Acid (PFOS)	3.22		ng/l	1.93	0.486	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.93	0.293	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.93	1.17	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.93	0.625	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.93	0.251	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.93	0.946	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.93	0.560	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.93	0.776	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.93	0.359	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.93	0.316	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.93	0.239	1
PFOA/PFOS, Total	3.22		ng/l	1.93	0.228	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-11	Date Collected:	08/06/19 14:45
Client ID:	HVRA-RB04-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	104		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97		33-143

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-12	Date Collected:	08/06/19 15:50
Client ID:	HVRA-MW105-4.0	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8270D	Extraction Date:	08/17/19 01:31
Analytical Date:	08/18/19 19:02		
Analyst:	RC		
Percent Solids:	94%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
1,4-Dioxane	ND		ug/kg	26	8.1	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	76		25-120
Phenol-d6	84		10-120
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	74		30-120
2,4,6-Tribromophenol	69		10-136
4-Terphenyl-d14	62		18-120

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-12	Date Collected:	08/06/19 15:50
Client ID:	HVRA-MW105-4.0	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/08/19 15:12
Analytical Date:	08/13/19 15:49		
Analyst:	JW		
Percent Solids:	94%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.082	J	ug/kg	1.02	0.023	1
Perfluoropentanoic Acid (PFPeA)	0.219	J	ug/kg	1.02	0.047	1
Perfluorobutanesulfonic Acid (PFBS)	0.075	J	ug/kg	1.02	0.040	1
Perfluorohexanoic Acid (PFHxA)	0.342	J	ug/kg	1.02	0.054	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.02	0.046	1
Perfluorohexanesulfonic Acid (PFHxS)	4.77		ug/kg	1.02	0.062	1
Perfluorooctanoic Acid (PFOA)	0.164	J	ug/kg	1.02	0.043	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.03		ug/kg	1.02	0.184	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.02	0.140	1
Perfluorononanoic Acid (PFNA)	0.128	J	ug/kg	1.02	0.077	1
Perfluorooctanesulfonic Acid (PFOS)	56.9		ug/kg	1.02	0.133	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.02	0.069	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.02	0.294	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.02	0.206	1
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.02	0.048	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.02	0.157	1
Perfluorooctanesulfonamide (FOSA)	0.142	J	ug/kg	1.02	0.100	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.02	0.087	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.02	0.072	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.02	0.209	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.02	0.055	1
PFOA/PFOS, Total	57.1	J	ug/kg	1.02	0.043	1

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-12	Date Collected:	08/06/19 15:50
Client ID:	HVRA-MW105-4.0	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	72		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	78		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**60**	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**59**	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	80		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	63		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	63		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	66		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**62**	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**28**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**61**	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**26**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**51**	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	28		26-160

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/11/19 15:02
Analyst: PB

Extraction Method: EPA 537(M)
Extraction Date: 08/08/19 13:52

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 04-06,09,12 Batch: WG1270181-1					
Perfluorobutanoic Acid (PFBA)	0.077	J	ug/kg	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/11/19 15:02
Analyst: PB

Extraction Method: EPA 537(M)
Extraction Date: 08/08/19 13:52

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 04-06,09,12 Batch: WG1270181-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	83		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	86		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57		26-160

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/09/19 09:23
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 08/08/19 17:30

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 10 Batch: WG1270249-1					
1,4-Dioxane	ND		ng/l	150	33.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	36		15-110

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/13/19 13:47
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 15:37

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 10 Batch: WG1271094-1					
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
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
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
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
Isophorone	ND		ug/l	5.0	1.2
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
Dimethyl phthalate	ND		ug/l	5.0	1.8
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
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

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/13/19 13:47
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 15:37

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 10 Batch: WG1271094-1					
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
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
Phenol	ND		ug/l	5.0	0.57
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77
Carbazole	ND		ug/l	2.0	0.49
Atrazine	ND		ug/l	10	0.76
Benzaldehyde	ND		ug/l	5.0	0.53
Caprolactam	ND		ug/l	10	3.3
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		21-120
Phenol-d6	39		10-120
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	76		15-120
2,4,6-Tribromophenol	49		10-120
4-Terphenyl-d14	79		41-149

Project Name: HVRA | **Lab Number:** L1935085
Project Number: 18.8090 | **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/12/19 12:07
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 15:37

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 10 Batch: WG1271095-1					
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	0.02	J	ug/l	0.10	0.01
Phenanthrene	0.05	J	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	0.03	J	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: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/12/19 12:07
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 15:37

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 10 Batch: WG1271095-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	54		21-120
Phenol-d6	40		10-120
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	72		15-120
2,4,6-Tribromophenol	75		10-120
4-Terphenyl-d14	72		41-149

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/19/19 11:09
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/15/19 11:17

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03,07-08,10-11 Batch: WG1272715-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.380	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	0.276	J	ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	0.276	J	ng/l	2.00	0.236

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	122,537(M)	Extraction Method:	EPA 537
Analytical Date:	08/19/19 11:09	Extraction Date:	08/15/19 11:17
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03,07-08,10-11 Batch: WG1272715-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	82		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	32		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	113		33-143

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8270D	Extraction Method:	EPA 3546
Analytical Date:	08/17/19 00:22	Extraction Date:	08/16/19 04:15
Analyst:	RC		

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04-05 Batch: WG1273108-1					
Acenaphthene	ND		ug/kg	130	17.
Hexachlorobenzene	ND		ug/kg	99	18.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	160	16.
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.
Dimethyl phthalate	ND		ug/kg	160	35.
Benzo(a)anthracene	ND		ug/kg	99	18.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	99	28.

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/17/19 00:22
Analyst: RC

Extraction Method: EPA 3546
Extraction Date: 08/16/19 04:15

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04-05 Batch: WG1273108-1					
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	20.
2,4-Dichlorophenol	ND		ug/kg	150	26.
2,4-Dimethylphenol	ND		ug/kg	160	54.
2-Nitrophenol	ND		ug/kg	360	62.
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.

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/17/19 00:22
Analyst: RC

Extraction Method: EPA 3546
Extraction Date: 08/16/19 04:15

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04-05 Batch: WG1273108-1					
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.
Carbazole	ND		ug/kg	160	16.
Atrazine	ND		ug/kg	130	58.
Benzaldehyde	ND		ug/kg	220	44.
Caprolactam	ND		ug/kg	160	50.
2,3,4,6-Tetrachlorophenol	ND		ug/kg	160	33.
1,4-Dioxane	ND		ug/kg	25	7.6

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	86		25-120
Phenol-d6	89		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	75		30-120
2,4,6-Tribromophenol	81		10-136
4-Terphenyl-d14	83		18-120

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/18/19 11:03
Analyst: RC

Extraction Method: EPA 3546
Extraction Date: 08/17/19 01:31

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 09,12 Batch: WG1273531-1					
1,4-Dioxane	ND		ug/kg	25	7.6

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	98		25-120
Phenol-d6	105		10-120
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	89		30-120
2,4,6-Tribromophenol	94		10-136
4-Terphenyl-d14	99		18-120

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/20/19 00:16
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 08/19/19 05:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 06 Batch: WG1273919-1					
Acenaphthene	ND		ug/kg	130	17.
Hexachlorobenzene	ND		ug/kg	99	18.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	160	16.
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	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.
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.

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/20/19 00:16
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 08/19/19 05:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 06 Batch: WG1273919-1					
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.
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.

Project Name: HVRA
Project Number: 18.8090

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Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/20/19 00:16
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 08/19/19 05:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 06 Batch: WG1273919-1					
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.
Carbazole	ND		ug/kg	160	16.
Atrazine	ND		ug/kg	130	58.
Benzaldehyde	ND		ug/kg	220	45.
Caprolactam	ND		ug/kg	160	50.
2,3,4,6-Tetrachlorophenol	ND		ug/kg	160	33.
1,4-Dioxane	ND		ug/kg	25	7.6

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	69		25-120
Phenol-d6	72		10-120
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	55		30-120
2,4,6-Tribromophenol	78		10-136
4-Terphenyl-d14	63		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04-06,09,12 Batch: WG1270181-2 WG1270181-3								
Perfluorobutanoic Acid (PFBA)	91		88		71-135	3		30
Perfluoropentanoic Acid (PFPeA)	90		88		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	82		83		72-128	1		30
Perfluorohexanoic Acid (PFHxA)	89		88		70-132	1		30
Perfluoroheptanoic Acid (PFHpA)	94		89		71-131	5		30
Perfluorohexanesulfonic Acid (PFHxS)	81		77		67-130	5		30
Perfluorooctanoic Acid (PFOA)	91		89		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	102		92		64-140	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	86		87		70-132	1		30
Perfluorononanoic Acid (PFNA)	87		91		72-129	4		30
Perfluorooctanesulfonic Acid (PFOS)	84		83		68-136	1		30
Perfluorodecanoic Acid (PFDA)	91		90		69-133	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	85		84		65-137	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	98		89		63-144	10		30
Perfluoroundecanoic Acid (PFUnA)	91		85		64-136	7		30
Perfluorodecanesulfonic Acid (PFDS)	86		91		59-134	6		30
Perfluorooctanesulfonamide (FOSA)	88		124		67-137	**34**	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	88		81		61-139	8		30
Perfluorododecanoic Acid (PFDoA)	94		91		69-135	3		30
Perfluorotridecanoic Acid (PFTrDA)	94		92		66-139	2		30
Perfluorotetradecanoic Acid (PFTA)	96		94		69-133	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04-06,09,12 Batch: WG1270181-2 WG1270181-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		72		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		85		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		106		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		83		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		90		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		109		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		95		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74		81		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		97		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		104		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		93		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		91		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		85		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		94		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	73		77		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		85		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		55		26-160

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

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Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 10 Batch: WG1270249-2 WG1270249-3								
1,4-Dioxane	123		122		40-140	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	29		36		15-110

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 10 Batch: WG1271094-2 WG1271094-3								
Bis(2-chloroethyl)ether	70		74		40-140	6		30
3,3'-Dichlorobenzidine	54		51		40-140	6		30
2,4-Dinitrotoluene	63		70		48-143	11		30
2,6-Dinitrotoluene	72		82		40-140	13		30
4-Chlorophenyl phenyl ether	63		70		40-140	11		30
4-Bromophenyl phenyl ether	67		71		40-140	6		30
Bis(2-chloroisopropyl)ether	82		92		40-140	11		30
Bis(2-chloroethoxy)methane	74		81		40-140	9		30
Hexachlorocyclopentadiene	64		72		40-140	12		30
Isophorone	79		87		40-140	10		30
Nitrobenzene	69		77		40-140	11		30
NDPA/DPA	66		67		40-140	2		30
n-Nitrosodi-n-propylamine	81		90		29-132	11		30
Bis(2-ethylhexyl)phthalate	84		99		40-140	16		30
Butyl benzyl phthalate	91		99		40-140	8		30
Di-n-butylphthalate	80		93		40-140	15		30
Di-n-octylphthalate	96		110		40-140	14		30
Diethyl phthalate	72		78		40-140	8		30
Dimethyl phthalate	77		88		40-140	13		30
Biphenyl	65		72		40-140	10		30
4-Chloroaniline	56		80		40-140	**35**	Q	30
2-Nitroaniline	74		86		52-143	15		30
3-Nitroaniline	52		58		25-145	11		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 10 Batch: WG1271094-2 WG1271094-3								
4-Nitroaniline	60		65		51-143	8		30
Dibenzofuran	61		66		40-140	8		30
1,2,4,5-Tetrachlorobenzene	61		70		2-134	14		30
Acetophenone	63		69		39-129	9		30
2,4,6-Trichlorophenol	68		78		30-130	14		30
p-Chloro-m-cresol	79		86		23-97	8		30
2-Chlorophenol	68		75		27-123	10		30
2,4-Dichlorophenol	71		78		30-130	9		30
2,4-Dimethylphenol	56		47		30-130	17		30
2-Nitrophenol	74		82		30-130	10		30
4-Nitrophenol	59		64		10-80	8		30
2,4-Dinitrophenol	50		60		20-130	18		30
4,6-Dinitro-o-cresol	70		76		20-164	8		30
Phenol	51		58		12-110	13		30
3-Methylphenol/4-Methylphenol	64		68		30-130	6		30
2,4,5-Trichlorophenol	78		88		30-130	12		30
Carbazole	74		83		55-144	11		30
Atrazine	100		109		40-140	9		30
Benzaldehyde	68		72		40-140	6		30
Caprolactam	49		56		10-130	13		30
2,3,4,6-Tetrachlorophenol	63		73		40-140	15		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 10 Batch: WG1271094-2 WG1271094-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	54		60		21-120
Phenol-d6	47		52		10-120
Nitrobenzene-d5	71		81		23-120
2-Fluorobiphenyl	67		79		15-120
2,4,6-Tribromophenol	57		61		10-120
4-Terphenyl-d14	73		83		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 10 Batch: WG1271095-2 WG1271095-3								
Acenaphthene	90		66		40-140	31		40
2-Chloronaphthalene	92		70		40-140	27		40
Fluoranthene	90		65		40-140	32		40
Hexachlorobutadiene	82		63		40-140	26		40
Naphthalene	85		65		40-140	27		40
Benzo(a)anthracene	94		69		40-140	31		40
Benzo(a)pyrene	98		72		40-140	31		40
Benzo(b)fluoranthene	93		69		40-140	30		40
Benzo(k)fluoranthene	97		72		40-140	30		40
Chrysene	88		65		40-140	30		40
Acenaphthylene	97		72		40-140	30		40
Anthracene	95		70		40-140	30		40
Benzo(ghi)perylene	85		62		40-140	31		40
Fluorene	92		67		40-140	31		40
Phenanthrene	90		66		40-140	31		40
Dibenzo(a,h)anthracene	96		69		40-140	33		40
Indeno(1,2,3-cd)pyrene	93		67		40-140	33		40
Pyrene	89		65		40-140	31		40
2-Methylnaphthalene	94		71		40-140	28		40
Pentachlorophenol	69		41		40-140	**51**	Q	40
Hexachlorobenzene	97		73		40-140	28		40
Hexachloroethane	74		56		40-140	28		40

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 10 Batch: WG1271095-2 WG1271095-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	64		49		21-120
Phenol-d6	51		38		10-120
Nitrobenzene-d5	90		68		23-120
2-Fluorobiphenyl	83		62		15-120
2,4,6-Tribromophenol	95		68		10-120
4-Terphenyl-d14	88		64		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03,07-08,10-11 Batch: WG1272715-2 WG1272715-3								
Perfluorobutanoic Acid (PFBA)	107		113		67-148	5		30
Perfluoropentanoic Acid (PFPeA)	106		109		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	99		102		65-157	3		30
Perfluorohexanoic Acid (PFHxA)	111		112		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	106		115		58-159	8		30
Perfluorohexanesulfonic Acid (PFHxS)	87		89		69-177	2		30
Perfluorooctanoic Acid (PFOA)	113		115		63-159	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	125		104		49-187	18		30
Perfluoroheptanesulfonic Acid (PFHpS)	101		112		61-179	10		30
Perfluorononanoic Acid (PFNA)	112		118		68-171	5		30
Perfluorooctanesulfonic Acid (PFOS)	95		101		52-151	6		30
Perfluorodecanoic Acid (PFDA)	106		114		63-171	7		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		93		56-173	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	105		117		60-166	11		30
Perfluoroundecanoic Acid (PFUnA)	111		103		60-153	7		30
Perfluorodecanesulfonic Acid (PFDS)	92		97		38-156	5		30
Perfluorooctanesulfonamide (FOSA)	107		107		46-170	0		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	98		107		45-170	9		30
Perfluorododecanoic Acid (PFDoA)	97		93		67-153	4		30
Perfluorotridecanoic Acid (PFTrDA)	88		92		48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	103		95		59-182	8		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03,07-08,10-11 Batch: WG1272715-2 WG1272715-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	106		105		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		103		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		94		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		100		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		127		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		99		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	80		107		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		95		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111		110		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		93		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80		95		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		84		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		99		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		23		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	127		118		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	122		120		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	108		113		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-05 Batch: WG1273108-2 WG1273108-3								
Acenaphthene	69		79		31-137	14		50
Hexachlorobenzene	69		77		40-140	11		50
Bis(2-chloroethyl)ether	67		77		40-140	14		50
2-Chloronaphthalene	66		72		40-140	9		50
3,3'-Dichlorobenzidine	54		58		40-140	7		50
2,4-Dinitrotoluene	81		90		40-132	11		50
2,6-Dinitrotoluene	78		84		40-140	7		50
Fluoranthene	73		80		40-140	9		50
4-Chlorophenyl phenyl ether	68		76		40-140	11		50
4-Bromophenyl phenyl ether	71		78		40-140	9		50
Bis(2-chloroisopropyl)ether	55		61		40-140	10		50
Bis(2-chloroethoxy)methane	71		79		40-117	11		50
Hexachlorobutadiene	66		73		40-140	10		50
Hexachlorocyclopentadiene	65		73		40-140	12		50
Hexachloroethane	67		73		40-140	9		50
Isophorone	75		84		40-140	11		50
Naphthalene	68		77		40-140	12		50
Nitrobenzene	72		82		40-140	13		50
NDPA/DPA	72		81		36-157	12		50
n-Nitrosodi-n-propylamine	76		85		32-121	11		50
Bis(2-ethylhexyl)phthalate	80		88		40-140	10		50
Butyl benzyl phthalate	82		91		40-140	10		50
Di-n-butylphthalate	83		91		40-140	9		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-05 Batch: WG1273108-2 WG1273108-3								
Di-n-octylphthalate	88		98		40-140	11		50
Diethyl phthalate	73		81		40-140	10		50
Dimethyl phthalate	69		78		40-140	12		50
Benzo(a)anthracene	75		84		40-140	11		50
Benzo(a)pyrene	68		77		40-140	12		50
Benzo(b)fluoranthene	73		80		40-140	9		50
Benzo(k)fluoranthene	67		77		40-140	14		50
Chrysene	69		77		40-140	11		50
Acenaphthylene	69		77		40-140	11		50
Anthracene	74		84		40-140	13		50
Benzo(ghi)perylene	75		84		40-140	11		50
Fluorene	72		80		40-140	11		50
Phenanthrene	71		78		40-140	9		50
Dibenzo(a,h)anthracene	78		87		40-140	11		50
Indeno(1,2,3-cd)pyrene	76		92		40-140	19		50
Pyrene	70		78		35-142	11		50
Biphenyl	72		80		37-127	11		50
4-Chloroaniline	55		57		40-140	4		50
2-Nitroaniline	78		88		47-134	12		50
3-Nitroaniline	64		69		26-129	8		50
4-Nitroaniline	72		80		41-125	11		50
Dibenzofuran	73		81		40-140	10		50
2-Methylnaphthalene	69		78		40-140	12		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-05 Batch: WG1273108-2 WG1273108-3								
1,2,4,5-Tetrachlorobenzene	70		77		40-117	10		50
Acetophenone	75		85		14-144	13		50
2,4,6-Trichlorophenol	75		83		30-130	10		50
p-Chloro-m-cresol	80		87		26-103	8		50
2-Chlorophenol	75		85		25-102	13		50
2,4-Dichlorophenol	75		85		30-130	13		50
2,4-Dimethylphenol	75		85		30-130	13		50
2-Nitrophenol	77		87		30-130	12		50
4-Nitrophenol	75		84		11-114	11		50
2,4-Dinitrophenol	60		62		4-130	3		50
4,6-Dinitro-o-cresol	87		95		10-130	9		50
Pentachlorophenol	67		73		17-109	9		50
Phenol	76		84		26-90	10		50
2-Methylphenol	79		90		30-130.	13		50
3-Methylphenol/4-Methylphenol	77		88		30-130	13		50
2,4,5-Trichlorophenol	76		86		30-130	12		50
Carbazole	76		85		54-128	11		50
Atrazine	79		86		40-140	8		50
Benzaldehyde	76		87		40-140	13		50
Caprolactam	73		81		15-130	10		50
2,3,4,6-Tetrachlorophenol	72		80		40-140	11		50
1,4-Dioxane	52		58		40-140	11		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-05 Batch: WG1273108-2 WG1273108-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	72		82		25-120
Phenol-d6	75		84		10-120
Nitrobenzene-d5	74		78		23-120
2-Fluorobiphenyl	63		70		30-120
2,4,6-Tribromophenol	69		79		10-136
4-Terphenyl-d14	68		77		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935085

Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 09,12 Batch: WG1273531-2 WG1273531-3								
1,4-Dioxane	75		71		40-140	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	102		92		25-120
Phenol-d6	106		96		10-120
Nitrobenzene-d5	103		96		23-120
2-Fluorobiphenyl	88		80		30-120
2,4,6-Tribromophenol	91		87		10-136
4-Terphenyl-d14	90		84		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 06 Batch: WG1273919-2 WG1273919-3								
Acenaphthene	73		61		31-137	18		50
Hexachlorobenzene	80		64		40-140	22		50
Bis(2-chloroethyl)ether	65		61		40-140	6		50
2-Chloronaphthalene	75		66		40-140	13		50
3,3'-Dichlorobenzidine	64		46		40-140	33		50
2,4-Dinitrotoluene	85		67		40-132	24		50
2,6-Dinitrotoluene	92		74		40-140	22		50
Fluoranthene	81		63		40-140	25		50
4-Chlorophenyl phenyl ether	76		63		40-140	19		50
4-Bromophenyl phenyl ether	81		64		40-140	23		50
Bis(2-chloroisopropyl)ether	58		55		40-140	5		50
Bis(2-chloroethoxy)methane	77		68		40-117	12		50
Hexachlorobutadiene	63		57		40-140	10		50
Hexachlorocyclopentadiene	68		62		40-140	9		50
Hexachloroethane	56		55		40-140	2		50
Isophorone	79		70		40-140	12		50
Naphthalene	64		57		40-140	12		50
Nitrobenzene	70		65		40-140	7		50
NDPA/DPA	79		64		36-157	21		50
n-Nitrosodi-n-propylamine	77		69		32-121	11		50
Bis(2-ethylhexyl)phthalate	89		73		40-140	20		50
Butyl benzyl phthalate	89		68		40-140	27		50
Di-n-butylphthalate	84		67		40-140	23		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 06 Batch: WG1273919-2 WG1273919-3								
Di-n-octylphthalate	91		72		40-140	23		50
Diethyl phthalate	84		68		40-140	21		50
Dimethyl phthalate	85		70		40-140	19		50
Benzo(a)anthracene	72		58		40-140	22		50
Benzo(a)pyrene	74		54		40-140	31		50
Benzo(b)fluoranthene	75		54		40-140	33		50
Benzo(k)fluoranthene	77		57		40-140	30		50
Chrysene	71		57		40-140	22		50
Acenaphthylene	78		66		40-140	17		50
Anthracene	79		64		40-140	21		50
Benzo(ghi)perylene	63		49		40-140	25		50
Fluorene	78		63		40-140	21		50
Phenanthrene	73		59		40-140	21		50
Dibenzo(a,h)anthracene	69		53		40-140	26		50
Indeno(1,2,3-cd)pyrene	67		52		40-140	25		50
Pyrene	78		60		35-142	26		50
Biphenyl	80		68		37-127	16		50
4-Chloroaniline	70		55		40-140	24		50
2-Nitroaniline	90		72		47-134	22		50
3-Nitroaniline	70		54		26-129	26		50
4-Nitroaniline	82		63		41-125	26		50
Dibenzofuran	73		60		40-140	20		50
2-Methylnaphthalene	71		63		40-140	12		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 06 Batch: WG1273919-2 WG1273919-3								
1,2,4,5-Tetrachlorobenzene	69		62		40-117	11		50
Acetophenone	82		76		14-144	8		50
2,4,6-Trichlorophenol	84		71		30-130	17		50
p-Chloro-m-cresol	93		76		26-103	20		50
2-Chlorophenol	74		68		25-102	8		50
2,4-Dichlorophenol	88		79		30-130	11		50
2,4-Dimethylphenol	91		82		30-130	10		50
2-Nitrophenol	83		75		30-130	10		50
4-Nitrophenol	81		59		11-114	31		50
2,4-Dinitrophenol	74		58		4-130	24		50
4,6-Dinitro-o-cresol	86		67		10-130	25		50
Pentachlorophenol	83		65		17-109	24		50
Phenol	78		70		26-90	11		50
2-Methylphenol	80		71		30-130.	12		50
3-Methylphenol/4-Methylphenol	91		82		30-130	10		50
2,4,5-Trichlorophenol	87		68		30-130	25		50
Carbazole	78		62		54-128	23		50
Atrazine	90		70		40-140	25		50
Benzaldehyde	70		62		40-140	12		50
Caprolactam	92		70		15-130	27		50
2,3,4,6-Tetrachlorophenol	80		63		40-140	24		50
1,4-Dioxane	**29**	Q	**34**	Q	40-140	16		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935085

Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 06 Batch: WG1273919-2 WG1273919-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	74		68		25-120
Phenol-d6	80		70		10-120
Nitrobenzene-d5	62		55		23-120
2-Fluorobiphenyl	58		50		30-120
2,4,6-Tribromophenol	89		69		10-136
4-Terphenyl-d14	65		49		18-120

PCBS

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-04	Date Collected:	08/06/19 09:45
Client ID:	HVRA-MW102-4.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	08/16/19 03:25
Analytical Date:	08/18/19 20:04	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	08/17/19
Percent Solids:	89%	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/17/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	35.5	3.15	1	A
Aroclor 1221	ND		ug/kg	35.5	3.56	1	A
Aroclor 1232	ND		ug/kg	35.5	7.52	1	A
Aroclor 1242	ND		ug/kg	35.5	4.78	1	A
Aroclor 1248	ND		ug/kg	35.5	5.32	1	A
Aroclor 1254	ND		ug/kg	35.5	3.88	1	A
Aroclor 1260	ND		ug/kg	35.5	6.56	1	A
Aroclor 1262	ND		ug/kg	35.5	4.51	1	A
Aroclor 1268	ND		ug/kg	35.5	3.68	1	A
PCBs, Total	ND		ug/kg	35.5	3.15	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	69		30-150	A
Decachlorobiphenyl	47		30-150	A
2,4,5,6-Tetrachloro-m-xylene	68		30-150	B
Decachlorobiphenyl	71		30-150	B

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-05	Date Collected:	08/06/19 00:00
Client ID:	HVRA-FD01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	08/16/19 03:25
Analytical Date:	08/18/19 20:16	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	08/17/19
Percent Solids:	89%	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/17/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	36.8	3.27	1	A
Aroclor 1221	ND		ug/kg	36.8	3.69	1	A
Aroclor 1232	ND		ug/kg	36.8	7.80	1	A
Aroclor 1242	ND		ug/kg	36.8	4.96	1	A
Aroclor 1248	ND		ug/kg	36.8	5.52	1	A
Aroclor 1254	ND		ug/kg	36.8	4.03	1	A
Aroclor 1260	ND		ug/kg	36.8	6.80	1	A
Aroclor 1262	ND		ug/kg	36.8	4.67	1	A
Aroclor 1268	ND		ug/kg	36.8	3.81	1	A
PCBs, Total	ND		ug/kg	36.8	3.27	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	51		30-150	A
Decachlorobiphenyl	36		30-150	A
2,4,5,6-Tetrachloro-m-xylene	51		30-150	B
Decachlorobiphenyl	53		30-150	B

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-06	Date Collected:	08/06/19 11:45
Client ID:	HVRA-MW103-10.0	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	08/16/19 03:25
Analytical Date:	08/18/19 20:29	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	08/17/19
Percent Solids:	91%	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/17/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	35.5	3.15	1	A
Aroclor 1221	ND		ug/kg	35.5	3.55	1	A
Aroclor 1232	ND		ug/kg	35.5	7.52	1	A
Aroclor 1242	ND		ug/kg	35.5	4.78	1	A
Aroclor 1248	ND		ug/kg	35.5	5.32	1	A
Aroclor 1254	ND		ug/kg	35.5	3.88	1	A
Aroclor 1260	ND		ug/kg	35.5	6.55	1	A
Aroclor 1262	ND		ug/kg	35.5	4.50	1	A
Aroclor 1268	ND		ug/kg	35.5	3.67	1	A
PCBs, Total	ND		ug/kg	35.5	3.15	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		30-150	A
Decachlorobiphenyl	53		30-150	A
2,4,5,6-Tetrachloro-m-xylene	66		30-150	B
Decachlorobiphenyl	77		30-150	B

Project Name: HVRA | **Lab Number:** L1935085
Project Number: 18.8090 | **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-10
Client ID: HVRA-EB01-190806
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 13:20
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8082A
Analytical Date: 08/16/19 05:09
Analyst: HT

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 10:26
Cleanup Method: EPA 3665A
Cleanup Date: 08/14/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/15/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	55		30-150	A
Decachlorobiphenyl	50		30-150	A
2,4,5,6-Tetrachloro-m-xylene	57		30-150	B
Decachlorobiphenyl	57		30-150	B

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/16/19 07:38
Analyst: HT

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 10:26
Cleanup Method: EPA 3665A
Cleanup Date: 08/14/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/15/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 10 Batch: WG1271086-1						
Aroclor 1016	ND		ug/l	0.083	0.034	A
Aroclor 1221	ND		ug/l	0.083	0.067	A
Aroclor 1232	ND		ug/l	0.083	0.046	A
Aroclor 1242	ND		ug/l	0.083	0.039	A
Aroclor 1248	ND		ug/l	0.083	0.049	A
Aroclor 1254	ND		ug/l	0.083	0.039	A
Aroclor 1260	ND		ug/l	0.083	0.032	A
Aroclor 1262	ND		ug/l	0.083	0.035	A
Aroclor 1268	ND		ug/l	0.083	0.034	A
PCBs, Total	ND		ug/l	0.083	0.032	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	53		30-150	A
Decachlorobiphenyl	57		30-150	A
2,4,5,6-Tetrachloro-m-xylene	54		30-150	B
Decachlorobiphenyl	56		30-150	B

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/17/19 11:20
Analyst: KB

Extraction Method: EPA 3546
Extraction Date: 08/15/19 23:55
Cleanup Method: EPA 3665A
Cleanup Date: 08/17/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/17/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 04-06 Batch: WG1273044-1						
Aroclor 1016	ND		ug/kg	33.0	2.93	A
Aroclor 1221	ND		ug/kg	33.0	3.31	A
Aroclor 1232	ND		ug/kg	33.0	7.00	A
Aroclor 1242	ND		ug/kg	33.0	4.45	A
Aroclor 1248	ND		ug/kg	33.0	4.95	A
Aroclor 1254	ND		ug/kg	33.0	3.61	A
Aroclor 1260	ND		ug/kg	33.0	6.10	A
Aroclor 1262	ND		ug/kg	33.0	4.19	A
Aroclor 1268	ND		ug/kg	33.0	3.42	A
PCBs, Total	ND		ug/kg	33.0	2.93	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		30-150	A
Decachlorobiphenyl	78		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	61		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 10 Batch: WG1271086-2 WG1271086-3									
Aroclor 1016	71		68		40-140	4		50	A
Aroclor 1260	64		61		40-140	5		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	66		65		30-150	A
Decachlorobiphenyl	68		67		30-150	A
2,4,5,6-Tetrachloro-m-xylene	64		66		30-150	B
Decachlorobiphenyl	68		65		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 04-06 Batch: WG1273044-2 WG1273044-3									
Aroclor 1016	86		94		40-140	9		50	A
Aroclor 1260	91		98		40-140	7		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	72		79		30-150	A
Decachlorobiphenyl	75		79		30-150	A
2,4,5,6-Tetrachloro-m-xylene	66		73		30-150	B
Decachlorobiphenyl	66		68		30-150	B

PESTICIDES

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-04	Date Collected:	08/06/19 09:45
Client ID:	HVRA-MW102-4.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8081B	Extraction Date:	08/16/19 03:45
Analytical Date:	08/17/19 23:42	Cleanup Method:	EPA 3620B
Analyst:	SL	Cleanup Date:	08/17/19
Percent Solids:	89%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.76	0.345	1	A
Lindane	ND		ug/kg	0.734	0.328	1	A
Alpha-BHC	ND		ug/kg	0.734	0.209	1	A
Beta-BHC	ND		ug/kg	1.76	0.668	1	A
Heptachlor	ND		ug/kg	0.881	0.395	1	A
Aldrin	ND		ug/kg	1.76	0.621	1	A
Heptachlor epoxide	ND		ug/kg	3.30	0.992	1	A
Endrin	ND		ug/kg	0.734	0.301	1	A
Endrin aldehyde	ND		ug/kg	2.20	0.771	1	A
Endrin ketone	ND		ug/kg	1.76	0.454	1	A
Dieldrin	ND		ug/kg	1.10	0.551	1	A
4,4'-DDE	ND		ug/kg	1.76	0.408	1	A
4,4'-DDD	ND		ug/kg	1.76	0.629	1	A
4,4'-DDT	ND		ug/kg	3.30	1.42	1	A
Endosulfan I	ND		ug/kg	1.76	0.416	1	A
Endosulfan II	ND		ug/kg	1.76	0.589	1	A
Endosulfan sulfate	ND		ug/kg	0.734	0.350	1	A
Methoxychlor	ND		ug/kg	3.30	1.03	1	A
Toxaphene	ND		ug/kg	33.0	9.25	1	A
cis-Chlordane	ND		ug/kg	2.20	0.614	1	A
trans-Chlordane	ND		ug/kg	2.20	0.582	1	A
Chlordane	ND		ug/kg	14.3	5.84	1	A

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-04	Date Collected:	08/06/19 09:45
Client ID:	HVRA-MW102-4.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	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	130		30-150	B
Decachlorobiphenyl	143		30-150	B
2,4,5,6-Tetrachloro-m-xylene	126		30-150	A
Decachlorobiphenyl	138		30-150	A

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-05
Client ID: HVRA-FD01-190806
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 00:00
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 08/17/19 23:53
Analyst: SL
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 08/16/19 03:45
Cleanup Method: EPA 3620B
Cleanup Date: 08/17/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.75	0.342	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	0.663	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	0.765	1	A
Endrin ketone	ND		ug/kg	1.75	0.450	1	A
Dieldrin	ND		ug/kg	1.09	0.547	1	A
4,4'-DDE	ND		ug/kg	1.75	0.404	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	0.584	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	9.18	1	A
cis-Chlordane	ND		ug/kg	2.19	0.609	1	A
trans-Chlordane	ND		ug/kg	2.19	0.577	1	A
Chlordane	ND		ug/kg	14.2	5.79	1	A

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-05	Date Collected:	08/06/19 00:00
Client ID:	HVRA-FD01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	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	99		30-150	B
Decachlorobiphenyl	110		30-150	B
2,4,5,6-Tetrachloro-m-xylene	98		30-150	A
Decachlorobiphenyl	103		30-150	A

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-06	Date Collected:	08/06/19 11:45
Client ID:	HVRA-MW103-10.0	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8081B	Extraction Date:	08/16/19 03:45
Analytical Date:	08/18/19 00:05	Cleanup Method:	EPA 3620B
Analyst:	SL	Cleanup Date:	08/17/19
Percent Solids:	91%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.67	0.328	1	A
Lindane	ND		ug/kg	0.698	0.312	1	A
Alpha-BHC	ND		ug/kg	0.698	0.198	1	A
Beta-BHC	ND		ug/kg	1.67	0.635	1	A
Heptachlor	ND		ug/kg	0.837	0.375	1	A
Aldrin	ND		ug/kg	1.67	0.589	1	A
Heptachlor epoxide	ND		ug/kg	3.14	0.942	1	A
Endrin	ND		ug/kg	0.698	0.286	1	A
Endrin aldehyde	ND		ug/kg	2.09	0.732	1	A
Endrin ketone	ND		ug/kg	1.67	0.431	1	A
Dieldrin	ND		ug/kg	1.05	0.523	1	A
4,4'-DDE	ND		ug/kg	1.67	0.387	1	A
4,4'-DDD	ND		ug/kg	1.67	0.597	1	A
4,4'-DDT	ND		ug/kg	3.14	1.35	1	A
Endosulfan I	ND		ug/kg	1.67	0.396	1	A
Endosulfan II	ND		ug/kg	1.67	0.559	1	A
Endosulfan sulfate	ND		ug/kg	0.698	0.332	1	A
Methoxychlor	ND		ug/kg	3.14	0.977	1	A
Toxaphene	ND		ug/kg	31.4	8.79	1	A
cis-Chlordane	ND		ug/kg	2.09	0.583	1	A
trans-Chlordane	ND		ug/kg	2.09	0.552	1	A
Chlordane	ND		ug/kg	13.6	5.54	1	A

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-06	Date Collected:	08/06/19 11:45
Client ID:	HVRA-MW103-10.0	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	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	109		30-150	B
Decachlorobiphenyl	123		30-150	B
2,4,5,6-Tetrachloro-m-xylene	107		30-150	A
Decachlorobiphenyl	104		30-150	A

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8081B	Extraction Date:	08/11/19 23:58
Analytical Date:	08/16/19 13:21		
Analyst:	SL		

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:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	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	80		30-150	A
Decachlorobiphenyl	57		30-150	A
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	81		30-150	B

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/15/19 02:34
Analyst: AMC

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 23:58

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 10 Batch: WG1271187-1						
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: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/15/19 02:34
Analyst: AMC

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 23:58

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 10 Batch: WG1271187-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	85		30-150	A
Decachlorobiphenyl	93		30-150	A
2,4,5,6-Tetrachloro-m-xylene	84		30-150	B
Decachlorobiphenyl	95		30-150	B

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/17/19 20:47
Analyst: AMC

Extraction Method: EPA 3546
Extraction Date: 08/15/19 23:18
Cleanup Method: EPA 3620B
Cleanup Date: 08/16/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 04-06 Batch: WG1273037-1						
Delta-BHC	ND		ug/kg	1.51	0.295	A
Lindane	ND		ug/kg	0.628	0.281	A
Alpha-BHC	ND		ug/kg	0.628	0.178	A
Beta-BHC	ND		ug/kg	1.51	0.571	A
Heptachlor	ND		ug/kg	0.753	0.338	A
Aldrin	ND		ug/kg	1.51	0.530	A
Heptachlor epoxide	ND		ug/kg	2.82	0.847	A
Endrin	ND		ug/kg	0.628	0.257	A
Endrin aldehyde	ND		ug/kg	1.88	0.659	A
Endrin ketone	ND		ug/kg	1.51	0.388	A
Dieldrin	ND		ug/kg	0.942	0.471	A
4,4'-DDE	ND		ug/kg	1.51	0.348	A
4,4'-DDD	ND		ug/kg	1.51	0.537	A
4,4'-DDT	ND		ug/kg	2.82	1.21	A
Endosulfan I	ND		ug/kg	1.51	0.356	A
Endosulfan II	ND		ug/kg	1.51	0.503	A
Endosulfan sulfate	ND		ug/kg	0.628	0.299	A
Methoxychlor	ND		ug/kg	2.82	0.879	A
Toxaphene	ND		ug/kg	28.2	7.91	A
cis-Chlordane	ND		ug/kg	1.88	0.525	A
trans-Chlordane	ND		ug/kg	1.88	0.497	A
Chlordane	ND		ug/kg	12.2	4.99	A

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/17/19 20:47
Analyst: AMC

Extraction Method: EPA 3546
Extraction Date: 08/15/19 23:18
Cleanup Method: EPA 3620B
Cleanup Date: 08/16/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 04-06 Batch: WG1273037-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	86		30-150	B
Decachlorobiphenyl	91		30-150	B
2,4,5,6-Tetrachloro-m-xylene	85		30-150	A
Decachlorobiphenyl	81		30-150	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 10 Batch: WG1271187-2 WG1271187-3									
Delta-BHC	75		94		30-150	**23**	Q	20	A
Lindane	83		95		30-150	14		20	A
Alpha-BHC	85		96		30-150	12		20	A
Beta-BHC	79		93		30-150	16		20	A
Heptachlor	80		95		30-150	18		20	A
Aldrin	76		89		30-150	15		20	A
Heptachlor epoxide	88		106		30-150	19		20	A
Endrin	87		108		30-150	**22**	Q	20	A
Endrin aldehyde	69		89		30-150	**25**	Q	20	A
Endrin ketone	87		111		30-150	**25**	Q	20	A
Dieldrin	88		108		30-150	20		20	A
4,4'-DDE	83		103		30-150	**22**	Q	20	A
4,4'-DDD	84		110		30-150	**27**	Q	20	A
4,4'-DDT	86		113		30-150	**27**	Q	20	A
Endosulfan I	78		92		30-150	17		20	A
Endosulfan II	78		102		30-150	**26**	Q	20	A
Endosulfan sulfate	87		116		30-150	**28**	Q	20	A
Methoxychlor	80		106		30-150	**28**	Q	20	A
cis-Chlordane	74		84		30-150	13		20	A
trans-Chlordane	79		97		30-150	**21**	Q	20	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 10 Batch: WG1271187-2 WG1271187-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		88		30-150	A
Decachlorobiphenyl	74		95		30-150	A
2,4,5,6-Tetrachloro-m-xylene	74		87		30-150	B
Decachlorobiphenyl	78		93		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 04-06 Batch: WG1273037-2 WG1273037-3									
Delta-BHC	84		84		30-150	0		30	A
Lindane	81		81		30-150	0		30	A
Alpha-BHC	89		89		30-150	0		30	A
Beta-BHC	79		78		30-150	1		30	A
Heptachlor	86		84		30-150	2		30	A
Aldrin	77		75		30-150	3		30	A
Heptachlor epoxide	82		80		30-150	2		30	A
Endrin	89		87		30-150	2		30	A
Endrin aldehyde	63		69		30-150	9		30	A
Endrin ketone	86		87		30-150	1		30	A
Dieldrin	90		87		30-150	3		30	A
4,4'-DDE	78		76		30-150	3		30	A
4,4'-DDD	88		86		30-150	2		30	A
4,4'-DDT	90		88		30-150	2		30	A
Endosulfan I	74		72		30-150	3		30	A
Endosulfan II	84		83		30-150	1		30	A
Endosulfan sulfate	87		89		30-150	2		30	A
Methoxychlor	81		80		30-150	1		30	A
cis-Chlordane	63		61		30-150	3		30	A
trans-Chlordane	73		72		30-150	1		30	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 04-06 Batch: WG1273037-2 WG1273037-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	84		88		30-150	B
Decachlorobiphenyl	85		83		30-150	B
2,4,5,6-Tetrachloro-m-xylene	85		85		30-150	A
Decachlorobiphenyl	72		78		30-150	A

METALS

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-04 Date Collected: 08/06/19 09:45
Client ID: HVRA-MW102-4.5 Date Received: 08/06/19
Sample Location: WAPPINGERS FALLS, NY 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	11000		mg/kg	8.86	2.39	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Antimony, Total	1.35	J	mg/kg	4.43	0.337	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Arsenic, Total	4.67		mg/kg	0.886	0.184	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Barium, Total	44.1		mg/kg	0.886	0.154	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Beryllium, Total	0.363	J	mg/kg	0.443	0.029	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Cadmium, Total	ND		mg/kg	0.886	0.087	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Calcium, Total	34200		mg/kg	8.86	3.10	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Chromium, Total	13.3		mg/kg	0.886	0.085	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Cobalt, Total	9.42		mg/kg	1.77	0.147	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Copper, Total	27.5		mg/kg	0.886	0.228	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Iron, Total	24300		mg/kg	4.43	0.800	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Lead, Total	9.85		mg/kg	4.43	0.237	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Magnesium, Total	7670		mg/kg	8.86	1.36	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Manganese, Total	657		mg/kg	0.886	0.141	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Mercury, Total	ND		mg/kg	0.071	0.046	1	08/14/19 07:10	08/14/19 15:20	EPA 7471B	1,7471B	GD
Nickel, Total	18.9		mg/kg	2.21	0.214	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Potassium, Total	850		mg/kg	221	12.8	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Selenium, Total	ND		mg/kg	1.77	0.228	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Silver, Total	ND		mg/kg	0.886	0.251	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Sodium, Total	49.2	J	mg/kg	177	2.79	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	1.77	0.279	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Vanadium, Total	13.4		mg/kg	0.886	0.180	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB
Zinc, Total	57.4		mg/kg	4.43	0.260	2	08/13/19 22:15	08/14/19 20:08	EPA 3050B	1,6010D	AB

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-05 Date Collected: 08/06/19 00:00
Client ID: HVRA-FD01-190806 Date Received: 08/06/19
Sample Location: WAPPINGERS FALLS, NY 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	11400		mg/kg	8.64	2.33	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Antimony, Total	1.18	J	mg/kg	4.32	0.328	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Arsenic, Total	4.53		mg/kg	0.864	0.180	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Barium, Total	50.0		mg/kg	0.864	0.150	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Beryllium, Total	0.363	J	mg/kg	0.432	0.029	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Cadmium, Total	ND		mg/kg	0.864	0.085	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Calcium, Total	21900		mg/kg	8.64	3.02	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Chromium, Total	14.1		mg/kg	0.864	0.083	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Cobalt, Total	9.32		mg/kg	1.73	0.143	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Copper, Total	29.4		mg/kg	0.864	0.223	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Iron, Total	25000		mg/kg	4.32	0.780	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Lead, Total	9.87		mg/kg	4.32	0.232	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Magnesium, Total	7590		mg/kg	8.64	1.33	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Manganese, Total	551		mg/kg	0.864	0.137	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Mercury, Total	ND		mg/kg	0.071	0.046	1	08/14/19 07:10	08/14/19 15:22	EPA 7471B	1,7471B	GD
Nickel, Total	19.2		mg/kg	2.16	0.209	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Potassium, Total	820		mg/kg	216	12.4	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Selenium, Total	ND		mg/kg	1.73	0.223	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Silver, Total	ND		mg/kg	0.864	0.244	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Sodium, Total	45.9	J	mg/kg	173	2.72	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	1.73	0.272	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Vanadium, Total	13.9		mg/kg	0.864	0.175	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB
Zinc, Total	59.5		mg/kg	4.32	0.253	2	08/13/19 22:15	08/14/19 20:12	EPA 3050B	1,6010D	AB

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-06	Date Collected:	08/06/19 11:45
Client ID:	HVRA-MW103-10.0	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	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	10800		mg/kg	8.28	2.24	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Antimony, Total	1.32	J	mg/kg	4.14	0.315	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Arsenic, Total	5.06		mg/kg	0.828	0.172	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Barium, Total	43.1		mg/kg	0.828	0.144	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Beryllium, Total	0.406	J	mg/kg	0.414	0.027	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Cadmium, Total	ND		mg/kg	0.828	0.081	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Calcium, Total	22800		mg/kg	8.28	2.90	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Chromium, Total	14.0		mg/kg	0.828	0.080	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Cobalt, Total	10.6		mg/kg	1.66	0.138	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Copper, Total	25.5		mg/kg	0.828	0.214	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Iron, Total	23600		mg/kg	4.14	0.748	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Lead, Total	10.7		mg/kg	4.14	0.222	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Magnesium, Total	9470		mg/kg	8.28	1.28	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Manganese, Total	730		mg/kg	0.828	0.132	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Mercury, Total	ND		mg/kg	0.070	0.046	1	08/14/19 07:10	08/14/19 15:24	EPA 7471B	1,7471B	GD
Nickel, Total	20.5		mg/kg	2.07	0.200	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Potassium, Total	866		mg/kg	207	11.9	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Selenium, Total	ND		mg/kg	1.66	0.214	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Silver, Total	ND		mg/kg	0.828	0.234	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Sodium, Total	52.4	J	mg/kg	166	2.61	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	1.66	0.261	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Vanadium, Total	13.4		mg/kg	0.828	0.168	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB
Zinc, Total	56.3		mg/kg	4.14	0.243	2	08/13/19 22:15	08/14/19 20:17	EPA 3050B	1,6010D	AB

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	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	ND		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Calcium, Total	ND		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Manganese, Total	0.00113		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/14/19 12:05	08/14/19 16:32	EPA 7470A	1,7470A	GD
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

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): 10 Batch: WG1271502-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Calcium, Total	ND		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM

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): 04-06 Batch: WG1271994-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Antimony, Total	ND		mg/kg	2.00	0.152	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Arsenic, Total	ND		mg/kg	0.400	0.083	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Barium, Total	ND		mg/kg	0.400	0.070	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Beryllium, Total	ND		mg/kg	0.200	0.013	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Cadmium, Total	ND		mg/kg	0.400	0.039	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Calcium, Total	ND		mg/kg	4.00	1.40	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Chromium, Total	0.060	J	mg/kg	0.400	0.038	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Cobalt, Total	ND		mg/kg	0.800	0.066	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Copper, Total	ND		mg/kg	0.400	0.103	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Iron, Total	0.972	J	mg/kg	2.00	0.361	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Lead, Total	ND		mg/kg	2.00	0.107	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Magnesium, Total	ND		mg/kg	4.00	0.616	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Manganese, Total	ND		mg/kg	0.400	0.064	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Nickel, Total	ND		mg/kg	1.00	0.097	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Potassium, Total	ND		mg/kg	100	5.76	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Selenium, Total	ND		mg/kg	0.800	0.103	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Silver, Total	ND		mg/kg	0.400	0.113	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Sodium, Total	1.80	J	mg/kg	80.0	1.26	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Thallium, Total	ND		mg/kg	0.800	0.126	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC
Zinc, Total	ND		mg/kg	2.00	0.117	1	08/13/19 22:15	08/14/19 15:48	1,6010D	LC

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): 04-06 Batch: WG1272076-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	08/14/19 07:10	08/14/19 11:09	1,7471B	GD

Prep Information

Digestion Method: EPA 7471B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 10 Batch: WG1272265-1										
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/14/19 12:05	08/14/19 16:08	1,7470A	GD

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 10 Batch: WG1271502-2								
Aluminum, Total	108		-		80-120	-		
Antimony, Total	93		-		80-120	-		
Arsenic, Total	109		-		80-120	-		
Barium, Total	108		-		80-120	-		
Beryllium, Total	109		-		80-120	-		
Cadmium, Total	113		-		80-120	-		
Calcium, Total	114		-		80-120	-		
Chromium, Total	105		-		80-120	-		
Cobalt, Total	104		-		80-120	-		
Copper, Total	100		-		80-120	-		
Iron, Total	112		-		80-120	-		
Lead, Total	108		-		80-120	-		
Magnesium, Total	108		-		80-120	-		
Manganese, Total	104		-		80-120	-		
Nickel, Total	108		-		80-120	-		
Potassium, Total	110		-		80-120	-		
Selenium, Total	112		-		80-120	-		
Silver, Total	102		-		80-120	-		
Sodium, Total	108		-		80-120	-		
Thallium, Total	107		-		80-120	-		
Vanadium, Total	105		-		80-120	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 10 Batch: WG1271502-2					
Zinc, Total	112	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04-06 Batch: WG1271994-2 SRM Lot Number: D105-540					
Aluminum, Total	62	-	51-149	-	
Antimony, Total	159	-	19-249	-	
Arsenic, Total	100	-	70-130	-	
Barium, Total	83	-	75-125	-	
Beryllium, Total	85	-	75-125	-	
Cadmium, Total	96	-	75-125	-	
Calcium, Total	73	-	73-127	-	
Chromium, Total	84	-	70-130	-	
Cobalt, Total	93	-	75-125	-	
Copper, Total	84	-	75-125	-	
Iron, Total	76	-	38-162	-	
Lead, Total	89	-	71-128	-	
Magnesium, Total	76	-	63-137	-	
Manganese, Total	86	-	76-124	-	
Nickel, Total	96	-	70-131	-	
Potassium, Total	72	-	60-140	-	
Selenium, Total	98	-	63-137	-	
Silver, Total	85	-	69-131	-	
Sodium, Total	80	-	37-162	-	
Thallium, Total	97	-	68-132	-	
Zinc, Total	90	-	70-130	-	

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04-06 Batch: WG1272076-2 SRM Lot Number: D105-540					
Mercury, Total	99	-	60-141	-	
Total Metals - Mansfield Lab Associated sample(s): 10 Batch: WG1272265-2					
Mercury, Total	100	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

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): 10 QC Batch ID: WG1271502-3 WG1271502-4 QC Sample: L1935927-03 Client ID: MS Sample												
Aluminum, Total	ND	2	2.09	104		2.16	108		75-125	3		20
Antimony, Total	0.00125J	0.5	0.4393	88		0.4867	97		75-125	10		20
Arsenic, Total	0.00810	0.12	0.1390	109		0.1377	108		75-125	1		20
Barium, Total	0.1521	2	2.260	105		2.359	110		75-125	4		20
Beryllium, Total	ND	0.05	0.05027	100		0.05284	106		75-125	5		20
Cadmium, Total	ND	0.051	0.05822	114		0.06010	118		75-125	3		20
Calcium, Total	148.	10	142	**0**	Q	147	**0**	Q	75-125	3		20
Chromium, Total	ND	0.2	0.2105	105		0.2185	109		75-125	4		20
Cobalt, Total	ND	0.5	0.5412	108		0.5532	111		75-125	2		20
Copper, Total	0.00093J	0.25	0.2577	103		0.2587	103		75-125	0		20
Iron, Total	0.434	1	1.58	115		1.58	115		75-125	0		20
Lead, Total	ND	0.51	0.5548	109		0.5836	114		75-125	5		20
Magnesium, Total	42.7	10	49.9	**72**	Q	51.1	84		75-125	2		20
Manganese, Total	0.2582	0.5	0.7640	101		0.7783	104		75-125	2		20
Nickel, Total	0.00112J	0.5	0.5324	106		0.5666	113		75-125	6		20
Potassium, Total	3.04	10	13.3	103		13.8	108		75-125	4		20
Selenium, Total	ND	0.12	0.125	104		0.138	115		75-125	10		20
Silver, Total	ND	0.05	0.05292	106		0.05378	108		75-125	2		20
Sodium, Total	86.9	10	89.7	**28**	Q	91.5	**46**	Q	75-125	2		20
Thallium, Total	0.00018J	0.12	0.1297	108		0.1353	113		75-125	4		20
Vanadium, Total	ND	0.5	0.5446	109		0.5554	111		75-125	2		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

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): 10 QC Batch ID: WG1271502-3 WG1271502-4 QC Sample: L1935927-03 Client ID: MS Sample									
Zinc, Total	ND	0.5	0.5575	112	0.5692	114	75-125	2	20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

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): 10 QC Batch ID: WG1271502-7 WG1271502-8 QC Sample: L1935927-05 Client ID: MS Sample											
Aluminum, Total	0.0100	2	1.99	99		2.22	110		75-125	11	20
Antimony, Total	ND	0.5	0.4019	80		0.4579	92		75-125	13	20
Arsenic, Total	0.00032J	0.12	0.1248	104		0.1283	107		75-125	3	20
Barium, Total	0.01562	2	2.012	100		2.147	106		75-125	6	20
Beryllium, Total	ND	0.05	0.05898	118		0.05549	111		75-125	6	20
Cadmium, Total	ND	0.051	0.05334	104		0.05600	110		75-125	5	20
Calcium, Total	37.4	10	41.4	**40**	Q	45.0	76		75-125	8	20
Chromium, Total	0.00069J	0.2	0.1996	100		0.2156	108		75-125	8	20
Cobalt, Total	ND	0.5	0.5023	100		0.5347	107		75-125	6	20
Copper, Total	0.00095J	0.25	0.2401	96		0.2516	101		75-125	5	20
Iron, Total	0.0211J	1	1.12	112		1.14	114		75-125	2	20
Lead, Total	ND	0.51	0.5286	104		0.5648	111		75-125	7	20
Magnesium, Total	7.72	10	17.1	94		18.5	108		75-125	8	20
Manganese, Total	0.03920	0.5	0.5259	97		0.5702	106		75-125	8	20
Nickel, Total	0.00057J	0.5	0.5061	101		0.5414	108		75-125	7	20
Potassium, Total	3.16	10	12.7	95		13.7	105		75-125	8	20
Selenium, Total	ND	0.12	0.131	109		0.142	118		75-125	8	20
Silver, Total	ND	0.05	0.05033	101		0.05215	104		75-125	4	20
Sodium, Total	135.	10	127	**0**	Q	137	**20**	Q	75-125	8	20
Thallium, Total	ND	0.12	0.1241	103		0.1337	111		75-125	7	20
Vanadium, Total	ND	0.5	0.5003	100		0.5506	110		75-125	10	20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

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): 10 QC Batch ID: WG1271502-7 WG1271502-8 QC Sample: L1935927-05 Client ID: MS Sample									
Zinc, Total	ND	0.5	0.5268	105	0.5546	111	75-125	5	20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

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): 04-06 QC Batch ID: WG1271994-3 QC Sample: L1934767-01 Client ID: MS Sample										
Aluminum, Total	7760	183	8660	**491**	Q	-	-	75-125	-	20
Antimony, Total	1.02J	45.8	32.1	**70**	Q	-	-	75-125	-	20
Arsenic, Total	1.50	11	10.3	80		-	-	75-125	-	20
Barium, Total	54.0	183	195	77		-	-	75-125	-	20
Beryllium, Total	0.450	4.58	3.76	**72**	Q	-	-	75-125	-	20
Cadmium, Total	ND	4.67	3.00	**64**	Q	-	-	75-125	-	20
Calcium, Total	1860	916	2580	78		-	-	75-125	-	20
Chromium, Total	16.7	18.3	30.3	**74**	Q	-	-	75-125	-	20
Cobalt, Total	8.96	45.8	41.1	**70**	Q	-	-	75-125	-	20
Copper, Total	9.22	22.9	27.0	78		-	-	75-125	-	20
Iron, Total	18600	91.6	19400	**873**	Q	-	-	75-125	-	20
Lead, Total	9.47	46.7	41.2	**68**	Q	-	-	75-125	-	20
Magnesium, Total	5230	916	6290	116		-	-	75-125	-	20
Manganese, Total	185	45.8	222	81		-	-	75-125	-	20
Nickel, Total	19.8	45.8	53.1	**73**	Q	-	-	75-125	-	20
Potassium, Total	1600	916	2480	96		-	-	75-125	-	20
Selenium, Total	ND	11	6.83	**62**	Q	-	-	75-125	-	20
Silver, Total	ND	27.5	21.3	77		-	-	75-125	-	20
Sodium, Total	266	916	988	79		-	-	75-125	-	20
Thallium, Total	ND	11	7.70	**70**	Q	-	-	75-125	-	20
Zinc, Total	42.9	45.8	76.8	**74**	Q	-	-	75-125	-	20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

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): 04-06 QC Batch ID: WG1272076-3 WG1272076-4 QC Sample: L1935376-09 Client ID: MS Sample									
Mercury, Total	ND	0.142	0.146	102	0.144	101	80-120	1	20
Total Metals - Mansfield Lab Associated sample(s): 10 QC Batch ID: WG1272265-3 QC Sample: L1935755-37 Client ID: MS Sample									
Mercury, Total	ND	0.005	0.00481	96	-	-	75-125	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04-06 QC Batch ID: WG1271994-4 QC Sample: L1934767-01 Client ID: DUP Sample						
Lead, Total	9.47	9.86	mg/kg	4		20
Total Metals - Mansfield Lab Associated sample(s): 10 QC Batch ID: WG1272265-4 QC Sample: L1935755-37 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-04 Date Collected: 08/06/19 09:45
Client ID: HVRA-MW102-4.5 Date Received: 08/06/19
Sample Location: WAPPINGERS FALLS, NY 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	89.1		%	0.100	NA	1	-	08/07/19 08:48	121,2540G	RI
Cyanide, Total	ND		mg/kg	1.1	0.24	1	08/07/19 11:50	08/07/19 15:06	1,9010C/9012B	LH
Moisture	10.9		%	0.100	NA	1	-	08/07/19 08:48	121,2540G	RI

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-05
Client ID: HVRA-FD01-190806
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/06/19 00:00
Date Received: 08/06/19
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	88.8		%	0.100	NA	1	-	08/07/19 08:48	121,2540G	RI
Cyanide, Total	ND		mg/kg	1.1	0.24	1	08/07/19 11:50	08/07/19 15:09	1,9010C/9012B	LH
Moisture	11.2		%	0.100	NA	1	-	08/07/19 08:48	121,2540G	RI

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-06 Date Collected: 08/06/19 11:45
Client ID: HVRA-MW103-10.0 Date Received: 08/06/19
Sample Location: WAPPINGERS FALLS, NY 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	-	08/07/19 08:48	121,2540G	RI
Cyanide, Total	ND		mg/kg	1.1	0.23	1	08/07/19 11:50	08/07/19 15:10	1,9010C/9012B	LH
Moisture	9.10		%	0.100	NA	1	-	08/07/19 08:48	121,2540G	RI

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-09
Client ID: HVRA-MW104-9.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 13:25
Date Received: 08/06/19
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	94.7		%	0.100	NA	1	-	08/07/19 08:48	121,2540G	RI

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	ND		mg/l	0.005	0.001	1	08/07/19 13:55	08/07/19 16:37	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-12
Client ID: HVRA-MW105-4.0
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/06/19 15:50
Date Received: 08/06/19
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	93.9		%	0.100	NA	1	-	08/07/19 08:48	121,2540G	RI

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

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): 04-06 Batch: WG1269546-1										
Cyanide, Total	ND		mg/kg	0.84	0.18	1	08/07/19 11:50	08/07/19 14:32	1,9010C/9012B	LH
General Chemistry - Westborough Lab for sample(s): 10 Batch: WG1269575-1										
Cyanide, Total	ND		mg/l	0.005	0.001	1	08/07/19 13:55	08/07/19 16:07	1,9010C/9012B	LH

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 04-06 Batch: WG1269546-2 WG1269546-3								
Cyanide, Total	**73**	Q	**72**	Q	80-120	0		35
General Chemistry - Westborough Lab Associated sample(s): 10 Batch: WG1269575-2 WG1269575-3								
Cyanide, Total	93		96		85-115	3		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 04-06 QC Batch ID: WG1269546-4 WG1269546-5 QC Sample: L1934097-04 Client ID: MS Sample												
Cyanide, Total	ND	21	20	93		19	88		75-125	5		35
General Chemistry - Westborough Lab Associated sample(s): 10 QC Batch ID: WG1269575-4 WG1269575-5 QC Sample: L1935116-01 Client ID: MS Sample												
Cyanide, Total	ND	0.2	0.179	90		0.188	94		80-120	5		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 04-06,09,12 QC Batch ID: WG1269486-1 QC Sample: L1935085-04 Client ID: HVRA-MW102-4.5						
Solids, Total	89.1	88.8	%	0		20
Moisture	10.9	11.2	%	3		20
General Chemistry - Westborough Lab Associated sample(s): 04-06 QC Batch ID: WG1269546-6 QC Sample: L1934097-04 Client ID: DUP Sample						
Cyanide, Total	ND	ND	mg/kg	NC		35

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

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(*)
L1935085-01A	Plastic 250ml unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935085-02A	Vial HCl preserved	A	NA		2.8	Y	Absent		NYTCL-8260-R2(14)
L1935085-02B	Vial HCl preserved	A	NA		2.8	Y	Absent		NYTCL-8260-R2(14)
L1935085-02C	Plastic 250ml unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935085-03A	Plastic 250ml unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935085-04A	Vial MeOH preserved	A	NA		2.8	Y	Absent		NYTCL-8260HLW-R2(14)
L1935085-04B	Vial water preserved	A	NA		2.8	Y	Absent	07-AUG-19 04:05	NYTCL-8260HLW-R2(14)
L1935085-04C	Vial water preserved	A	NA		2.8	Y	Absent	07-AUG-19 17:15	NYTCL-8260HLW-R2(14)
L1935085-04D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7),MOISTURE(7)
L1935085-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1935085-04F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1935085-04G	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1935085-04H	Plastic 8oz unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(28)
L1935085-05A	Vial MeOH preserved	A	NA		2.8	Y	Absent		NYTCL-8260HLW-R2(14)
L1935085-05B	Vial water preserved	A	NA		2.8	Y	Absent	07-AUG-19 04:05	NYTCL-8260HLW-R2(14)
L1935085-05C	Vial water preserved	A	NA		2.8	Y	Absent	07-AUG-19 04:05	NYTCL-8260HLW-R2(14)
L1935085-05D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7),MOISTURE(7)

*Values in parentheses indicate holding time in days

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1935085-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1935085-05F	Plastic 8oz unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(28)
L1935085-05G	Glass 250ml/8oz unpreserved	A	NA		2.8	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1935085-06A	Vial MeOH preserved	A	NA		2.8	Y	Absent		NYTCL-8260HLW-R2(14)
L1935085-06B	Vial water preserved	A	NA		2.8	Y	Absent	07-AUG-19 04:05	NYTCL-8260HLW-R2(14)
L1935085-06C	Vial water preserved	A	NA		2.8	Y	Absent	07-AUG-19 04:05	NYTCL-8260HLW-R2(14)
L1935085-06D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7),MOISTURE(7)
L1935085-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1935085-06F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1935085-06G	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1935085-06H	Plastic 8oz unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(28)
L1935085-07A	Plastic 8oz unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935085-08A	Plastic 250ml unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935085-09A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L1935085-09B	Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		NYTCL-8270(14)
L1935085-09C	Plastic 8oz unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(28)
L1935085-10A	Vial HCl preserved	A	NA		2.8	Y	Absent		NYTCL-8260-R2(14)
L1935085-10B	Vial HCl preserved	A	NA		2.8	Y	Absent		NYTCL-8260-R2(14)
L1935085-10C	Vial HCl preserved	A	NA		2.8	Y	Absent		NYTCL-8260-R2(14)
L1935085-10D	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8082-LVI(7)
L1935085-10E	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8082-LVI(7)
L1935085-10F	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8081(7)

*Values in parentheses indicate holding time in days

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1935085-10G	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8081(7)
L1935085-10H	Plastic 250ml unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935085-10I	Plastic 250ml unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935085-10J	Amber 250ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935085-10K	Amber 250ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935085-10L	Amber 250ml unpreserved	A	7	7	2.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935085-10M	Amber 250ml unpreserved	A	7	7	2.8	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935085-10N	Plastic 250ml HNO3 preserved	A	<2	<2	2.8	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935085-10O	Plastic 250ml NaOH preserved	A	>12	>12	2.8	Y	Absent		TCN-9010(14)
L1935085-11A	Plastic 250ml unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935085-12A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L1935085-12B	Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		NYTCL-8270(14)
L1935085-12C	Plastic 8oz unpreserved	B	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(28)
L1935085-13A	Vial HCl preserved	A	NA		2.8	Y	Absent		ARCHIVE()
L1935085-13B	Vial HCl preserved	A	NA		2.8	Y	Absent		ARCHIVE()

*Values in parentheses indicate holding time in days

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 08/20/19

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.
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.

Footnotes

Report Format: DU Report with 'J' Qualifiers

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.

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. If a 'Total' result is requested, the results of its individual components will also be reported.

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 using acetone as a solvent.

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.

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.

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.

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

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
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; 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.**

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.

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 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 1 of 2

Date Rec'd in Lab: 8/6/19

ALPHA Job #: L1935085

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

Project Information
Project Name: HVRA
Project Location: Wappingers Falls, NY
Project #: 18.8090
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
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 #

Client Information
Client: C.T. Male Associate
Address: 50 Century Hill Dr. Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

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:

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	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pest	TAL Metals	CN	PFAS, Moisture	1,4-Dioxane	Sample Specific Comments	Total Bottles
35085-01	HVRA-FTB01-190806	8/6/19	1000	Water	DK							✓			1
-02	HVRA-LTB01-190806		—	Water	DK	✓						✓			~~1~~ 3
-03	HVRA-RB01-190806		0835	Water	~~DK~~ CB							✓			1
-04	HVRA-MW102-4.5		0945	Soil	CB	✓	✓	✓	✓	✓	✓	✓	✓		8
8/7 ~~-05~~	~~HVRA-MW102-~~														
-05	HVRA-FD01-190806		—	Soil	CB	✓	✓	✓	✓	✓	✓	✓	✓		7
-06	HVRA-MW103-10.0		1145	Soil	CB	✓	✓	✓	✓	✓	✓	✓	✓		8
-07	HVRA-RB02-190806		1130	Water	CB							✓			1
-08	HVRA-RB03-190806		1250	Water	CB							✓	✓		1
-09	HVRA-MW104-9.5	↓	1325	Soil	CB							✓	✓		3
	Container Type *Water Samples differ*					V	A	A	A	A	A	P	A		
	Preservative					F	A	A	A	A	A	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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	8/6/19-1700	[signature] AAL	8-6-19 17:00
[signature]	8-6-19 18:45	[signature] AAL	8/6/19 1930
[signature] AAL	8/6/19 2305	[signature]	8/6/19 23:50

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)

NEW YORK CHAIN OF CUSTODY

ALPHA

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: 8/6/19

ALPHA Job #: L1935085

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

Project Information
Project Name: HVRA
Project Location: Wappingers Falls, NY
Project #: 18.8098
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information
Client: C.T. Male Associates
Address: 50 Century Hill Dr. Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

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:

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	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pest.	TAL Metals	CN	PFAS, Moisture	1,4-Dioxane	Sample Specific Comments	Total Bottles
35085-10	HVRA-EB01-190806	8/6/19	1320	Water	DK	✓	✓	✓	✓	✓	✓	✓	✓	(Ziploc Bag)	15
-11	HVRA-RB01-190806	↓	1445	Water	CB							✓			1
-12	HVRA-MW103-4.0	↓	1550	Soil	CB							✓	✓		3

		TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pest.	TAL Metals	CN	PFAS, Moisture	1,4-Dioxane
Container Type	*water sample diff*	V	A	A	A	A	A	P	A
Preservative		F	A	A	A	A	A	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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	8/6/19-1700	[signature] AAL	8-6-19 17:00
[signature]	8-6-19 18:45	[signature] AAL	8/6/19 1930
[signature] AAL	8/6/19 2355	[signature]	8/6/19 2350

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:	L1935927
Client:	C.T. Male Associates 50 Century Hill Drive Latham, NY 12210
ATTN:	Kirk Moline
Phone:	(518) 786-7400
Project Name:	HVRA
Project Number:	18.8090
Report Date:	08/29/19

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: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1935927-01	HVRA-LTB01-190807	WATER	WAPPINGERS FALLS, NY	08/07/19 00:00	08/09/19
L1935927-02	HVRA-FTB01-190807	WATER	WAPPINGERS FALLS, NY	08/07/19 14:35	08/09/19
L1935927-03	HVRA-MAINTBLDG-190807	WATER	WAPPINGERS FALLS, NY	08/07/19 15:00	08/09/19
L1935927-04	HVRA-FD01-190807	WATER	WAPPINGERS FALLS, NY	08/07/19 00:00	08/09/19
L1935927-05	HVRA-MW100-190808	WATER	WAPPINGERS FALLS, NY	08/08/19 13:20	08/09/19
L1935927-06	HVRA-FD01-190808	WATER	WAPPINGERS FALLS, NY	08/08/19 00:00	08/09/19
L1935927-07	HVRA-EB01-190808	WATER	WAPPINGERS FALLS, NY	08/08/19 14:20	08/09/19
L1935927-08	HVRA-OF1-190808	SOIL	WAPPINGERS FALLS, NY	08/08/19 16:00	08/09/19
L1935927-09	HVRA-FD02-190808	SOIL	WAPPINGERS FALLS, NY	08/08/19 00:00	08/09/19
L1935927-10	HVRA-NW102-190809	WATER	WAPPINGERS FALLS, NY	08/09/19 08:40	08/09/19
L1935927-11	HVRA-MW104-190809	WATER	WAPPINGERS FALLS, NY	08/09/19 09:25	08/09/19
L1935927-12	HVRA-MW103-190809	WATER	WAPPINGERS FALLS, NY	08/09/19 10:00	08/09/19
L1935927-13	HVRA-MW101-190809	WATER	WAPPINGERS FALLS, NY	08/09/19 09:15	08/09/19

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

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.

Case Narrative (continued)

Report Submission

August 29, 2019: This final report includes the results of all requested analyses.

August 20, 2019: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

The WG1273127-5 Method Blank, associated with L1935927-08 and -09, has a concentration above the reporting limit for bromomethane. Since the samples were non-detect to the RL for this target analyte, no further actions were taken. The results of the original analysis are reported.

Semivolatile Organics

The WG1271251-1 Method Blank, associated with L1935927-03 through -06, has a concentration above the reporting limit for Bis(2-ethylhexyl)phthalate. The results of the original analysis are reported and are qualified with a "B" for any associated sample concentrations that are less than 10x the blank concentration for this analyte.

Perfluorinated Alkyl Acids by Isotope Dilution

L1935927-05: The results for 8:2FTS are not reported in the original run because the quadratic fit of the curve does not allow for an estimated "E" flagged value. The sample was re-extracted on dilution outside the recommended holding time and the result within the calibration curve is reported for this compound.

L1935927-11: The sample was re-extracted on dilution outside of holding time in order to quantify the results within the calibration range. The results should be considered estimated, and are qualified with an E flag, for any compounds that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compounds that exceeded the calibration range.

L1935927-11, WG1273269-1 and WG1274408-2/-3: Extracted Internal Standard recoveries were outside the

Case Narrative (continued)

acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.
The WG1273269-2/-3 LCS/LCSD recoveries, associated with L1935927-08 and -09, are below the acceptance criteria for perfluorooctanesulfonamide (fosa) (51%/150%); however, it has been identified as a "difficult" analyte. The results of the associated samples are reported.
The WG1273269-2/-3 LCS/LCSD RPDs, associated with L1935927-08 and -09, are above the acceptance criteria for 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (36%) and perfluorooctanesulfonamide (fosa) (99%).
The WG1273269-4/-5 MS/MSD RPD, associated with L1935927-08 and -09, is above the acceptance criteria for perfluorooctanesulfonamide (fosa) (49%).
The WG1274408-4 MS recovery, performed on L1935927-03, is outside the acceptance criteria for perfluorooctanesulfonamide (fosa) (180%).
The WG1274408-4/-5 MS/MSD RPD, performed on L1935927-03, is outside the acceptance criteria for perfluorooctanesulfonamide (fosa) (63%).
The WG1274408-6/-7 MS/MSD recoveries, performed on L1935927-05, are outside the acceptance criteria for perfluorooctanesulfonic acid (pfos) (449%/345%). The unacceptable percent recoveries are attributed to the elevated concentrations of target compounds present in the native sample.
The WG1277357-4 MS recovery, performed on L1935927-05, is outside the acceptance criteria for 1h,1h,2h,2h-perfluorodecanesulfonic acid (8:2fts) (54%). The unacceptable percent recovery is attributed to the elevated concentrations of target compounds present in the native sample.
WG1273981-3: The continuing calibration standard had the response for 8:2FTS outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.
WG1273981-3: The continuing calibration standard had the response for M2-6:2FtS and M2-8:2FtS outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.
WG1277821-1: The continuing calibration standard had the response for M2-8:2FTS outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further

Case Narrative (continued)

action was taken.

WG1277821-2: The continuing calibration standard had the response for M2-8:2FTS outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1277821-2: The continuing calibration standard had the response for 8:2FTS outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

PCBs

L1935927-10 was extracted with the method required holding time exceeded.

Pesticides

The WG1273532-6/-7 MS/MSD recoveries, performed on L1935927-08, are outside the acceptance criteria for endrin aldehyde (0%/0%). The unacceptable percent recoveries are attributed to the elevated concentrations of target compounds present in the native sample.

Total Metals

L1935927-08 and -09: 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 WG1271502-3/-4 MS/MSD recoveries for calcium (0%/0%), magnesium (MS at 72%) and sodium (28%/46%), performed on L1935927-03, do not apply because the sample concentration is greater than four times the spike amounts added.

The WG1271502-7 MS recovery, performed on L1935927-05, is outside the acceptance criteria for calcium (40%). A post digestion spike was performed and was within acceptance criteria.

The WG1271502-7/-8 MS/MSD recoveries for sodium (0%/20%), performed on L1935927-05, does not apply because the sample concentration is greater than four times the spike amount added.

The WG1272465-3/-4 MS/MSD recoveries for aluminum (0%/0%), calcium (0%/0%), iron (3640%/0%),

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

Case Narrative (continued)

magnesium (0%/0%) and manganese (0%/0%), performed on L1935927-08, do not apply because the sample concentrations are greater than four times the spike amounts added.
The WG1272465-3/-4 MS/MSD recoveries, performed on L1935927-08, are outside the acceptance criteria for lead (72%/74%). A post digestion spike was performed and yielded unacceptable recoveries for lead (76%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.
The WG1272465-3/-4 MS/MSD RPDs for calcium (133%) and magnesium (88%), performed on L1935927-08, are above the acceptance criteria.

Cyanide, Total
The WG1271126-2/-3 LCS/LCSD recoveries (75%/70%), associated with L1935927-08 and -09, is outside our in-house acceptance criteria, but within the vendor-certified acceptance limits. The results of the original analyses are 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: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 08/29/19

ORGANICS

VOLATILES

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-01	Date Collected:	08/07/19 00:00
Client ID:	HVRA-LTB01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 08/14/19 15:13
Analyst: PK

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
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	1.1	J	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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-01	Date Collected:	08/07/19 00:00
Client ID:	HVRA-LTB01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	7.2		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	97		70-130

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-05
Client ID: HVRA-MW100-190808
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/08/19 13:20
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 08/14/19 15:42
Analyst: PK

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
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	1.4	J	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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-05	Date Collected:	08/08/19 13:20
Client ID:	HVRA-MW100-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	13		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	98		70-130

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-06
Client ID: HVRA-FD01-190808
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/08/19 00:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 08/14/19 16:10
Analyst: PK

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
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	1.2	J	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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-06	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	8.6		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	98		70-130

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-07
Client ID: HVRA-EB01-190808
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/08/19 14:20
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 08/14/19 16:39
Analyst: PK

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
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	0.96	J	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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: HVRA | **Lab Number:** L1935927
Project Number: 18.8090 | **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	9.1		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	98		70-130

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-08	Date Collected:	08/08/19 16:00
Client ID:	HVRA-OF1-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 08/16/19 01:50
Analyst: MV
Percent Solids: 84%

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	0.66		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
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
Trichloroethene	ND		ug/kg	0.54	0.15	1
1,2-Dichlorobenzene	ND		ug/kg	2.2	0.16	1

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-08	Date Collected:	08/08/19 16:00
Client ID:	HVRA-OF1-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/kg	1.1	0.19	1
Styrene	ND		ug/kg	1.1	0.21	1
Dichlorodifluoromethane	ND		ug/kg	11	0.99	1
Acetone	31		ug/kg	11	5.2	1
Carbon disulfide	ND		ug/kg	11	4.9	1
2-Butanone	ND		ug/kg	11	2.4	1
4-Methyl-2-pentanone	ND		ug/kg	11	1.4	1
2-Hexanone	ND		ug/kg	11	1.3	1
Bromochloromethane	ND		ug/kg	2.2	0.22	1
1,2-Dibromoethane	ND		ug/kg	1.1	0.30	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.2	1.1	1
Isopropylbenzene	ND		ug/kg	1.1	0.12	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
Methyl Acetate	ND		ug/kg	4.3	1.0	1
Cyclohexane	ND		ug/kg	11	0.59	1
1,4-Dioxane	ND		ug/kg	87	38.	1
Freon-113	ND		ug/kg	4.3	0.75	1
Methyl cyclohexane	ND		ug/kg	4.3	0.66	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	107		70-130

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-09
Client ID: HVRA-FD02-190808
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/08/19 00:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 08/16/19 02:15
Analyst: MV
Percent Solids: 86%

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	1.3		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	0.27	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
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	0.20	J	ug/kg	1.6	0.14	1
Trichloroethene	ND		ug/kg	0.52	0.14	1
1,2-Dichlorobenzene	ND		ug/kg	2.1	0.15	1

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-09 Date Collected: 08/08/19 00:00
Client ID: HVRA-FD02-190808 Date Received: 08/09/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18	1
Styrene	ND		ug/kg	1.0	0.20	1
Dichlorodifluoromethane	ND		ug/kg	10	0.95	1
Acetone	58		ug/kg	10	5.0	1
Carbon disulfide	ND		ug/kg	10	4.7	1
2-Butanone	ND		ug/kg	10	2.3	1
4-Methyl-2-pentanone	ND		ug/kg	10	1.3	1
2-Hexanone	ND		ug/kg	10	1.2	1
Bromochloromethane	ND		ug/kg	2.1	0.21	1
1,2-Dibromoethane	ND		ug/kg	1.0	0.29	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.1	1.0	1
Isopropylbenzene	ND		ug/kg	1.0	0.11	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
Methyl Acetate	ND		ug/kg	4.1	0.98	1
Cyclohexane	ND		ug/kg	10	0.56	1
1,4-Dioxane	ND		ug/kg	83	36.	1
Freon-113	ND		ug/kg	4.1	0.72	1
Methyl cyclohexane	ND		ug/kg	4.1	0.62	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	104		70-130

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 08/14/19 17:07
Analyst: PK

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
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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	18		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	98		70-130

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Matrix:	Water
Analytical Method:	1,8260C
Analytical Date:	08/14/19 17:36
Analyst:	PK

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
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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	11		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	97		70-130

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/14/19 09:01
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,05-07,10,12 Batch: WG1272314-5					
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
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
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/14/19 09:01
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,05-07,10,12 Batch: WG1272314-5					
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23
Cyclohexane	ND		ug/l	10	0.27
1,4-Dioxane	ND		ug/l	250	61.
Freon-113	ND		ug/l	2.5	0.70
Methyl cyclohexane	ND		ug/l	10	0.40

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/14/19 09:01
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,05-07,10,12 Batch: WG1272314-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	96		70-130

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/15/19 19:24
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 08-09 Batch: WG1273127-5					
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
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	2.0		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
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/15/19 19:24
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 08-09 Batch: WG1273127-5					
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
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
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
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Isopropylbenzene	ND		ug/kg	1.0	0.11
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
Methyl Acetate	ND		ug/kg	4.0	0.95
Cyclohexane	ND		ug/kg	10	0.54
1,4-Dioxane	ND		ug/kg	80	35.
Freon-113	ND		ug/kg	4.0	0.69
Methyl cyclohexane	ND		ug/kg	4.0	0.60

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/15/19 19:24
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 08-09 Batch: WG1273127-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	106		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05-07,10,12 Batch: WG1272314-3 WG1272314-4								
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	110		110		70-130	0		20
Chloroform	100		100		70-130	0		20
Carbon tetrachloride	110		100		63-132	10		20
1,2-Dichloropropane	110		110		70-130	0		20
Dibromochloromethane	100		100		63-130	0		20
1,1,2-Trichloroethane	110		100		70-130	10		20
Tetrachloroethene	100		100		70-130	0		20
Chlorobenzene	100		100		75-130	0		20
Trichlorofluoromethane	100		100		62-150	0		20
1,2-Dichloroethane	110		110		70-130	0		20
1,1,1-Trichloroethane	100		100		67-130	0		20
Bromodichloromethane	100		100		67-130	0		20
trans-1,3-Dichloropropene	100		100		70-130	0		20
cis-1,3-Dichloropropene	110		110		70-130	0		20
Bromoform	91		92		54-136	1		20
1,1,2,2-Tetrachloroethane	110		110		67-130	0		20
Benzene	110		100		70-130	10		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
Chloromethane	88		86		64-130	2		20
Bromomethane	69		70		39-139	1		20
Vinyl chloride	100		99		55-140	1		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05-07,10,12 Batch: WG1272314-3 WG1272314-4								
Chloroethane	110		110		55-138	0		20
1,1-Dichloroethene	100		100		61-145	0		20
trans-1,2-Dichloroethene	100		100		70-130	0		20
Trichloroethene	110		100		70-130	10		20
1,2-Dichlorobenzene	100		100		70-130	0		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	100		100		70-130	0		20
Methyl tert butyl ether	110		110		63-130	0		20
p/m-Xylene	105		100		70-130	5		20
o-Xylene	105		105		70-130	0		20
cis-1,2-Dichloroethene	110		100		70-130	10		20
Styrene	105		100		70-130	5		20
Dichlorodifluoromethane	86		84		36-147	2		20
Acetone	120		110		58-148	9		20
Carbon disulfide	100		100		51-130	0		20
2-Butanone	120		120		63-138	0		20
4-Methyl-2-pentanone	100		100		59-130	0		20
2-Hexanone	110		110		57-130	0		20
Bromochloromethane	110		110		70-130	0		20
1,2-Dibromoethane	100		100		70-130	0		20
1,2-Dibromo-3-chloropropane	100		110		41-144	10		20
Isopropylbenzene	100		100		70-130	0		20
1,2,3-Trichlorobenzene	110		110		70-130	0		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05-07,10,12 Batch: WG1272314-3 WG1272314-4								
1,2,4-Trichlorobenzene	100		110		70-130	10		20
Methyl Acetate	120		120		70-130	0		20
Cyclohexane	110		110		70-130	0		20
1,4-Dioxane	142		136		56-162	4		20
Freon-113	110		100		70-130	10		20
Methyl cyclohexane	110		100		70-130	10		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		102		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	99		99		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09 Batch: WG1273127-3 WG1273127-4								
Methylene chloride	97		97		70-130	0		30
1,1-Dichloroethane	104		102		70-130	2		30
Chloroform	101		100		70-130	1		30
Carbon tetrachloride	105		105		70-130	0		30
1,2-Dichloropropane	100		102		70-130	2		30
Dibromochloromethane	98		97		70-130	1		30
1,1,2-Trichloroethane	95		96		70-130	1		30
Tetrachloroethene	95		96		70-130	1		30
Chlorobenzene	92		90		70-130	2		30
Trichlorofluoromethane	102		100		70-139	2		30
1,2-Dichloroethane	104		103		70-130	1		30
1,1,1-Trichloroethane	103		103		70-130	0		30
Bromodichloromethane	100		101		70-130	1		30
trans-1,3-Dichloropropene	96		95		70-130	1		30
cis-1,3-Dichloropropene	103		104		70-130	1		30
Bromoform	90		91		70-130	1		30
1,1,2,2-Tetrachloroethane	88		87		70-130	1		30
Benzene	100		100		70-130	0		30
Toluene	94		94		70-130	0		30
Ethylbenzene	96		96		70-130	0		30
Chloromethane	109		109		52-130	0		30
Bromomethane	**153**	Q	143		57-147	7		30
Vinyl chloride	102		102		67-130	0		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09 Batch: WG1273127-3 WG1273127-4								
Chloroethane	104		101		50-151	3		30
1,1-Dichloroethene	102		101		65-135	1		30
trans-1,2-Dichloroethene	103		102		70-130	1		30
Trichloroethene	98		99		70-130	1		30
1,2-Dichlorobenzene	89		90		70-130	1		30
1,3-Dichlorobenzene	89		89		70-130	0		30
1,4-Dichlorobenzene	88		87		70-130	1		30
Methyl tert butyl ether	101		99		66-130	2		30
p/m-Xylene	97		96		70-130	1		30
o-Xylene	95		96		70-130	1		30
cis-1,2-Dichloroethene	102		102		70-130	0		30
Styrene	98		98		70-130	0		30
Dichlorodifluoromethane	109		108		30-146	1		30
Acetone	109		113		54-140	4		30
Carbon disulfide	101		100		59-130	1		30
2-Butanone	95		85		70-130	11		30
4-Methyl-2-pentanone	97		94		70-130	3		30
2-Hexanone	94		92		70-130	2		30
Bromochloromethane	107		108		70-130	1		30
1,2-Dibromoethane	100		101		70-130	1		30
1,2-Dibromo-3-chloropropane	98		94		68-130	4		30
Isopropylbenzene	89		90		70-130	1		30
1,2,3-Trichlorobenzene	87		85		70-130	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09 Batch: WG1273127-3 WG1273127-4								
1,2,4-Trichlorobenzene	87		84		70-130	4		30
Methyl Acetate	109		112		51-146	3		30
Cyclohexane	105		107		59-142	2		30
1,4-Dioxane	115		103		65-136	11		30
Freon-113	106		105		50-139	1		30
Methyl cyclohexane	99		99		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		97		70-130
Toluene-d8	96		97		70-130
4-Bromofluorobenzene	98		98		70-130
Dibromofluoromethane	102		101		70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05-07,10,12 QC Batch ID: WG1272314-6 WG1272314-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
Methylene chloride	ND	10	12	120		12	120		70-130	0		20
1,1-Dichloroethane	ND	10	12	120		12	120		70-130	0		20
Chloroform	ND	10	12	120		12	120		70-130	0		20
Carbon tetrachloride	ND	10	11	110		12	120		63-132	9		20
1,2-Dichloropropane	ND	10	12	120		12	120		70-130	0		20
Dibromochloromethane	ND	10	11	110		12	120		63-130	9		20
1,1,2-Trichloroethane	ND	10	12	120		12	120		70-130	0		20
Tetrachloroethene	ND	10	10	100		10	100		70-130	0		20
Chlorobenzene	ND	10	11	110		11	110		75-130	0		20
Trichlorofluoromethane	ND	10	11	110		12	120		62-150	9		20
1,2-Dichloroethane	ND	10	12	120		12	120		70-130	0		20
1,1,1-Trichloroethane	ND	10	11	110		12	120		67-130	9		20
Bromodichloromethane	ND	10	12	120		12	120		67-130	0		20
trans-1,3-Dichloropropene	ND	10	11	110		11	110		70-130	0		20
cis-1,3-Dichloropropene	ND	10	11	110		12	120		70-130	9		20
Bromoform	ND	10	9.9	99		10	100		54-136	1		20
1,1,2,2-Tetrachloroethane	ND	10	12	120		12	120		67-130	0		20
Benzene	ND	10	12	120		12	120		70-130	0		20
Toluene	ND	10	11	110		11	110		70-130	0		20
Ethylbenzene	ND	10	10	100		11	110		70-130	10		20
Chloromethane	1.4J	10	15	**150**	Q	16	**160**	Q	64-130	6		20
Bromomethane	ND	10	6.8	68		7.9	79		39-139	15		20
Vinyl chloride	ND	10	12	120		12	120		55-140	0		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05-07,10,12 QC Batch ID: WG1272314-6 WG1272314-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
Chloroethane	ND	10	12	120		12	120		55-138	0		20
1,1-Dichloroethene	ND	10	12	120		12	120		61-145	0		20
trans-1,2-Dichloroethene	ND	10	11	110		12	120		70-130	9		20
Trichloroethene	ND	10	11	110		12	120		70-130	9		20
1,2-Dichlorobenzene	ND	10	11	110		11	110		70-130	0		20
1,3-Dichlorobenzene	ND	10	10	100		11	110		70-130	10		20
1,4-Dichlorobenzene	ND	10	10	100		11	110		70-130	10		20
Methyl tert butyl ether	ND	10	11	110		12	120		63-130	9		20
p/m-Xylene	ND	20	21	105		22	110		70-130	5		20
o-Xylene	ND	20	22	110		22	110		70-130	0		20
cis-1,2-Dichloroethene	ND	10	12	120		12	120		70-130	0		20
Styrene	ND	20	20	100		22	110		70-130	10		20
Dichlorodifluoromethane	ND	10	11	110		11	110		36-147	0		20
Acetone	13	10	25	120		23	100		58-148	8		20
Carbon disulfide	ND	10	11	110		12	120		51-130	9		20
2-Butanone	ND	10	13	130		14	**140**	Q	63-138	7		20
4-Methyl-2-pentanone	ND	10	12	120		12	120		59-130	0		20
2-Hexanone	ND	10	13	130		14	**140**	Q	57-130	7		20
Bromochloromethane	ND	10	12	120		12	120		70-130	0		20
1,2-Dibromoethane	ND	10	11	110		12	120		70-130	9		20
1,2-Dibromo-3-chloropropane	ND	10	11	110		12	120		41-144	9		20
Isopropylbenzene	ND	10	10	100		11	110		70-130	10		20
1,2,3-Trichlorobenzene	ND	10	12	120		13	130		70-130	8		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05-07,10,12 QC Batch ID: WG1272314-6 WG1272314-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
1,2,4-Trichlorobenzene	ND	10	11	110		12	120		70-130	9		20
Methyl Acetate	ND	10	12	120		13	130		70-130	8		20
Cyclohexane	ND	10	11	110		11	110		70-130	0		20
1,4-Dioxane	ND	500	830	**166**	Q	980	**196**	Q	56-162	17		20
Freon-113	ND	10	10	100		11	110		70-130	10		20
Methyl cyclohexane	ND	10	9.9J	99		10	100		70-130	1		20

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		103		70-130
4-Bromofluorobenzene	99		101		70-130
Dibromofluoromethane	99		100		70-130
Toluene-d8	98		98		70-130

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273127-6 WG1273127-7 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Methylene chloride	ND	109	110	101		110	98		70-130	5		30
1,1-Dichloroethane	ND	109	120	108		110	104		70-130	6		30
Chloroform	ND	109	110	101		100	97		70-130	7		30
Carbon tetrachloride	ND	109	130	115		120	112		70-130	5		30
1,2-Dichloropropane	ND	109	110	104		100	98		70-130	8		30
Dibromochloromethane	ND	109	96	88		88	82		70-130	9		30
1,1,2-Trichloroethane	ND	109	93	85		86	81		70-130	7		30
Tetrachloroethene	0.66	109	99	90		93	87		70-130	5		30
Chlorobenzene	ND	109	89	81		80	75		70-130	11		30
Trichlorofluoromethane	ND	109	140	128		130	124		70-139	6		30
1,2-Dichloroethane	ND	109	110	98		100	94		70-130	7		30
1,1,1-Trichloroethane	ND	109	120	113		120	108		70-130	7		30
Bromodichloromethane	ND	109	110	99		99	93		70-130	9		30
trans-1,3-Dichloropropene	ND	109	96	88		90	84		70-130	7		30
cis-1,3-Dichloropropene	ND	109	110	103		100	97		70-130	8		30
Bromoform	ND	109	87	79		76	71		70-130	13		30
1,1,2,2-Tetrachloroethane	ND	109	77	70		68	**64**	Q	70-130	12		30
Benzene	ND	109	110	103		110	98		70-130	6		30
Toluene	ND	109	100	91		92	86		70-130	8		30
Ethylbenzene	ND	109	99	91		91	85		70-130	9		30
Chloromethane	ND	109	120	111		120	110		52-130	3		30
Bromomethane	ND	109	120	106		130	118		57-147	8		30
Vinyl chloride	ND	109	130	117		130	119		67-130	1		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273127-6 WG1273127-7 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Chloroethane	ND	109	150	138		140	130		50-151	8		30
1,1-Dichloroethene	ND	109	120	112		120	112		65-135	2		30
trans-1,2-Dichloroethene	ND	109	110	104		110	102		70-130	4		30
Trichloroethene	ND	109	110	100		100	95		70-130	8		30
1,2-Dichlorobenzene	ND	109	71	**66**	Q	59	**55**	Q	70-130	20		30
1,3-Dichlorobenzene	ND	109	73	**67**	Q	62	**58**	Q	70-130	17		30
1,4-Dichlorobenzene	ND	109	69	**64**	Q	58	**54**	Q	70-130	18		30
Methyl tert butyl ether	ND	109	110	99		100	97		66-130	5		30
p/m-Xylene	ND	218	200	90		180	83		70-130	10		30
o-Xylene	ND	218	190	89		170	82		70-130	11		30
cis-1,2-Dichloroethene	ND	109	110	103		110	99		70-130	6		30
Styrene	ND	218	190	87		170	78		70-130	13		30
Dichlorodifluoromethane	ND	109	130	121		130	121		30-146	2		30
Acetone	31	109	150	111		130	91		54-140	17		30
Carbon disulfide	ND	109	120	108		110	105		59-130	5		30
2-Butanone	ND	109	99	91		93	88		70-130	6		30
4-Methyl-2-pentanone	ND	109	97	89		90	85		70-130	7		30
2-Hexanone	ND	109	85	78		80	75		70-130	7		30
Bromochloromethane	ND	109	110	101		100	97		70-130	7		30
1,2-Dibromoethane	ND	109	95	87		87	82		70-130	8		30
1,2-Dibromo-3-chloropropane	ND	109	79	73		68	**64**	Q	68-130	16		30
Isopropylbenzene	ND	109	95	87		87	82		70-130	8		30
1,2,3-Trichlorobenzene	ND	109	50	**45**	Q	36	**34**	Q	70-130	**31**	Q	30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273127-6 WG1273127-7 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
1,2,4-Trichlorobenzene	ND	109	51	**47**	Q	40	**37**	Q	70-130	25		30
Methyl Acetate	ND	109	210	**188**	Q	200	**188**	Q	51-146	2		30
Cyclohexane	ND	109	140	124		130	121		59-142	5		30
1,4-Dioxane	ND	5450	6100	112		6200	117		65-136	2		30
Freon-113	ND	109	130	118		130	117		50-139	3		30
Methyl cyclohexane	ND	109	120	110		120	111		70-130	2		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		97		70-130
4-Bromofluorobenzene	97		97		70-130
Dibromofluoromethane	103		102		70-130
Toluene-d8	94		94		70-130

SEMIVOLATILES

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-01	Date Collected:	08/07/19 00:00
Client ID:	HVRA-LTB01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/16/19 09:53
Analytical Date:	08/20/19 20:28		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.97	0.402	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.97	0.390	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.97	0.234	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.97	0.323	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.97	0.222	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.97	0.370	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.97	0.232	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.97	1.31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.97	0.677	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.97	0.307	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.97	0.496	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.97	0.299	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.97	1.19	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.97	0.638	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.97	0.256	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.97	0.964	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.97	0.571	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.97	0.791	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.97	0.366	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.97	0.322	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.97	0.244	1
PFOA/PFOS, Total	ND		ng/l	1.97	0.232	1

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-01	Date Collected:	08/07/19 00:00
Client ID:	HVRA-LTB01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	133		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	104		33-143

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-02	Date Collected:	08/07/19 14:35
Client ID:	HVRA-FTB01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/20/19 08:34
Analytical Date:	08/22/19 05:25		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.99	0.406	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.99	0.394	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.99	0.237	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.99	0.327	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.99	0.224	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.99	0.374	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.99	0.235	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.99	1.33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.99	0.685	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.99	0.311	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.99	0.502	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.99	0.303	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.99	1.21	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.99	0.645	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.99	0.259	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.99	0.976	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.99	0.578	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.99	0.801	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.99	0.370	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.99	0.326	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.99	0.247	1
PFOA/PFOS, Total	ND		ng/l	1.99	0.235	1

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-02	Date Collected:	08/07/19 14:35
Client ID:	HVRA-FTB01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	48		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	43		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	110		33-143

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-03
Client ID: HVRA-MAINTBLDG-190807
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/07/19 15:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 08/15/19 18:07
Analyst: RC
Extraction Method: EPA 3510C
Extraction Date: 08/12/19 08:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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	1.6	JB	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
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

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-03	Date Collected:	08/07/19 15:00
Client ID:	HVRA-MAINTBLDG-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	83		21-120
Phenol-d6	67		10-120
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	107		15-120
2,4,6-Tribromophenol	76		10-120
4-Terphenyl-d14	114		41-149

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-03	Date Collected:	08/07/19 15:00
Client ID:	HVRA-MAINTBLDG-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/12/19 08:25
Analytical Date:	08/13/19 15:54		
Analyst:	CB		

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:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-03	Date Collected:	08/07/19 15:00
Client ID:	HVRA-MAINTBLDG-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	79		21-120
Phenol-d6	63		10-120
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	100		15-120
2,4,6-Tribromophenol	**122**	Q	10-120
4-Terphenyl-d14	110		41-149

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-03	Date Collected:	08/07/19 15:00
Client ID:	HVRA-MAINTBLDG-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/13/19 14:47
Analytical Date:	08/14/19 12:01		
Analyst:	MA		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	254.		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	37		15-110

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-03	Date Collected:	08/07/19 15:00
Client ID:	HVRA-MAINTBLDG-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/20/19 08:34
Analytical Date:	08/22/19 05:42		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.34		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	1.03	J	ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
Perfluorohexanoic Acid (PFHxA)	0.830	J	ng/l	1.80	0.296	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	1.18	J	ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.884	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1
PFOA/PFOS, Total	ND		ng/l	1.80	0.213	1

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-03	Date Collected:	08/07/19 15:00
Client ID:	HVRA-MAINTBLDG-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	126		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	38		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	41		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	116		33-143

Project Name: HVRA | **Lab Number:** L1935927
Project Number: 18.8090 | **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-04	Date Collected:	08/07/19 00:00
Client ID:	HVRA-FD01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D	Extraction Date:	08/12/19 08:24
Analytical Date:	08/15/19 19:23		
Analyst:	RC		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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
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

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-04	Date Collected:	08/07/19 00:00
Client ID:	HVRA-FD01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	48		21-120
Phenol-d6	43		10-120
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	79		15-120
2,4,6-Tribromophenol	31		10-120
4-Terphenyl-d14	88		41-149

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-04	Date Collected:	08/07/19 00:00
Client ID:	HVRA-FD01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/12/19 08:25
Analytical Date:	08/13/19 16:10		
Analyst:	CB		

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:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-04	Date Collected:	08/07/19 00:00
Client ID:	HVRA-FD01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	49		10-120
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	78		15-120
2,4,6-Tribromophenol	88		10-120
4-Terphenyl-d14	90		41-149

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-04	Date Collected:	08/07/19 00:00
Client ID:	HVRA-FD01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/13/19 14:47
Analytical Date:	08/14/19 14:20		
Analyst:	MA		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	284.		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	42		15-110

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-04	Date Collected:	08/07/19 00:00
Client ID:	HVRA-FD01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/16/19 09:53
Analytical Date:	08/20/19 20:45		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.45		ng/l	1.94	0.397	1
Perfluoropentanoic Acid (PFPeA)	1.13	J	ng/l	1.94	0.385	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.94	0.232	1
Perfluorohexanoic Acid (PFHxA)	0.895	J	ng/l	1.94	0.319	1
Perfluoroheptanoic Acid (PFHpA)	0.377	J	ng/l	1.94	0.219	1
Perfluorohexanesulfonic Acid (PFHxS)	1.10	J	ng/l	1.94	0.366	1
Perfluorooctanoic Acid (PFOA)	0.506	J	ng/l	1.94	0.230	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.94	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.94	0.669	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.94	0.304	1
Perfluorooctanesulfonic Acid (PFOS)	0.521	J	ng/l	1.94	0.490	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	0.296	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.94	1.18	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.94	0.630	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.94	0.253	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.94	0.953	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.94	0.564	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.94	0.782	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.94	0.362	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.94	0.318	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.94	0.241	1
PFOA/PFOS, Total	1.03	J	ng/l	1.94	0.230	1

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-04	Date Collected:	08/07/19 00:00
Client ID:	HVRA-FD01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	66		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	129		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	111		33-143

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-05	Date Collected:	08/08/19 13:20
Client ID:	HVRA-MW100-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D	Extraction Date:	08/12/19 08:24
Analytical Date:	08/15/19 18:32		
Analyst:	RC		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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
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

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-05	Date Collected:	08/08/19 13:20
Client ID:	HVRA-MW100-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	56		21-120
Phenol-d6	46		10-120
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	74		15-120
2,4,6-Tribromophenol	57		10-120
4-Terphenyl-d14	87		41-149

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-05	Date Collected:	08/08/19 13:20
Client ID:	HVRA-MW100-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/12/19 08:25
Analytical Date:	08/13/19 16:27		
Analyst:	CB		

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	0.03	J	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: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-05	Date Collected:	08/08/19 13:20
Client ID:	HVRA-MW100-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	56		21-120
Phenol-d6	44		10-120
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	73		15-120
2,4,6-Tribromophenol	88		10-120
4-Terphenyl-d14	86		41-149

Project Name: HVRA
Lab Number: L1935927
Project Number: 18.8090
Report Date: 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-05
Date Collected: 08/08/19 13:20
Client ID: HVRA-MW100-190808
Date Received: 08/09/19
Sample Location: WAPPINGERS FALLS, NY
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Extraction Method: EPA 3510C
Analytical Method: 1,8270D-SIM
Extraction Date: 08/13/19 14:47
Analytical Date: 08/14/19 13:11
Analyst: MA

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	41		15-110

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-05
Client ID: HVRA-MW100-190808
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/08/19 13:20
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/22/19 06:33
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/20/19 08:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	75.9		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	258		ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	15.2		ng/l	1.80	0.215	1
Perfluorohexanoic Acid (PFHxA)	222		ng/l	1.80	0.296	1
Perfluoroheptanoic Acid (PFHpA)	102		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	368		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	47.1		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	39.0		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	7.56		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	8.67		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	595		ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	28.9		ng/l	1.80	0.274	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.628	J	ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	2.09		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	2.64		ng/l	1.80	0.884	1
Perfluorooctanesulfonamide (FOSA)	23.8		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	0.487	J	ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1
PFOA/PFOS, Total	642		ng/l	1.80	0.213	1

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-05	Date Collected:	08/08/19 13:20
Client ID:	HVRA-MW100-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93		33-143

Project Name: HVRA | **Lab Number:** L1935927
Project Number: 18.8090 | **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-05 RE
Client ID: HVRA-MW100-190808
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/08/19 13:20
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/28/19 20:46
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/27/19 17:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	331		ng/l	10.0	6.06	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	44		7-170

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-06	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D	Extraction Date:	08/12/19 08:24
Analytical Date:	08/15/19 19:49		
Analyst:	RC		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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
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

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-06	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	63		21-120
Phenol-d6	52		10-120
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	83		15-120
2,4,6-Tribromophenol	57		10-120
4-Terphenyl-d14	91		41-149

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-06	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/12/19 08:25
Analytical Date:	08/13/19 16:44		
Analyst:	CB		

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: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-06	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	64		21-120
Phenol-d6	52		10-120
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	83		15-120
2,4,6-Tribromophenol	96		10-120
4-Terphenyl-d14	93		41-149

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-06	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/13/19 14:47
Analytical Date:	08/14/19 15:05		
Analyst:	MA		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	35		15-110

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-06	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/20/19 08:34
Analytical Date:	08/22/19 07:24		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	77.0		ng/l	1.92	0.391	1
Perfluoropentanoic Acid (PFPeA)	260		ng/l	1.92	0.379	1
Perfluorobutanesulfonic Acid (PFBS)	15.5		ng/l	1.92	0.228	1
Perfluorohexanoic Acid (PFHxA)	229		ng/l	1.92	0.314	1
Perfluoroheptanoic Acid (PFHpA)	101		ng/l	1.92	0.216	1
Perfluorohexanesulfonic Acid (PFHxS)	370		ng/l	1.92	0.360	1
Perfluorooctanoic Acid (PFOA)	48.1		ng/l	1.92	0.226	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	48.2		ng/l	1.92	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	9.04		ng/l	1.92	0.659	1
Perfluorononanoic Acid (PFNA)	8.28		ng/l	1.92	0.299	1
Perfluorooctanesulfonic Acid (PFOS)	699		ng/l	1.92	0.483	1
Perfluorodecanoic Acid (PFDA)	32.9		ng/l	1.92	0.291	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	344		ng/l	1.92	1.16	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.621	1
Perfluoroundecanoic Acid (PFUnA)	2.73		ng/l	1.92	0.249	1
Perfluorodecanesulfonic Acid (PFDS)	3.97		ng/l	1.92	0.939	1
Perfluorooctanesulfonamide (FOSA)	20.8		ng/l	1.92	0.556	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.770	1
Perfluorododecanoic Acid (PFDoA)	0.456	J	ng/l	1.92	0.356	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.313	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.238	1
PFOA/PFOS, Total	747		ng/l	1.92	0.226	1

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-06	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	83		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	104		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		33-143

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D	Extraction Date:	08/14/19 16:04
Analytical Date:	08/16/19 22:39		
Analyst:	SZ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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	1.7	J	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
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

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	55		21-120
Phenol-d6	44		10-120
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	70		15-120
2,4,6-Tribromophenol	52		10-120
4-Terphenyl-d14	84		41-149

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/13/19 14:47
Analytical Date:	08/14/19 15:28		
Analyst:	MA		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	163	36.8	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	35		15-110

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/14/19 16:04
Analytical Date:	08/15/19 14:45		
Analyst:	CB		

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	0.08	J	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	0.03	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: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	63		21-120
Phenol-d6	53		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	82		15-120
2,4,6-Tribromophenol	77		10-120
4-Terphenyl-d14	101		41-149

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/20/19 08:34
Analytical Date:	08/22/19 07:41		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.89	0.386	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.89	0.375	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.225	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.89	0.311	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	0.213	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.356	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.89	0.223	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.652	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	0.295	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.477	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	0.288	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.15	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.614	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.246	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.928	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.549	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.761	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.352	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.310	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.235	1
PFOA/PFOS, Total	ND		ng/l	1.89	0.223	1

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	45		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	33		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	101		33-143

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-08	Date Collected:	08/08/19 16:00
Client ID:	HVRA-OF1-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8270D	Extraction Date:	08/17/19 01:31
Analytical Date:	08/18/19 19:27		
Analyst:	RC		
Percent Solids:	84%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	160	20.	1
Hexachlorobenzene	ND		ug/kg	120	22.	1
Bis(2-chloroethyl)ether	ND		ug/kg	180	27.	1
2-Chloronaphthalene	ND		ug/kg	200	20.	1
3,3'-Dichlorobenzidine	ND		ug/kg	200	52.	1
2,4-Dinitrotoluene	ND		ug/kg	200	39.	1
2,6-Dinitrotoluene	ND		ug/kg	200	34.	1
Fluoranthene	550		ug/kg	120	22.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	200	21.	1
4-Bromophenyl phenyl ether	ND		ug/kg	200	30.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	240	34.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	210	20.	1
Hexachlorobutadiene	ND		ug/kg	200	29.	1
Hexachlorocyclopentadiene	ND		ug/kg	560	180	1
Hexachloroethane	ND		ug/kg	160	32.	1
Isophorone	ND		ug/kg	180	26.	1
Naphthalene	ND		ug/kg	200	24.	1
Nitrobenzene	ND		ug/kg	180	29.	1
NDPA/DPA	ND		ug/kg	160	22.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	200	30.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	200	68.	1
Butyl benzyl phthalate	ND		ug/kg	200	50.	1
Di-n-butylphthalate	ND		ug/kg	200	37.	1
Di-n-octylphthalate	ND		ug/kg	200	67.	1
Diethyl phthalate	ND		ug/kg	200	18.	1
Dimethyl phthalate	ND		ug/kg	200	41.	1
Benzo(a)anthracene	200		ug/kg	120	22.	1
Benzo(a)pyrene	200		ug/kg	160	48.	1

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-08	Date Collected:	08/08/19 16:00
Client ID:	HVRA-OF1-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	320		ug/kg	120	33.	1
Benzo(k)fluoranthene	83	J	ug/kg	120	31.	1
Chrysene	240		ug/kg	120	20.	1
Acenaphthylene	ND		ug/kg	160	30.	1
Anthracene	ND		ug/kg	120	38.	1
Benzo(ghi)perylene	160		ug/kg	160	23.	1
Fluorene	ND		ug/kg	200	19.	1
Phenanthrene	260		ug/kg	120	24.	1
Dibenzo(a,h)anthracene	29	J	ug/kg	120	23.	1
Indeno(1,2,3-cd)pyrene	170		ug/kg	160	27.	1
Pyrene	430		ug/kg	120	20.	1
Biphenyl	ND		ug/kg	450	46.	1
4-Chloroaniline	ND		ug/kg	200	36.	1
2-Nitroaniline	ND		ug/kg	200	38.	1
3-Nitroaniline	ND		ug/kg	200	37.	1
4-Nitroaniline	ND		ug/kg	200	81.	1
Dibenzofuran	ND		ug/kg	200	19.	1
2-Methylnaphthalene	ND		ug/kg	240	24.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	200	20.	1
Acetophenone	ND		ug/kg	200	24.	1
2,4,6-Trichlorophenol	ND		ug/kg	120	37.	1
p-Chloro-m-cresol	ND		ug/kg	200	29.	1
2-Chlorophenol	ND		ug/kg	200	23.	1
2,4-Dichlorophenol	ND		ug/kg	180	32.	1
2,4-Dimethylphenol	ND		ug/kg	200	65.	1
2-Nitrophenol	ND		ug/kg	420	74.	1
4-Nitrophenol	ND		ug/kg	280	80.	1
2,4-Dinitrophenol	ND		ug/kg	940	92.	1
4,6-Dinitro-o-cresol	ND		ug/kg	510	94.	1
Pentachlorophenol	ND		ug/kg	160	43.	1
Phenol	ND		ug/kg	200	30.	1
2-Methylphenol	ND		ug/kg	200	30.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	280	31.	1
2,4,5-Trichlorophenol	ND		ug/kg	200	38.	1
Carbazole	49	J	ug/kg	200	19.	1
Atrazine	ND		ug/kg	160	69.	1
Benzaldehyde	ND		ug/kg	260	53.	1

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-08	Date Collected:	08/08/19 16:00
Client ID:	HVRA-OF1-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	200	60.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	200	40.	1
1,4-Dioxane	ND		ug/kg	30	9.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	86		25-120
Phenol-d6	88		10-120
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	66		30-120
2,4,6-Tribromophenol	80		10-136
4-Terphenyl-d14	54		18-120

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-08	Date Collected:	08/08/19 16:00
Client ID:	HVRA-OF1-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/16/19 10:37
Analytical Date:	08/21/19 02:59		
Analyst:	AJ		
Percent Solids:	84%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ug/kg	1.03	0.023	1
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.03	0.047	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.03	0.040	1
Perfluorohexanoic Acid (PFHxA)	0.069	J	ug/kg	1.03	0.054	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.03	0.047	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.03	0.062	1
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.03	0.043	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.03	0.185	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.03	0.141	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.03	0.077	1
Perfluorooctanesulfonic Acid (PFOS)	0.356	J	ug/kg	1.03	0.134	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.03	0.069	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.03	0.296	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.03	0.208	1
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.03	0.048	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.03	0.158	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.03	0.101	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.03	0.087	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.03	0.072	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.03	0.211	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.03	0.056	1
PFOA/PFOS, Total	0.356	J	ug/kg	1.03	0.043	1

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-08	Date Collected:	08/08/19 16:00
Client ID:	HVRA-OF1-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	75		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	118		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	105		26-160

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-09	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD02-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8270D	Extraction Date:	08/17/19 01:31
Analytical Date:	08/18/19 19:53		
Analyst:	RC		
Percent Solids:	86%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	150	20.	1
Hexachlorobenzene	ND		ug/kg	120	21.	1
Bis(2-chloroethyl)ether	ND		ug/kg	170	26.	1
2-Chloronaphthalene	ND		ug/kg	190	19.	1
3,3'-Dichlorobenzidine	ND		ug/kg	190	51.	1
2,4-Dinitrotoluene	ND		ug/kg	190	38.	1
2,6-Dinitrotoluene	ND		ug/kg	190	33.	1
Fluoranthene	900		ug/kg	120	22.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	190	20.	1
4-Bromophenyl phenyl ether	ND		ug/kg	190	29.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	230	33.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	210	19.	1
Hexachlorobutadiene	ND		ug/kg	190	28.	1
Hexachlorocyclopentadiene	ND		ug/kg	550	170	1
Hexachloroethane	ND		ug/kg	150	31.	1
Isophorone	ND		ug/kg	170	25.	1
Naphthalene	ND		ug/kg	190	23.	1
Nitrobenzene	ND		ug/kg	170	28.	1
NDPA/DPA	ND		ug/kg	150	22.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	190	30.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	190	66.	1
Butyl benzyl phthalate	ND		ug/kg	190	48.	1
Di-n-butylphthalate	ND		ug/kg	190	36.	1
Di-n-octylphthalate	ND		ug/kg	190	65.	1
Diethyl phthalate	ND		ug/kg	190	18.	1
Dimethyl phthalate	ND		ug/kg	190	40.	1
Benzo(a)anthracene	310		ug/kg	120	22.	1
Benzo(a)pyrene	300		ug/kg	150	47.	1

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-09	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD02-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	440		ug/kg	120	32.	1
Benzo(k)fluoranthene	160		ug/kg	120	31.	1
Chrysene	380		ug/kg	120	20.	1
Acenaphthylene	ND		ug/kg	150	30.	1
Anthracene	69	J	ug/kg	120	37.	1
Benzo(ghi)perylene	230		ug/kg	150	22.	1
Fluorene	28	J	ug/kg	190	19.	1
Phenanthrene	470		ug/kg	120	23.	1
Dibenzo(a,h)anthracene	46	J	ug/kg	120	22.	1
Indeno(1,2,3-cd)pyrene	240		ug/kg	150	27.	1
Pyrene	690		ug/kg	120	19.	1
Biphenyl	ND		ug/kg	440	44.	1
4-Chloroaniline	ND		ug/kg	190	35.	1
2-Nitroaniline	ND		ug/kg	190	37.	1
3-Nitroaniline	ND		ug/kg	190	36.	1
4-Nitroaniline	ND		ug/kg	190	79.	1
Dibenzofuran	ND		ug/kg	190	18.	1
2-Methylnaphthalene	ND		ug/kg	230	23.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	190	20.	1
Acetophenone	ND		ug/kg	190	24.	1
2,4,6-Trichlorophenol	ND		ug/kg	120	36.	1
p-Chloro-m-cresol	ND		ug/kg	190	28.	1
2-Chlorophenol	ND		ug/kg	190	23.	1
2,4-Dichlorophenol	ND		ug/kg	170	31.	1
2,4-Dimethylphenol	ND		ug/kg	190	63.	1
2-Nitrophenol	ND		ug/kg	410	72.	1
4-Nitrophenol	ND		ug/kg	270	78.	1
2,4-Dinitrophenol	ND		ug/kg	920	89.	1
4,6-Dinitro-o-cresol	ND		ug/kg	500	92.	1
Pentachlorophenol	ND		ug/kg	150	42.	1
Phenol	ND		ug/kg	190	29.	1
2-Methylphenol	ND		ug/kg	190	30.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	280	30.	1
2,4,5-Trichlorophenol	ND		ug/kg	190	37.	1
Carbazole	67	J	ug/kg	190	19.	1
Atrazine	ND		ug/kg	150	67.	1
Benzaldehyde	ND		ug/kg	250	52.	1

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-09	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD02-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	190	58.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	190	39.	1
1,4-Dioxane	ND		ug/kg	29	8.8	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	97		25-120
Phenol-d6	104		10-120
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	76		30-120
2,4,6-Tribromophenol	90		10-136
4-Terphenyl-d14	60		18-120

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-09	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD02-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/16/19 10:37
Analytical Date:	08/21/19 03:50		
Analyst:	AJ		
Percent Solids:	86%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ug/kg	1.05	0.024	1
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.05	0.048	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.05	0.041	1
Perfluorohexanoic Acid (PFHxA)	0.061	J	ug/kg	1.05	0.055	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.05	0.047	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.05	0.064	1
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.05	0.044	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.05	0.188	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.05	0.143	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.05	0.079	1
Perfluorooctanesulfonic Acid (PFOS)	0.320	J	ug/kg	1.05	0.136	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.05	0.070	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.05	0.301	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.05	0.211	1
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.05	0.049	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.05	0.160	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.05	0.103	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.05	0.089	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.05	0.073	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.05	0.214	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.05	0.057	1
PFOA/PFOS, Total	0.320	J	ug/kg	1.05	0.044	1

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-09	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD02-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	124		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	110		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	88		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	107		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	115		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	115		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	113		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	110		26-160

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D	Extraction Date:	08/15/19 01:07
Analytical Date:	08/16/19 23:05		
Analyst:	SZ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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
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

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		21-120
Phenol-d6	57		10-120
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	82		15-120
2,4,6-Tribromophenol	66		10-120
4-Terphenyl-d14	88		41-149

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/13/19 14:47
Analytical Date:	08/14/19 15:50		
Analyst:	MA		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	39		15-110

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-10
Client ID: HVRA-NW102-190809
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/09/19 08:40
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 08/15/19 15:01
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/15/19 01:10

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	0.02	J	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	0.04	J	ug/l	0.10	0.02	1
Benzo(a)pyrene	0.03	J	ug/l	0.10	0.02	1
Benzo(b)fluoranthene	0.03	J	ug/l	0.10	0.01	1
Benzo(k)fluoranthene	0.03	J	ug/l	0.10	0.01	1
Chrysene	0.02	J	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	0.03	J	ug/l	0.10	0.01	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	0.04	J	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	0.03	J	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: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	73		21-120
Phenol-d6	63		10-120
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	89		15-120
2,4,6-Tribromophenol	90		10-120
4-Terphenyl-d14	96		41-149

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/20/19 08:34
Analytical Date:	08/22/19 07:58		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.72	J	ng/l	1.95	0.398	1
Perfluoropentanoic Acid (PFPeA)	1.38	J	ng/l	1.95	0.387	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.95	0.232	1
Perfluorohexanoic Acid (PFHxA)	1.41	J	ng/l	1.95	0.320	1
Perfluoroheptanoic Acid (PFHpA)	0.762	J	ng/l	1.95	0.220	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.95	0.367	1
Perfluorooctanoic Acid (PFOA)	1.26	J	ng/l	1.95	0.230	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.95	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.95	0.672	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.95	0.305	1
Perfluorooctanesulfonic Acid (PFOS)	1.17	J	ng/l	1.95	0.492	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.95	0.297	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.95	1.18	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.95	0.633	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.95	0.254	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.95	0.957	1
Perfluorooctanesulfonamide (FOSA)	0.684	J	ng/l	1.95	0.566	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.95	0.785	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.95	0.363	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.95	0.320	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.95	0.242	1
PFOA/PFOS, Total	2.43	J	ng/l	1.95	0.230	1

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	49		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	28		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93		33-143

Project Name: HVRA | **Lab Number:** L1935927

Project Number: 18.8090 | **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-11
Client ID: HVRA-MW104-190809
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/09/19 09:25
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 08/14/19 17:40
Analyst: MA

Extraction Method: EPA 3510C
Extraction Date: 08/13/19 14:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	35		15-110

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-11
Client ID: HVRA-MW104-190809
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/09/19 09:25
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/22/19 08:15
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/20/19 08:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	113		ng/l	1.89	0.386	1
Perfluoropentanoic Acid (PFPeA)	205		ng/l	1.89	0.375	1
Perfluorobutanesulfonic Acid (PFBS)	151		ng/l	1.89	0.225	1
Perfluorohexanoic Acid (PFHxA)	710		ng/l	1.89	0.311	1
Perfluoroheptanoic Acid (PFHpA)	92.6		ng/l	1.89	0.213	1
Perfluorohexanesulfonic Acid (PFHxS)	3030	E	ng/l	1.89	0.356	1
Perfluorooctanoic Acid (PFOA)	122		ng/l	1.89	0.223	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.68		ng/l	1.89	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	47.7		ng/l	1.89	0.652	1
Perfluorononanoic Acid (PFNA)	22.6		ng/l	1.89	0.295	1
Perfluorooctanesulfonic Acid (PFOS)	1720	E	ng/l	1.89	0.477	1
Perfluorodecanoic Acid (PFDA)	0.530	J	ng/l	1.89	0.288	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.15	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.614	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.246	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.928	1
Perfluorooctanesulfonamide (FOSA)	16.8		ng/l	1.89	0.549	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.761	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.352	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.310	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.235	1
PFOA/PFOS, Total	1840		ng/l	1.89	0.223	1

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-11	Date Collected:	08/09/19 09:25
Client ID:	HVRA-MW104-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**190**	Q	31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	118		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	67		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	40		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	60		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	46		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	37		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**21**	Q	33-143

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-11 RE	Date Collected:	08/09/19 09:25
Client ID:	HVRA-MW104-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/27/19 17:30
Analytical Date:	08/28/19 21:02		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorohexanesulfonic Acid (PFHxS)	5420		ng/l	20.0	3.76	1
Perfluorooctanesulfonic Acid (PFOS)	2280		ng/l	20.0	5.04	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	79		47-153
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		42-146

Project Name: HVRA | **Lab Number:** L1935927

Project Number: 18.8090 | **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-12
Client ID: HVRA-MW103-190809
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/09/19 10:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 08/16/19 23:30
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/15/19 01:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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
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

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
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
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Carbazole	ND		ug/l	2.0	0.49	1
Atrazine	ND		ug/l	10	0.76	1
Benzaldehyde	ND		ug/l	5.0	0.53	1
Caprolactam	ND		ug/l	10	3.3	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	69		21-120
Phenol-d6	56		10-120
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	87		15-120
2,4,6-Tribromophenol	65		10-120
4-Terphenyl-d14	90		41-149

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/13/19 14:48
Analytical Date:	08/14/19 18:02		
Analyst:	MA		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	156	35.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	40		15-110

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/15/19 01:10
Analytical Date:	08/15/19 15:17		
Analyst:	CB		

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	0.06	J	ug/l	0.10	0.05	1
Benzo(a)anthracene	0.02	J	ug/l	0.10	0.02	1
Benzo(a)pyrene	0.02	J	ug/l	0.10	0.02	1
Benzo(b)fluoranthene	0.06	J	ug/l	0.10	0.01	1
Benzo(k)fluoranthene	0.02	J	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	0.05	J	ug/l	0.10	0.01	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	0.02	J	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	0.05	J	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:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	74		21-120
Phenol-d6	63		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	92		15-120
2,4,6-Tribromophenol	82		10-120
4-Terphenyl-d14	99		41-149

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/20/19 08:34
Analytical Date:	08/22/19 08:32		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.39	J	ng/l	1.84	0.376	1
Perfluoropentanoic Acid (PFPeA)	1.15	J	ng/l	1.84	0.365	1
Perfluorobutanesulfonic Acid (PFBS)	0.819	J	ng/l	1.84	0.220	1
Perfluorohexanoic Acid (PFHxA)	1.26	J	ng/l	1.84	0.302	1
Perfluoroheptanoic Acid (PFHpA)	0.819	J	ng/l	1.84	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	4.74		ng/l	1.84	0.347	1
Perfluorooctanoic Acid (PFOA)	2.10		ng/l	1.84	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.635	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	0.288	1
Perfluorooctanesulfonic Acid (PFOS)	1.32	J	ng/l	1.84	0.465	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.280	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.598	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.240	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.904	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.535	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.742	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.343	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.302	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.229	1
PFOA/PFOS, Total	3.42	J	ng/l	1.84	0.218	1

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	51		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	41		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	111		33-143

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-13	Date Collected:	08/09/19 09:15
Client ID:	HVRA-MW101-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/13/19 14:48
Analytical Date:	08/14/19 18:23		
Analyst:	MA		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	39		15-110

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-13	Date Collected:	08/09/19 09:15
Client ID:	HVRA-MW101-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/20/19 08:37
Analytical Date:	08/22/19 08:49		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	71.1		ng/l	1.81	0.370	1
Perfluoropentanoic Acid (PFPeA)	130		ng/l	1.81	0.359	1
Perfluorobutanesulfonic Acid (PFBS)	11.1		ng/l	1.81	0.216	1
Perfluorohexanoic Acid (PFHxA)	74.8		ng/l	1.81	0.297	1
Perfluoroheptanoic Acid (PFHpA)	16.0		ng/l	1.81	0.204	1
Perfluorohexanesulfonic Acid (PFHxS)	99.8		ng/l	1.81	0.340	1
Perfluorooctanoic Acid (PFOA)	11.3		ng/l	1.81	0.214	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	24.1		ng/l	1.81	1.21	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.90		ng/l	1.81	0.623	1
Perfluorononanoic Acid (PFNA)	3.05		ng/l	1.81	0.283	1
Perfluorooctanesulfonic Acid (PFOS)	68.1		ng/l	1.81	0.456	1
Perfluorodecanoic Acid (PFDA)	0.536	J	ng/l	1.81	0.275	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	2.72		ng/l	1.81	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	0.587	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.236	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.888	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	0.525	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	0.728	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.337	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.296	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	0.225	1
PFOA/PFOS, Total	79.4		ng/l	1.81	0.214	1

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-13	Date Collected:	08/09/19 09:15
Client ID:	HVRA-MW101-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	123		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	51		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	76		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	36		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	33		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	111		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	102		33-143

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/14/19 01:58
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/12/19 08:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 03-06 Batch: WG1271251-1					
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
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
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
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
Isophorone	ND		ug/l	5.0	1.2
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	3.5		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
Dimethyl phthalate	ND		ug/l	5.0	1.8
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
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

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/14/19 01:58
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/12/19 08:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 03-06 Batch: WG1271251-1					
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
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
Phenol	ND		ug/l	5.0	0.57
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77
Carbazole	ND		ug/l	2.0	0.49
Atrazine	ND		ug/l	10	0.76
Benzaldehyde	ND		ug/l	5.0	0.53
Caprolactam	ND		ug/l	10	3.3
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	60		21-120
Phenol-d6	48		10-120
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	78		15-120
2,4,6-Tribromophenol	56		10-120
4-Terphenyl-d14	85		41-149

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/13/19 12:52
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 08/12/19 08:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 03-06 Batch: WG1271253-1					
Acenaphthene	0.03	J	ug/l	0.10	0.01
2-Chloronaphthalene	ND		ug/l	0.20	0.02
Fluoranthene	0.03	J	ug/l	0.10	0.02
Hexachlorobutadiene	ND		ug/l	0.50	0.05
Naphthalene	0.06	J	ug/l	0.10	0.05
Benzo(a)anthracene	ND		ug/l	0.10	0.02
Benzo(a)pyrene	0.03	J	ug/l	0.10	0.02
Benzo(b)fluoranthene	0.04	J	ug/l	0.10	0.01
Benzo(k)fluoranthene	0.03	J	ug/l	0.10	0.01
Chrysene	ND		ug/l	0.10	0.01
Acenaphthylene	0.03	J	ug/l	0.10	0.01
Anthracene	0.04	J	ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01
Fluorene	0.05	J	ug/l	0.10	0.01
Phenanthrene	0.06	J	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	0.03	J	ug/l	0.10	0.02
2-Methylnaphthalene	0.06	J	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:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8270D-SIM	Extraction Method:	EPA 3510C
Analytical Date:	08/13/19 12:52	Extraction Date:	08/12/19 08:25
Analyst:	DV		

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 03-06 Batch: WG1271253-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	61		21-120
Phenol-d6	48		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	79		15-120
2,4,6-Tribromophenol	95		10-120
4-Terphenyl-d14	93		41-149

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/14/19 10:58
Analyst: MA

Extraction Method: EPA 3510C
Extraction Date: 08/13/19 14:47

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 03-07,10-13 Batch: WG1271770-1					
1,4-Dioxane	ND		ng/l	150	33.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	35		15-110

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/16/19 04:17
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/14/19 16:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 07,10,12 Batch: WG1272405-1					
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
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
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
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
Isophorone	ND		ug/l	5.0	1.2
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
Dimethyl phthalate	ND		ug/l	5.0	1.8
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
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

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/16/19 04:17
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/14/19 16:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 07,10,12 Batch: WG1272405-1					
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
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
Phenol	ND		ug/l	5.0	0.57
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77
Carbazole	ND		ug/l	2.0	0.49
Atrazine	ND		ug/l	10	0.76
Benzaldehyde	ND		ug/l	5.0	0.53
Caprolactam	ND		ug/l	10	3.3
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		21-120
Phenol-d6	38		10-120
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	65		15-120
2,4,6-Tribromophenol	51		10-120
4-Terphenyl-d14	78		41-149

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/15/19 11:03
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 08/14/19 16:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 07,10,12 Batch: WG1272407-1					
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: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/15/19 11:03
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 08/14/19 16:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 07,10,12 Batch: WG1272407-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	59		21-120
Phenol-d6	46		10-120
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	75		15-120
2,4,6-Tribromophenol	81		10-120
4-Terphenyl-d14	102		41-149

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/19/19 19:58
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/16/19 09:48

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,04 Batch: WG1273199-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.336	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	122,537(M)	Extraction Method:	EPA 537
Analytical Date:	08/19/19 19:58	Extraction Date:	08/16/19 09:48
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,04 Batch: WG1273199-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	119		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	56		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	72		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		33-143

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/20/19 23:52
Analyst: AJ

Extraction Method: EPA 537(M)
Extraction Date: 08/16/19 10:37

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08-09 Batch: WG1273269-1					
Perfluorobutanoic Acid (PFBA)	0.091	J	ug/kg	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/20/19 23:52
Analyst: AJ

Extraction Method: EPA 537(M)
Extraction Date: 08/16/19 10:37

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08-09 Batch: WG1273269-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	127		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	118		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**138**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	118		26-160

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/18/19 11:03
Analyst: RC

Extraction Method: EPA 3546
Extraction Date: 08/17/19 01:31

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 08-09 Batch: WG1273531-1					
Acenaphthene	ND		ug/kg	130	17.
Hexachlorobenzene	ND		ug/kg	100	19.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	170	16.
3,3'-Dichlorobenzidine	ND		ug/kg	170	44.
2,4-Dinitrotoluene	ND		ug/kg	170	33.
2,6-Dinitrotoluene	ND		ug/kg	170	28.
Fluoranthene	ND		ug/kg	100	19.
4-Chlorophenyl phenyl ether	ND		ug/kg	170	18.
4-Bromophenyl phenyl ether	ND		ug/kg	170	25.
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	28.
Bis(2-chloroethoxy)methane	ND		ug/kg	180	17.
Hexachlorobutadiene	ND		ug/kg	170	24.
Hexachlorocyclopentadiene	ND		ug/kg	480	150
Hexachloroethane	ND		ug/kg	130	27.
Isophorone	ND		ug/kg	150	22.
Naphthalene	ND		ug/kg	170	20.
Nitrobenzene	ND		ug/kg	150	24.
NDPA/DPA	ND		ug/kg	130	19.
n-Nitrosodi-n-propylamine	ND		ug/kg	170	26.
Bis(2-ethylhexyl)phthalate	ND		ug/kg	170	57.
Butyl benzyl phthalate	ND		ug/kg	170	42.
Di-n-butylphthalate	ND		ug/kg	170	32.
Di-n-octylphthalate	ND		ug/kg	170	56.
Diethyl phthalate	ND		ug/kg	170	15.
Dimethyl phthalate	ND		ug/kg	170	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.

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/18/19 11:03
Analyst: RC

Extraction Method: EPA 3546
Extraction Date: 08/17/19 01:31

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 08-09 Batch: WG1273531-1					
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	170	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	170	30.
2-Nitroaniline	ND		ug/kg	170	32.
3-Nitroaniline	ND		ug/kg	170	31.
4-Nitroaniline	ND		ug/kg	170	69.
Dibenzofuran	ND		ug/kg	170	16.
2-Methylnaphthalene	ND		ug/kg	200	20.
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	170	17.
Acetophenone	ND		ug/kg	170	20.
2,4,6-Trichlorophenol	ND		ug/kg	100	32.
p-Chloro-m-cresol	ND		ug/kg	170	25.
2-Chlorophenol	ND		ug/kg	170	20.
2,4-Dichlorophenol	ND		ug/kg	150	27.
2,4-Dimethylphenol	ND		ug/kg	170	55.
2-Nitrophenol	ND		ug/kg	360	62.
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.

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/18/19 11:03
Analyst: RC

Extraction Method: EPA 3546
Extraction Date: 08/17/19 01:31

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 08-09 Batch: WG1273531-1					
Phenol	ND		ug/kg	170	25.
2-Methylphenol	ND		ug/kg	170	26.
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	26.
2,4,5-Trichlorophenol	ND		ug/kg	170	32.
Carbazole	ND		ug/kg	170	16.
Atrazine	ND		ug/kg	130	58.
Benzaldehyde	ND		ug/kg	220	45.
Caprolactam	ND		ug/kg	170	50.
2,3,4,6-Tetrachlorophenol	ND		ug/kg	170	34.
1,4-Dioxane	ND		ug/kg	25	7.6

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	98		25-120
Phenol-d6	105		10-120
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	89		30-120
2,4,6-Tribromophenol	94		10-136
4-Terphenyl-d14	99		18-120

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/22/19 02:53
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/20/19 08:34

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-03,05-07,10-13 Batch: WG1274408-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	122,537(M)	Extraction Method:	EPA 537
Analytical Date:	08/22/19 02:53	Extraction Date:	08/20/19 08:34
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-03,05-07,10-13 Batch: WG1274408-1

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	48		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	47		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	120		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	110		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	104		33-143

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/28/19 19:06
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/27/19 17:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 05,11 Batch: WG1277357-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.400	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/28/19 19:06
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/27/19 17:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 05,11 Batch: WG1277357-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	39		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	45		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-06 Batch: WG1271251-2 WG1271251-3								
Bis(2-chloroethyl)ether	67		65		40-140	3		30
3,3'-Dichlorobenzidine	65		85		40-140	27		30
2,4-Dinitrotoluene	64		78		48-143	20		30
2,6-Dinitrotoluene	72		86		40-140	18		30
4-Chlorophenyl phenyl ether	65		77		40-140	17		30
4-Bromophenyl phenyl ether	65		79		40-140	19		30
Bis(2-chloroisopropyl)ether	79		78		40-140	1		30
Bis(2-chloroethoxy)methane	72		75		40-140	4		30
Hexachlorocyclopentadiene	67		63		40-140	6		30
Isophorone	76		80		40-140	5		30
Nitrobenzene	73		74		40-140	1		30
NDPA/DPA	69		83		40-140	18		30
n-Nitrosodi-n-propylamine	78		79		29-132	1		30
Bis(2-ethylhexyl)phthalate	73		90		40-140	21		30
Butyl benzyl phthalate	81		100		40-140	21		30
Di-n-butylphthalate	76		94		40-140	21		30
Di-n-octylphthalate	77		94		40-140	20		30
Diethyl phthalate	72		86		40-140	18		30
Dimethyl phthalate	78		93		40-140	18		30
Biphenyl	64		69		40-140	8		30
4-Chloroaniline	72		80		40-140	11		30
2-Nitroaniline	73		84		52-143	14		30
3-Nitroaniline	63		75		25-145	17		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-06 Batch: WG1271251-2 WG1271251-3								
4-Nitroaniline	64		83		51-143	26		30
Dibenzofuran	64		71		40-140	10		30
1,2,4,5-Tetrachlorobenzene	64		64		2-134	0		30
Acetophenone	62		63		39-129	2		30
2,4,6-Trichlorophenol	69		70		30-130	1		30
p-Chloro-m-cresol	78		90		23-97	14		30
2-Chlorophenol	69		69		27-123	0		30
2,4-Dichlorophenol	69		73		30-130	6		30
2,4-Dimethylphenol	61		55		30-130	10		30
2-Nitrophenol	72		75		30-130	4		30
4-Nitrophenol	52		61		10-80	16		30
2,4-Dinitrophenol	56		42		20-130	29		30
4,6-Dinitro-o-cresol	71		67		20-164	6		30
Phenol	56		60		12-110	7		30
3-Methylphenol/4-Methylphenol	66		68		30-130	3		30
2,4,5-Trichlorophenol	74		86		30-130	15		30
Carbazole	77		94		55-144	20		30
Atrazine	98		126		40-140	25		30
Benzaldehyde	66		64		40-140	3		30
Caprolactam	47		60		10-130	24		30
2,3,4,6-Tetrachlorophenol	68		61		40-140	11		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-06 Batch: WG1271251-2 WG1271251-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	56		57		21-120
Phenol-d6	48		51		10-120
Nitrobenzene-d5	71		68		23-120
2-Fluorobiphenyl	70		75		15-120
2,4,6-Tribromophenol	60		66		10-120
4-Terphenyl-d14	75		91		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 03-06 Batch: WG1271253-2 WG1271253-3								
Acenaphthene	97		79		40-140	20		40
2-Chloronaphthalene	97		78		40-140	22		40
Fluoranthene	100		92		40-140	8		40
Hexachlorobutadiene	84		68		40-140	21		40
Naphthalene	92		73		40-140	23		40
Benzo(a)anthracene	101		92		40-140	9		40
Benzo(a)pyrene	106		97		40-140	9		40
Benzo(b)fluoranthene	102		94		40-140	8		40
Benzo(k)fluoranthene	107		97		40-140	10		40
Chrysene	96		88		40-140	9		40
Acenaphthylene	101		83		40-140	20		40
Anthracene	102		92		40-140	10		40
Benzo(ghi)perylene	101		94		40-140	7		40
Fluorene	100		83		40-140	19		40
Phenanthrene	96		86		40-140	11		40
Dibenzo(a,h)anthracene	108		102		40-140	6		40
Indeno(1,2,3-cd)pyrene	106		96		40-140	10		40
Pyrene	99		92		40-140	7		40
2-Methylnaphthalene	99		79		40-140	22		40
Pentachlorophenol	80		100		40-140	22		40
Hexachlorobenzene	104		88		40-140	17		40
Hexachloroethane	90		72		40-140	22		40

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 03-06 Batch: WG1271253-2 WG1271253-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	71		58		21-120
Phenol-d6	59		47		10-120
Nitrobenzene-d5	96		76		23-120
2-Fluorobiphenyl	89		71		15-120
2,4,6-Tribromophenol	97		97		10-120
4-Terphenyl-d14	99		93		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 03-07,10-13 Batch: WG1271770-2 WG1271770-3								
1,4-Dioxane	120		118		40-140	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	38		47		15-110

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 07,10,12 Batch: WG1272405-2 WG1272405-3								
Bis(2-chloroethyl)ether	68		58		40-140	16		30
3,3'-Dichlorobenzidine	63		51		40-140	21		30
2,4-Dinitrotoluene	69		56		48-143	21		30
2,6-Dinitrotoluene	78		65		40-140	18		30
4-Chlorophenyl phenyl ether	67		56		40-140	18		30
4-Bromophenyl phenyl ether	70		57		40-140	20		30
Bis(2-chloroisopropyl)ether	79		70		40-140	12		30
Bis(2-chloroethoxy)methane	73		62		40-140	16		30
Hexachlorocyclopentadiene	64		53		40-140	19		30
Isophorone	80		68		40-140	16		30
Nitrobenzene	74		64		40-140	14		30
NDPA/DPA	72		58		40-140	22		30
n-Nitrosodi-n-propylamine	80		70		29-132	13		30
Bis(2-ethylhexyl)phthalate	66		57		40-140	15		30
Butyl benzyl phthalate	81		67		40-140	19		30
Di-n-butylphthalate	74		61		40-140	19		30
Di-n-octylphthalate	70		58		40-140	19		30
Diethyl phthalate	75		61		40-140	21		30
Dimethyl phthalate	85		71		40-140	18		30
Biphenyl	67		55		40-140	20		30
4-Chloroaniline	68		57		40-140	18		30
2-Nitroaniline	77		65		52-143	17		30
3-Nitroaniline	63		49		25-145	25		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 07,10,12 Batch: WG1272405-2 WG1272405-3								
4-Nitroaniline	70		57		51-143	20		30
Dibenzofuran	66		54		40-140	20		30
1,2,4,5-Tetrachlorobenzene	65		53		2-134	20		30
Acetophenone	67		56		39-129	18		30
2,4,6-Trichlorophenol	74		60		30-130	21		30
p-Chloro-m-cresol	83		68		23-97	20		30
2-Chlorophenol	70		61		27-123	14		30
2,4-Dichlorophenol	73		62		30-130	16		30
2,4-Dimethylphenol	68		56		30-130	19		30
2-Nitrophenol	74		62		30-130	18		30
4-Nitrophenol	57		50		10-80	13		30
2,4-Dinitrophenol	66		58		20-130	13		30
4,6-Dinitro-o-cresol	82		69		20-164	17		30
Phenol	57		46		12-110	21		30
3-Methylphenol/4-Methylphenol	69		56		30-130	21		30
2,4,5-Trichlorophenol	81		70		30-130	15		30
Carbazole	82		65		55-144	23		30
Atrazine	111		89		40-140	22		30
Benzaldehyde	67		58		40-140	14		30
Caprolactam	47		41		10-130	14		30
2,3,4,6-Tetrachlorophenol	71		57		40-140	22		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA | **Lab Number:** L1935927
Project Number: 18.8090 | **Report Date:** 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 07,10,12 Batch: WG1272405-2 WG1272405-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	58		49		21-120
Phenol-d6	49		41		10-120
Nitrobenzene-d5	72		61		23-120
2-Fluorobiphenyl	70		58		15-120
2,4,6-Tribromophenol	65		53		10-120
4-Terphenyl-d14	82		65		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 07,10,12 Batch: WG1272407-2 WG1272407-3								
Acenaphthene	83		88		40-140	6		40
2-Chloronaphthalene	80		84		40-140	5		40
Fluoranthene	98		99		40-140	1		40
Hexachlorobutadiene	71		77		40-140	8		40
Naphthalene	77		82		40-140	6		40
Benzo(a)anthracene	95		94		40-140	1		40
Benzo(a)pyrene	102		103		40-140	1		40
Benzo(b)fluoranthene	104		106		40-140	2		40
Benzo(k)fluoranthene	101		98		40-140	3		40
Chrysene	96		98		40-140	2		40
Acenaphthylene	82		85		40-140	4		40
Anthracene	90		96		40-140	6		40
Benzo(ghi)perylene	100		101		40-140	1		40
Fluorene	86		91		40-140	6		40
Phenanthrene	89		92		40-140	3		40
Dibenzo(a,h)anthracene	103		104		40-140	1		40
Indeno(1,2,3-cd)pyrene	99		98		40-140	1		40
Pyrene	98		99		40-140	1		40
2-Methylnaphthalene	78		83		40-140	6		40
Pentachlorophenol	66		67		40-140	2		40
Hexachlorobenzene	82		87		40-140	6		40
Hexachloroethane	68		76		40-140	11		40

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 07,10,12 Batch: WG1272407-2 WG1272407-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	58		63		21-120
Phenol-d6	48		52		10-120
Nitrobenzene-d5	73		78		23-120
2-Fluorobiphenyl	71		76		15-120
2,4,6-Tribromophenol	74		70		10-120
4-Terphenyl-d14	91		91		41-149

Lab Control Sample Analysis
Batch Quality Control

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,04 Batch: WG1273199-2 WG1273199-3								
Perfluorobutanoic Acid (PFBA)	105		102		67-148	3		30
Perfluoropentanoic Acid (PFPeA)	98		95		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	93		89		65-157	4		30
Perfluorohexanoic Acid (PFHxA)	103		102		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	104		101		58-159	3		30
Perfluorohexanesulfonic Acid (PFHxS)	116		109		69-177	6		30
Perfluorooctanoic Acid (PFOA)	103		99		63-159	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	121		100		49-187	19		30
Perfluoroheptanesulfonic Acid (PFHpS)	102		98		61-179	4		30
Perfluorononanoic Acid (PFNA)	103		100		68-171	3		30
Perfluorooctanesulfonic Acid (PFOS)	104		101		52-151	3		30
Perfluorodecanoic Acid (PFDA)	103		102		63-171	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	83		101		56-173	20		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		112		60-166	11		30
Perfluoroundecanoic Acid (PFUnA)	106		103		60-153	3		30
Perfluorodecanesulfonic Acid (PFDS)	95		105		38-156	10		30
Perfluorooctanesulfonamide (FOSA)	86		92		46-170	7		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	80		104		45-170	26		30
Perfluorododecanoic Acid (PFDoA)	106		104		67-153	2		30
Perfluorotridecanoic Acid (PFTrDA)	113		111		48-158	2		30
Perfluorotetradecanoic Acid (PFTA)	109		110		59-182	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,04 Batch: WG1273199-2 WG1273199-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		108		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		131		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		107		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		103		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		103		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	79		98		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		103		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	53		72		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		100		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		98		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		94		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		69		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		80		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		92		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		35		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		77		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		83		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		86		33-143

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08-09 Batch: WG1273269-2 WG1273269-3								
Perfluorobutanoic Acid (PFBA)	106		106		71-135	0		30
Perfluoropentanoic Acid (PFPeA)	105		105		69-132	0		30
Perfluorobutanesulfonic Acid (PFBS)	105		106		72-128	1		30
Perfluorohexanoic Acid (PFHxA)	104		108		70-132	4		30
Perfluoroheptanoic Acid (PFHpA)	109		110		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	108		110		67-130	2		30
Perfluorooctanoic Acid (PFOA)	112		110		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	88		127		64-140	**36**	Q	30
Perfluoroheptanesulfonic Acid (PFHpS)	125		118		70-132	6		30
Perfluorononanoic Acid (PFNA)	95		107		72-129	12		30
Perfluorooctanesulfonic Acid (PFOS)	125		113		68-136	10		30
Perfluorodecanoic Acid (PFDA)	101		105		69-133	4		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	108		102		65-137	6		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	116		111		63-144	4		30
Perfluoroundecanoic Acid (PFUnA)	112		107		64-136	5		30
Perfluorodecanesulfonic Acid (PFDS)	122		116		59-134	5		30
Perfluorooctanesulfonamide (FOSA)	**51**	Q	**150**	Q	67-137	**99**	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	103		110		61-139	7		30
Perfluorododecanoic Acid (PFDoA)	93		90		69-135	3		30
Perfluorotridecanoic Acid (PFTrDA)	98		94		66-139	4		30
Perfluorotetradecanoic Acid (PFTA)	94		93		69-133	1		30

Lab Control Sample Analysis
Batch Quality Control

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08-09 Batch: WG1273269-2 WG1273269-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		87		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		99		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	126		100		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		90		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		97		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	129		102		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		92		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	127		71		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		98		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	117		100		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		97		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	96		78		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	106		105		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		110		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	7		5		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		105		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		103		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	109		111		26-160

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1273531-2 WG1273531-3								
Acenaphthene	91		84		31-137	8		50
Hexachlorobenzene	92		85		40-140	8		50
Bis(2-chloroethyl)ether	100		91		40-140	9		50
2-Chloronaphthalene	91		84		40-140	8		50
3,3'-Dichlorobenzidine	84		76		40-140	10		50
2,4-Dinitrotoluene	106		100		40-132	6		50
2,6-Dinitrotoluene	104		96		40-140	8		50
Fluoranthene	94		88		40-140	7		50
4-Chlorophenyl phenyl ether	87		82		40-140	6		50
4-Bromophenyl phenyl ether	92		86		40-140	7		50
Bis(2-chloroisopropyl)ether	78		72		40-140	8		50
Bis(2-chloroethoxy)methane	99		91		40-117	8		50
Hexachlorobutadiene	93		86		40-140	8		50
Hexachlorocyclopentadiene	94		86		40-140	9		50
Hexachloroethane	95		85		40-140	11		50
Isophorone	105		96		40-140	9		50
Naphthalene	96		88		40-140	9		50
Nitrobenzene	102		92		40-140	10		50
NDPA/DPA	92		88		36-157	4		50
n-Nitrosodi-n-propylamine	105		98		32-121	7		50
Bis(2-ethylhexyl)phthalate	103		96		40-140	7		50
Butyl benzyl phthalate	108		100		40-140	8		50
Di-n-butylphthalate	110		101		40-140	9		50

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1273531-2 WG1273531-3								
Di-n-octylphthalate	116		106		40-140	9		50
Diethyl phthalate	95		88		40-140	8		50
Dimethyl phthalate	93		85		40-140	9		50
Benzo(a)anthracene	97		89		40-140	9		50
Benzo(a)pyrene	91		82		40-140	10		50
Benzo(b)fluoranthene	99		81		40-140	20		50
Benzo(k)fluoranthene	86		88		40-140	2		50
Chrysene	90		84		40-140	7		50
Acenaphthylene	94		87		40-140	8		50
Anthracene	97		90		40-140	7		50
Benzo(ghi)perylene	97		90		40-140	7		50
Fluorene	94		89		40-140	5		50
Phenanthrene	91		84		40-140	8		50
Dibenzo(a,h)anthracene	101		93		40-140	8		50
Indeno(1,2,3-cd)pyrene	98		98		40-140	0		50
Pyrene	92		84		35-142	9		50
Biphenyl	97		91		37-127	6		50
4-Chloroaniline	59		55		40-140	7		50
2-Nitroaniline	104		98		47-134	6		50
3-Nitroaniline	78		73		26-129	7		50
4-Nitroaniline	89		81		41-125	9		50
Dibenzofuran	94		88		40-140	7		50
2-Methylnaphthalene	97		88		40-140	10		50

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1273531-2 WG1273531-3								
1,2,4,5-Tetrachlorobenzene	96		90		40-117	6		50
Acetophenone	107		97		14-144	10		50
2,4,6-Trichlorophenol	101		95		30-130	6		50
p-Chloro-m-cresol	**108**	Q	97		26-103	11		50
2-Chlorophenol	**108**	Q	98		25-102	10		50
2,4-Dichlorophenol	103		93		30-130	10		50
2,4-Dimethylphenol	104		96		30-130	8		50
2-Nitrophenol	111		103		30-130	7		50
4-Nitrophenol	109		100		11-114	9		50
2,4-Dinitrophenol	92		86		4-130	7		50
4,6-Dinitro-o-cresol	117		107		10-130	9		50
Pentachlorophenol	92		86		17-109	7		50
Phenol	**97**	Q	88		26-90	10		50
2-Methylphenol	110		100		30-130.	10		50
3-Methylphenol/4-Methylphenol	104		95		30-130	9		50
2,4,5-Trichlorophenol	103		94		30-130	9		50
Carbazole	98		90		54-128	9		50
Atrazine	103		97		40-140	6		50
Benzaldehyde	107		86		40-140	22		50
Caprolactam	98		91		15-130	7		50
2,3,4,6-Tetrachlorophenol	97		89		40-140	9		50
1,4-Dioxane	75		71		40-140	5		50

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1273531-2 WG1273531-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	102		92		25-120
Phenol-d6	106		96		10-120
Nitrobenzene-d5	103		96		23-120
2-Fluorobiphenyl	88		80		30-120
2,4,6-Tribromophenol	91		87		10-136
4-Terphenyl-d14	90		84		18-120

Lab Control Sample Analysis
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03,05-07,10-13 Batch: WG1274408-2 WG1274408-3								
Perfluorobutanoic Acid (PFBA)	113		112		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	112		111		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	113		113		65-157	0		30
Perfluorohexanoic Acid (PFHxA)	116		116		69-168	0		30
Perfluoroheptanoic Acid (PFHpA)	115		116		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	112		116		69-177	4		30
Perfluorooctanoic Acid (PFOA)	115		121		63-159	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	108		119		49-187	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	151		136		61-179	10		30
Perfluorononanoic Acid (PFNA)	123		114		68-171	8		30
Perfluorooctanesulfonic Acid (PFOS)	146		136		52-151	7		30
Perfluorodecanoic Acid (PFDA)	119		105		63-171	13		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	91		122		56-173	29		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	127		99		60-166	25		30
Perfluoroundecanoic Acid (PFUnA)	112		111		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	148		146		38-156	1		30
Perfluorooctanesulfonamide (FOSA)	109		103		46-170	6		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	101		90		45-170	12		30
Perfluorododecanoic Acid (PFDoA)	100		107		67-153	7		30
Perfluorotridecanoic Acid (PFTrDA)	110		112		48-158	2		30
Perfluorotetradecanoic Acid (PFTA)	116		107		59-182	8		30

Lab Control Sample Analysis
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03,05-07,10-13 Batch: WG1274408-2 WG1274408-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		89		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		105		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		108		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		88		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	122		109		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		86		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74		60		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		96		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64		49		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	139		143		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	141		131		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		44		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**161**	Q	**184**	Q	23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		84		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	112		109		33-143

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 05,11 Batch: WG1277357-2 WG1277357-3								
Perfluorobutanoic Acid (PFBA)	104		105		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	96		95		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	86		87		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	104		104		69-168	0		30
Perfluoroheptanoic Acid (PFHpA)	102		104		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	116		114		69-177	2		30
Perfluorooctanoic Acid (PFOA)	105		100		63-159	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	94		106		49-187	12		30
Perfluoroheptanesulfonic Acid (PFHpS)	90		96		61-179	6		30
Perfluorononanoic Acid (PFNA)	100		97		68-171	3		30
Perfluorooctanesulfonic Acid (PFOS)	107		107		52-151	0		30
Perfluorodecanoic Acid (PFDA)	101		109		63-171	8		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		93		56-173	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	106		99		60-166	7		30
Perfluoroundecanoic Acid (PFUnA)	99		99		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	107		100		38-156	7		30
Perfluorooctanesulfonamide (FOSA)	83		87		46-170	5		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	94		90		45-170	4		30
Perfluorododecanoic Acid (PFDoA)	109		107		67-153	2		30
Perfluorotridecanoic Acid (PFTrDA)	102		101		48-158	1		30
Perfluorotetradecanoic Acid (PFTA)	112		113		59-182	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 05,11 Batch: WG1277357-2 WG1277357-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		94		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		108		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		88		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		86		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		84		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81		84		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	41		39		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		94		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		87		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		83		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	47		46		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72		70		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	33		40		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		71		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		67		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		65		33-143

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-06 QC Batch ID: WG1271251-4 WG1271251-5 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807												
Bis(2-chloroethyl)ether	ND	18.2	15	83		15	83		40-140	0		30
3,3'-Dichlorobenzidine	ND	18.2	15	83		15	83		40-140	0		30
2,4-Dinitrotoluene	ND	18.2	17	94		17	94		48-143	0		30
2,6-Dinitrotoluene	ND	18.2	20	110		20	110		40-140	0		30
4-Chlorophenyl phenyl ether	ND	18.2	17	94		16	88		40-140	6		30
4-Bromophenyl phenyl ether	ND	18.2	17	94		17	94		40-140	0		30
Bis(2-chloroisopropyl)ether	ND	18.2	18	99		19	100		40-140	5		30
Bis(2-chloroethoxy)methane	ND	18.2	17	94		17	94		40-140	0		30
Hexachlorocyclopentadiene	ND	18.2	16.J	88		17.J	94		40-140	6		30
Isophorone	ND	18.2	19	100		19	100		40-140	0		30
Nitrobenzene	ND	18.2	16	88		16	88		40-140	0		30
NDPA/DPA	ND	18.2	18	99		17	94		40-140	6		30
n-Nitrosodi-n-propylamine	ND	18.2	19	100		19	100		29-132	0		30
Bis(2-ethylhexyl)phthalate	1.6JB	18.2	22	120		20	110		40-140	10		30
Butyl benzyl phthalate	ND	18.2	24	130		22	120		40-140	9		30
Di-n-butylphthalate	ND	18.2	22	120		20	110		40-140	10		30
Di-n-octylphthalate	ND	18.2	24	130		23	130		40-140	4		30
Diethyl phthalate	ND	18.2	19	100		18	99		40-140	5		30
Dimethyl phthalate	ND	18.2	21	120		21	120		40-140	0		30
Biphenyl	ND	18.2	16	88		16	88		40-140	0		30
4-Chloroaniline	ND	18.2	18	99		17	94		40-140	6		30
2-Nitroaniline	ND	18.2	20	110		20	110		52-143	0		30
3-Nitroaniline	ND	18.2	16	88		16	88		25-145	0		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-06 QC Batch ID: WG1271251-4 WG1271251-5 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807												
4-Nitroaniline	ND	18.2	17	94		16	88		51-143	6		30
Dibenzofuran	ND	18.2	16	88		15	83		40-140	6		30
1,2,4,5-Tetrachlorobenzene	ND	18.2	16	88		16	88		2-134	0		30
Acetophenone	ND	18.2	14	77		15	83		39-129	7		30
2,4,6-Trichlorophenol	ND	18.2	18	99		18	99		30-130	0		30
p-Chloro-m-cresol	ND	18.2	20	**110**	Q	20	**110**	Q	23-97	0		30
2-Chlorophenol	ND	18.2	16	88		16	88		27-123	0		30
2,4-Dichlorophenol	ND	18.2	17	94		17	94		30-130	0		30
2,4-Dimethylphenol	ND	18.2	8.4	46		8.2	45		30-130	2		30
2-Nitrophenol	ND	18.2	18	99		18	99		30-130	0		30
4-Nitrophenol	ND	18.2	16	**88**	Q	16	**88**	Q	10-80	0		30
2,4-Dinitrophenol	ND	18.2	17.J	94		16.J	88		20-130	6		30
4,6-Dinitro-o-cresol	ND	18.2	20	110		19	100		20-164	5		30
Phenol	ND	18.2	14	77		13	72		12-110	7		30
3-Methylphenol/4-Methylphenol	ND	18.2	17	94		16	88		30-130	6		30
2,4,5-Trichlorophenol	ND	18.2	21	120		20	110		30-130	5		30
Carbazole	ND	18.2	20	110		19	100		55-144	5		30
Atrazine	ND	18.2	27	**150**	Q	25	140		40-140	8		30
Benzaldehyde	ND	18.2	15	83		15	83		40-140	0		30
Caprolactam	ND	18.2	14	77		14	77		10-130	0		30
2,3,4,6-Tetrachlorophenol	ND	18.2	18	99		17	94		40-140	6		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS - Westborough Lab   Associated sample(s): 03-06   QC Batch ID: WG1271251-4 WG1271251-5   QC Sample: L1935927-03   Client ID: HVRA-MAINTBLDG-190807

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2,4,6-Tribromophenol	81		75		10-120
2-Fluorobiphenyl	97		97		15-120
2-Fluorophenol	71		69		21-120
4-Terphenyl-d14	109		105		41-149
Nitrobenzene-d5	89		89		23-120
Phenol-d6	68		64		10-120

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-06 QC Batch ID: WG1271251-6 WG1271251-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
Bis(2-chloroethyl)ether	ND	18.2	13	72		12	66		40-140	8		30
3,3'-Dichlorobenzidine	ND	18.2	2.9J	**16**	Q	3.2J	**18**	Q	40-140	10		30
2,4-Dinitrotoluene	ND	18.2	15	83		14	77		48-143	7		30
2,6-Dinitrotoluene	ND	18.2	17	94		16	88		40-140	6		30
4-Chlorophenyl phenyl ether	ND	18.2	15	83		14	77		40-140	7		30
4-Bromophenyl phenyl ether	ND	18.2	15	83		14	77		40-140	7		30
Bis(2-chloroisopropyl)ether	ND	18.2	16	88		15	83		40-140	6		30
Bis(2-chloroethoxy)methane	ND	18.2	15	83		14	77		40-140	7		30
Hexachlorocyclopentadiene	ND	18.2	14.J	77		14.J	77		40-140	0		30
Isophorone	ND	18.2	16	88		15	83		40-140	6		30
Nitrobenzene	ND	18.2	15	83		14	77		40-140	7		30
NDPA/DPA	ND	18.2	14	77		13	72		40-140	7		30
n-Nitrosodi-n-propylamine	ND	18.2	16	88		16	88		29-132	0		30
Bis(2-ethylhexyl)phthalate	ND	18.2	18	99		17	94		40-140	6		30
Butyl benzyl phthalate	ND	18.2	20	110		18	99		40-140	11		30
Di-n-butylphthalate	ND	18.2	18	99		17	94		40-140	6		30
Di-n-octylphthalate	ND	18.2	21	120		20	110		40-140	5		30
Diethyl phthalate	ND	18.2	16	88		15	83		40-140	6		30
Dimethyl phthalate	ND	18.2	18	99		17	94		40-140	6		30
Biphenyl	ND	18.2	14	77		14	77		40-140	0		30
4-Chloroaniline	ND	18.2	7.0	**39**	Q	8.0	44		40-140	13		30
2-Nitroaniline	ND	18.2	17	94		16	88		52-143	6		30
3-Nitroaniline	ND	18.2	9.1	50		8.6	47		25-145	6		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-06 QC Batch ID: WG1271251-6 WG1271251-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
4-Nitroaniline	ND	18.2	11	61		11	61		51-143	0		30
Dibenzofuran	ND	18.2	14	77		13	72		40-140	7		30
1,2,4,5-Tetrachlorobenzene	ND	18.2	14	77		13	72		2-134	7		30
Acetophenone	ND	18.2	12	66		12	66		39-129	0		30
2,4,6-Trichlorophenol	ND	18.2	15	83		14	77		30-130	7		30
p-Chloro-m-cresol	ND	18.2	18	**99**	Q	16	88		23-97	12		30
2-Chlorophenol	ND	18.2	14	77		13	72		27-123	7		30
2,4-Dichlorophenol	ND	18.2	14	77		14	77		30-130	0		30
2,4-Dimethylphenol	ND	18.2	3.7J	**20**	Q	3.8J	**21**	Q	30-130	3		30
2-Nitrophenol	ND	18.2	15	83		14	77		30-130	7		30
4-Nitrophenol	ND	18.2	14	77		17	**94**	Q	10-80	19		30
2,4-Dinitrophenol	ND	18.2	16.J	88		16.J	88		20-130	0		30
4,6-Dinitro-o-cresol	ND	18.2	17	94		16	88		20-164	6		30
Phenol	ND	18.2	11	61		11	61		12-110	0		30
3-Methylphenol/4-Methylphenol	ND	18.2	13	72		12	66		30-130	8		30
2,4,5-Trichlorophenol	ND	18.2	18	99		16	88		30-130	12		30
Carbazole	ND	18.2	17	94		16	88		55-144	6		30
Atrazine	ND	18.2	23	130		22	120		40-140	4		30
Benzaldehyde	ND	18.2	13	72		12	66		40-140	8		30
Caprolactam	ND	18.2	11	61		12	66		10-130	9		30
2,3,4,6-Tetrachlorophenol	ND	18.2	15	83		14	77		40-140	7		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-06 QC Batch ID: WG1271251-6 WG1271251-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2,4,6-Tribromophenol	63		60		10-120
2-Fluorobiphenyl	87		81		15-120
2-Fluorophenol	59		59		21-120
4-Terphenyl-d14	93		87		41-149
Nitrobenzene-d5	76		75		23-120
Phenol-d6	54		53		10-120

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 03-06 QC Batch ID: WG1271253-4 WG1271253-5 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807												
Acenaphthene	ND	18.2	17	94		18	99		40-140	6		40
2-Chloronaphthalene	ND	18.2	17	94		18	99		40-140	6		40
Fluoranthene	ND	18.2	18	99		18	99		40-140	0		40
Hexachlorobutadiene	ND	18.2	15	83		15	83		40-140	0		40
Naphthalene	ND	18.2	16	88		16	88		40-140	0		40
Benzo(a)anthracene	ND	18.2	18	99		18	99		40-140	0		40
Benzo(a)pyrene	ND	18.2	19	100		19	100		40-140	0		40
Benzo(b)fluoranthene	ND	18.2	18	99		18	99		40-140	0		40
Benzo(k)fluoranthene	ND	18.2	19	100		19	100		40-140	0		40
Chrysene	ND	18.2	17	94		17	94		40-140	0		40
Acenaphthylene	ND	18.2	18	99		19	100		40-140	5		40
Anthracene	ND	18.2	18	99		19	100		40-140	5		40
Benzo(ghi)perylene	ND	18.2	18	99		18	99		40-140	0		40
Fluorene	ND	18.2	18	99		18	99		40-140	0		40
Phenanthrene	ND	18.2	17	94		17	94		40-140	0		40
Dibenzo(a,h)anthracene	ND	18.2	19	100		20	110		40-140	5		40
Indeno(1,2,3-cd)pyrene	ND	18.2	19	100		19	100		40-140	0		40
Pyrene	ND	18.2	17	94		18	99		40-140	6		40
2-Methylnaphthalene	ND	18.2	17	94		18	99		40-140	6		40
Pentachlorophenol	ND	18.2	18	99		19	100		40-140	5		40
Hexachlorobenzene	ND	18.2	19	100		19	100		40-140	0		40
Hexachloroethane	ND	18.2	16	88		16	88		40-140	0		40

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS-SIM - Westborough Lab   Associated sample(s): 03-06   QC Batch ID: WG1271253-4 WG1271253-5   QC Sample: L1935927-03
Client ID: HVRA-MAINTBLDG-190807

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2,4,6-Tribromophenol	114		115		10-120
2-Fluorobiphenyl	92		94		15-120
2-Fluorophenol	77		77		21-120
4-Terphenyl-d14	101		102		41-149
Nitrobenzene-d5	98		101		23-120
Phenol-d6	66		64		10-120

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 03-06 QC Batch ID: WG1271253-6 WG1271253-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
Acenaphthene	ND	18.2	15	83		14	77		40-140	7		40
2-Chloronaphthalene	ND	18.2	15	83		14	77		40-140	7		40
Fluoranthene	ND	18.2	15	83		14	77		40-140	7		40
Hexachlorobutadiene	ND	18.2	12	66		12	66		40-140	0		40
Naphthalene	ND	18.2	14	77		13	72		40-140	7		40
Benzo(a)anthracene	ND	18.2	15	83		15	83		40-140	0		40
Benzo(a)pyrene	ND	18.2	16	88		16	88		40-140	0		40
Benzo(b)fluoranthene	ND	18.2	16	88		15	83		40-140	6		40
Benzo(k)fluoranthene	ND	18.2	16	88		16	88		40-140	0		40
Chrysene	ND	18.2	14	77		14	77		40-140	0		40
Acenaphthylene	ND	18.2	16	88		15	83		40-140	6		40
Anthracene	ND	18.2	16	88		15	83		40-140	6		40
Benzo(ghi)perylene	ND	18.2	15	83		14	77		40-140	7		40
Fluorene	ND	18.2	15	83		15	83		40-140	0		40
Phenanthrene	0.03J	18.2	15	83		14	77		40-140	7		40
Dibenzo(a,h)anthracene	ND	18.2	16	88		16	88		40-140	0		40
Indeno(1,2,3-cd)pyrene	ND	18.2	16	88		16	88		40-140	0		40
Pyrene	ND	18.2	15	83		14	77		40-140	7		40
2-Methylnaphthalene	ND	18.2	15	83		14	77		40-140	7		40
Pentachlorophenol	ND	18.2	18	99		17	94		40-140	6		40
Hexachlorobenzene	ND	18.2	16	88		15	83		40-140	6		40
Hexachloroethane	ND	18.2	14	77		13	72		40-140	7		40

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 03-06 QC Batch ID: WG1271253-6 WG1271253-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2,4,6-Tribromophenol	93		91		10-120
2-Fluorobiphenyl	79		77		15-120
2-Fluorophenol	64		64		21-120
4-Terphenyl-d14	85		83		41-149
Nitrobenzene-d5	85		84		23-120
Phenol-d6	54		54		10-120

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 03-07,10-13 QC Batch ID: WG1271770-4 WG1271770-5 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807												
1,4-Dioxane	254	5000	6160	118		6220	119		40-140	1		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,4-Dioxane-d8	37		39		15-110

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 03-07,10-13 QC Batch ID: WG1271770-6 WG1271770-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
1,4-Dioxane	ND	5000	5830	117		5760	115		40-140	1		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,4-Dioxane-d8	40		38		15-110

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08-09 QC Batch ID: WG1273269-4 WG1273269-5 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Perfluorobutanoic Acid (PFBA)	ND	5.6	5.97	107		6.03	106		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	ND	5.6	6.01	107		6.08	107		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	4.96	5.31	107		5.41	107		72-128	2		30
Perfluorohexanoic Acid (PFHxA)	0.069J	5.6	6.02	108		6.14	108		70-132	2		30
Perfluoroheptanoic Acid (PFHpA)	ND	5.6	6.44	115		6.48	114		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	5.1	5.60	110		6.10	118		67-130	9		30
Perfluorooctanoic Acid (PFOA)	ND	5.6	5.94	106		5.92	104		69-133	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	5.32	6.60	124		6.06	112		64-140	9		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	5.32	6.08	114		6.80	126		70-132	11		30
Perfluorononanoic Acid (PFNA)	ND	5.6	6.11	109		6.15	108		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	0.356J	5.18	6.20	120		6.67	127		68-136	7		30
Perfluorodecanoic Acid (PFDA)	ND	5.6	5.98	107		5.49	97		69-133	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	5.37	6.11	114		6.50	119		65-137	6		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	5.6	5.21	93		5.08	89		63-144	3		30
Perfluoroundecanoic Acid (PFUnA)	ND	5.6	6.58	118		6.06	107		64-136	8		30
Perfluorodecanesulfonic Acid (PFDS)	ND	5.4	6.19	115		6.77	123		59-134	9		30
Perfluorooctanesulfonamide (FOSA)	ND	5.6	7.05	126		4.26	75		67-137	**49**	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	5.6	6.28	112		6.11	107		61-139	3		30
Perfluorododecanoic Acid (PFDoA)	ND	5.6	5.38	96		5.60	98		69-135	4		30
Perfluorotridecanoic Acid (PFTrDA)	ND	5.6	5.91	106		6.50	114		66-139	10		30
Perfluorotetradecanoic Acid (PFTA)	ND	5.6	5.99	107		6.12	108		69-133	2		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab   Associated sample(s): 08-09   QC Batch ID: WG1273269-4 WG1273269-5   QC Sample: L1935927-08
Client ID: HVRA-OF1-190808

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	89		83		25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		96		32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	86		94		42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	114		115		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		112		64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		109		65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		96		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		101		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		107		63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		103		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	111		112		26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		97		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		108		65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		4		1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		106		65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		100		62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		97		61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		110		70-151

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273531-4 WG1273531-5 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Acenaphthene	ND	1560	1300	83		1300	83		31-137	0		50
Hexachlorobenzene	ND	1560	1300	83		1300	83		40-140	0		50
Bis(2-chloroethyl)ether	ND	1560	1500	96		1400	89		40-140	7		50
2-Chloronaphthalene	ND	1560	1300	83		1200	77		40-140	8		50
3,3'-Dichlorobenzidine	ND	1560	980	63		1200	77		40-140	20		50
2,4-Dinitrotoluene	ND	1560	1500	96		1500	96		40-132	0		50
2,6-Dinitrotoluene	ND	1560	1500	96		1400	89		40-140	7		50
Fluoranthene	550	1560	2000	93		2200	110		40-140	10		50
4-Chlorophenyl phenyl ether	ND	1560	1200	77		1200	77		40-140	0		50
4-Bromophenyl phenyl ether	ND	1560	1300	83		1300	83		40-140	0		50
Bis(2-chloroisopropyl)ether	ND	1560	1200	77		1100	70		40-140	9		50
Bis(2-chloroethoxy)methane	ND	1560	1500	96		1400	89		40-117	7		50
Hexachlorobutadiene	ND	1560	1300	83		1300	83		40-140	0		50
Hexachlorocyclopentadiene	ND	1560	650	42		280J	**18**	Q	40-140	**80**	Q	50
Hexachloroethane	ND	1560	1400	89		1200	77		40-140	15		50
Isophorone	ND	1560	1600	100		1600	100		40-140	0		50
Naphthalene	ND	1560	1400	89		1400	89		40-140	0		50
Nitrobenzene	ND	1560	1600	100		1500	96		40-140	6		50
NDPA/DPA	ND	1560	1300	83		1300	83		36-157	0		50
n-Nitrosodi-n-propylamine	ND	1560	1600	100		1500	96		32-121	6		50
Bis(2-ethylhexyl)phthalate	ND	1560	1400	89		1500	96		40-140	7		50
Butyl benzyl phthalate	ND	1560	1500	96		1500	96		40-140	0		50
Di-n-butylphthalate	ND	1560	1500	96		1500	96		40-140	0		50

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273531-4 WG1273531-5 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Di-n-octylphthalate	ND	1560	1600	100		1600	100		40-140	0		50
Diethyl phthalate	ND	1560	1300	83		1400	89		40-140	7		50
Dimethyl phthalate	ND	1560	1300	83		1300	83		40-140	0		50
Benzo(a)anthracene	200	1560	1600	89		1600	89		40-140	0		50
Benzo(a)pyrene	200	1560	1400	77		1500	83		40-140	7		50
Benzo(b)fluoranthene	320	1560	1600	82		1800	95		40-140	12		50
Benzo(k)fluoranthene	83J	1560	1300	83		1300	83		40-140	0		50
Chrysene	240	1560	1500	80		1500	81		40-140	0		50
Acenaphthylene	ND	1560	1300	83		1300	83		40-140	0		50
Anthracene	ND	1560	1400	89		1400	89		40-140	0		50
Benzo(ghi)perylene	160	1560	1400	89		1500	96		40-140	7		50
Fluorene	ND	1560	1300	83		1400	89		40-140	7		50
Phenanthrene	260	1560	1600	86		1700	92		40-140	6		50
Dibenzo(a,h)anthracene	29J	1560	1400	89		1400	89		40-140	0		50
Indeno(1,2,3-cd)pyrene	170	1560	1600	91		1600	91		40-140	0		50
Pyrene	430	1560	1800	87		1900	94		35-142	5		50
Biphenyl	ND	1560	1400	89		1300	83		37-127	7		50
4-Chloroaniline	ND	1560	890	57		990	63		40-140	11		50
2-Nitroaniline	ND	1560	1600	100		1600	100		47-134	0		50
3-Nitroaniline	ND	1560	1200	77		1200	77		26-129	0		50
4-Nitroaniline	ND	1560	1200	77		1300	83		41-125	8		50
Dibenzofuran	ND	1560	1400	89		1400	89		40-140	0		50
2-Methylnaphthalene	ND	1560	1400	89		1300	83		40-140	7		50

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273531-4 WG1273531-5 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
1,2,4,5-Tetrachlorobenzene	ND	1560	1400	89		1300	83		40-117	7		50
Acetophenone	ND	1560	1600	100		1500	96		14-144	6		50
2,4,6-Trichlorophenol	ND	1560	1500	96		1400	89		30-130	7		50
p-Chloro-m-cresol	ND	1560	1500	96		1600	100		26-103	6		50
2-Chlorophenol	ND	1560	1600	100		1600	100		25-102	0		50
2,4-Dichlorophenol	ND	1560	1600	100		1500	96		30-130	6		50
2,4-Dimethylphenol	ND	1560	1600	100		1500	96		30-130	6		50
2-Nitrophenol	ND	1560	1700	110		1600	100		30-130	6		50
4-Nitrophenol	ND	1560	1400	89		1600	100		11-114	13		50
2,4-Dinitrophenol	ND	1560	370J	24		360J	23		4-130	3		50
4,6-Dinitro-o-cresol	ND	1560	1100	70		780	50		10-130	34		50
Pentachlorophenol	ND	1560	1400	89		1400	89		17-109	0		50
Phenol	ND	1560	1600	**100**	Q	1400	89		26-90	13		50
2-Methylphenol	ND	1560	1700	110		1600	100		30-130.	6		50
3-Methylphenol/4-Methylphenol	ND	1560	1600	100		1500	96		30-130	6		50
2,4,5-Trichlorophenol	ND	1560	1500	96		1500	96		30-130	0		50
Carbazole	49J	1560	1400	89		1500	96		54-128	7		50
Atrazine	ND	1560	1500	96		1500	96		40-140	0		50
Benzaldehyde	ND	1560	1700	110		1600	100		40-140	6		50
Caprolactam	ND	1560	1300	83		1300	83		15-130	0		50
2,3,4,6-Tetrachlorophenol	ND	1560	1400	89		1400	89		40-140	0		50
1,4-Dioxane	ND	1560	1000	64		1000	64		40-140	0		50

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273531-4 WG1273531-5 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2,4,6-Tribromophenol	88		88		10-136
2-Fluorobiphenyl	77		74		30-120
2-Fluorophenol	99		95		25-120
4-Terphenyl-d14	75		75		18-120
Nitrobenzene-d5	102		96		23-120
Phenol-d6	103		97		10-120

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03,05-07,10-13 QC Batch ID: WG1274408-4 WG1274408-5 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807												
Perfluorobutanoic Acid (PFBA)	2.34	37.2	44.3	113		43.5	109		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	1.03J	37.2	42.9	115		42.5	113		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	32.9	36.7	111		36.7	110		65-157	0		30
Perfluorohexanoic Acid (PFHxA)	0.830J	37.2	43.8	118		42.7	114		69-168	3		30
Perfluoroheptanoic Acid (PFHpA)	ND	37.2	45.7	123		41.1	109		58-159	11		30
Perfluorohexanesulfonic Acid (PFHxS)	1.18J	33.9	37.8	111		36.6	107		69-177	3		30
Perfluorooctanoic Acid (PFOA)	ND	37.2	42.3	114		43.6	116		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35.3	41.2	117		51.4	144		49-187	22		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.3	44.7	127		42.9	120		61-179	4		30
Perfluorononanoic Acid (PFNA)	ND	37.2	43.1	116		43.2	115		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	ND	34.4	38.4	112		37.1	107		52-151	3		30
Perfluorodecanoic Acid (PFDA)	ND	37.2	39.9	107		37.0	98		63-171	8		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.7	37.8	106		41.7	116		56-173	10		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.2	38.4	103		38.1	101		60-166	1		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.2	42.3	114		39.6	105		60-153	7		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.9	36.7	102		32.0	88		38-156	14		30
Perfluorooctanesulfonamide (FOSA)	ND	37.2	66.8	**180**	Q	34.7	92		46-170	**63**	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.2	46.8	126		36.2	96		45-170	26		30
Perfluorododecanoic Acid (PFDoA)	ND	37.2	37.1	100		35.4	94		67-153	5		30
Perfluorotridecanoic Acid (PFTrDA)	ND	37.2	47.3	127		41.5	110		48-158	13		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.2	37.7	101		37.4	100		59-182	1		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03,05-07,10-13 QC Batch ID: WG1274408-4 WG1274408-5 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	44		37		7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	53		40		1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		105		23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		75		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		97		40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		77		38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		94		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		97		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		102		47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		107		33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		96		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	119		120		16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		23		1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		89		42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		97		36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		83		34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		94		31-159

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03,05-07,10-13 QC Batch ID: WG1274408-6 WG1274408-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
Perfluorobutanoic Acid (PFBA)	75.9	36.1	114	106		122	126		67-148	7		30
Perfluoropentanoic Acid (PFPeA)	258	36.1	293	97		310	142		63-161	6		30
Perfluorobutanesulfonic Acid (PFBS)	15.2	32	50.1	109		52.4	115		65-157	4		30
Perfluorohexanoic Acid (PFHxA)	222	36.1	262	111		277	150		69-168	6		30
Perfluoroheptanoic Acid (PFHpA)	102	36.1	145	119		148	126		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	368	32.9	393	76		411	129		69-177	4		30
Perfluorooctanoic Acid (PFOA)	47.1	36.1	87.9	113		91.2	120		63-159	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	39.0	34.3	80.9	122		93.6	157		49-187	15		30
Perfluoroheptanesulfonic Acid (PFHpS)	7.56	34.3	61.1	156		58.2	146		61-179	5		30
Perfluorononanoic Acid (PFNA)	8.67	36.1	47.9	109		50.3	114		68-171	5		30
Perfluorooctanesulfonic Acid (PFOS)	595	33.4	745	**449**	Q	712	**345**	Q	52-151	5		30
Perfluorodecanoic Acid (PFDA)	28.9	36.1	64.4	98		82.7	147		63-171	25		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.628J	36.1	36.2	100		40.0	109		60-166	10		30
Perfluoroundecanoic Acid (PFUnA)	2.09	36.1	40.8	107		41.6	108		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	2.64	34.9	50.7	138		46.8	125		38-156	8		30
Perfluorooctanesulfonamide (FOSA)	23.8	36.1	55.5	88		63.4	108		46-170	13		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.1	39.4	109		37.4	102		45-170	5		30
Perfluorododecanoic Acid (PFDoA)	0.487J	36.1	33.1	92		38.9	106		67-153	16		30
Perfluorotridecanoic Acid (PFTrDA)	ND	36.1	35.8	99		39.7	108		48-158	10		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.1	35.8	99		36.5	100		59-182	2		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03,05-07,10-13 QC Batch ID: WG1274408-6 WG1274408-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		97		7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101		85		1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	104		100		23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		71		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		97		40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		75		38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		73		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		77		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		104		47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		83		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		94		33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		92		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		103		16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36		40		1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		92		42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		85		36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		87		34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		111		31-159

Matrix Spike Analysis
Batch Quality Control

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 05,11 QC Batch ID: WG1277357-4 WG1277357-5 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	331	192	434	**54**	Q	490	83		56-173	12		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	63		59		7-170

PCBS

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-03
Client ID: HVRA-MAINTBLDG-190807
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/07/19 15:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8082A
Analytical Date: 08/17/19 12:38
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 08/12/19 08:42
Cleanup Method: EPA 3665A
Cleanup Date: 08/14/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/16/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

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	61		30-150	B
Decachlorobiphenyl	67		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-04	Date Collected:	08/07/19 00:00
Client ID:	HVRA-FD01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8082A	Extraction Date:	08/12/19 08:42
Analytical Date:	08/17/19 13:19	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	08/14/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/16/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	49		30-150	A
Decachlorobiphenyl	55		30-150	A
2,4,5,6-Tetrachloro-m-xylene	49		30-150	B
Decachlorobiphenyl	54		30-150	B

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-05	Date Collected:	08/08/19 13:20
Client ID:	HVRA-MW100-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8082A	Extraction Date:	08/13/19 18:28
Analytical Date:	08/14/19 13:27	Cleanup Method:	EPA 3665A
Analyst:	HT	Cleanup Date:	08/14/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/14/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		30-150	A
Decachlorobiphenyl	89		30-150	A
2,4,5,6-Tetrachloro-m-xylene	81		30-150	B
Decachlorobiphenyl	87		30-150	B

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-06	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8082A	Extraction Date:	08/13/19 18:28
Analytical Date:	08/16/19 04:28	Cleanup Method:	EPA 3665A
Analyst:	HT	Cleanup Date:	08/14/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/14/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	73		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	62		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8082A	Extraction Date:	08/13/19 18:28
Analytical Date:	08/16/19 04:41	Cleanup Method:	EPA 3665A
Analyst:	HT	Cleanup Date:	08/14/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/14/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	56		30-150	A
2,4,5,6-Tetrachloro-m-xylene	73		30-150	B
Decachlorobiphenyl	58		30-150	B

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-08	Date Collected:	08/08/19 16:00
Client ID:	HVRA-OF1-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	08/17/19 00:55
Analytical Date:	08/19/19 10:00	Cleanup Method:	EPA 3665A
Analyst:	HT	Cleanup Date:	08/17/19
Percent Solids:	84%	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/18/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	39.0	3.46	1	A
Aroclor 1221	ND		ug/kg	39.0	3.90	1	A
Aroclor 1232	ND		ug/kg	39.0	8.26	1	A
Aroclor 1242	ND		ug/kg	39.0	5.25	1	A
Aroclor 1248	ND		ug/kg	39.0	5.84	1	A
Aroclor 1254	ND		ug/kg	39.0	4.26	1	A
Aroclor 1260	ND		ug/kg	39.0	7.20	1	A
Aroclor 1262	ND		ug/kg	39.0	4.95	1	A
Aroclor 1268	ND		ug/kg	39.0	4.04	1	A
PCBs, Total	ND		ug/kg	39.0	3.46	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	64		30-150	A
Decachlorobiphenyl	60		30-150	A
2,4,5,6-Tetrachloro-m-xylene	56		30-150	B
Decachlorobiphenyl	53		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-09
Client ID: HVRA-FD02-190808
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/08/19 00:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 08/19/19 10:13
Analyst: HT
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 00:55
Cleanup Method: EPA 3665A
Cleanup Date: 08/17/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/18/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	38.2	3.39	1	A
Aroclor 1221	ND		ug/kg	38.2	3.83	1	A
Aroclor 1232	ND		ug/kg	38.2	8.10	1	A
Aroclor 1242	ND		ug/kg	38.2	5.15	1	A
Aroclor 1248	ND		ug/kg	38.2	5.73	1	A
Aroclor 1254	ND		ug/kg	38.2	4.18	1	A
Aroclor 1260	ND		ug/kg	38.2	7.06	1	A
Aroclor 1262	ND		ug/kg	38.2	4.85	1	A
Aroclor 1268	ND		ug/kg	38.2	3.96	1	A
PCBs, Total	ND		ug/kg	38.2	3.39	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	59		30-150	A
Decachlorobiphenyl	52		30-150	A
2,4,5,6-Tetrachloro-m-xylene	54		30-150	B
Decachlorobiphenyl	48		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8082A	Extraction Date:	08/17/19 13:59
Analytical Date:	08/19/19 01:04	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	08/17/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/17/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	81		30-150	A
2,4,5,6-Tetrachloro-m-xylene	83		30-150	B
Decachlorobiphenyl	77		30-150	B

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8082A	Extraction Date:	08/15/19 02:19
Analytical Date:	08/17/19 16:29	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	08/15/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/16/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	96		30-150	A
2,4,5,6-Tetrachloro-m-xylene	75		30-150	B
Decachlorobiphenyl	81		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-13	Date Collected:	08/09/19 09:15
Client ID:	HVRA-MW101-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8082A	Extraction Date:	08/15/19 02:19
Analytical Date:	08/17/19 16:42	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	08/15/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/16/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.083	0.034	1	A
Aroclor 1221	ND		ug/l	0.083	0.067	1	A
Aroclor 1232	ND		ug/l	0.083	0.046	1	A
Aroclor 1242	ND		ug/l	0.083	0.039	1	A
Aroclor 1248	ND		ug/l	0.083	0.049	1	A
Aroclor 1254	ND		ug/l	0.083	0.039	1	A
Aroclor 1260	ND		ug/l	0.083	0.032	1	A
Aroclor 1262	ND		ug/l	0.083	0.035	1	A
Aroclor 1268	ND		ug/l	0.083	0.034	1	A
PCBs, Total	ND		ug/l	0.083	0.032	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	92		30-150	A
2,4,5,6-Tetrachloro-m-xylene	127		30-150	B
Decachlorobiphenyl	82		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/16/19 07:38
Analyst: HT

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 10:26
Cleanup Method: EPA 3665A
Cleanup Date: 08/14/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/15/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 03-04 Batch: WG1271086-1						
Aroclor 1016	ND		ug/l	0.083	0.034	A
Aroclor 1221	ND		ug/l	0.083	0.067	A
Aroclor 1232	ND		ug/l	0.083	0.046	A
Aroclor 1242	ND		ug/l	0.083	0.039	A
Aroclor 1248	ND		ug/l	0.083	0.049	A
Aroclor 1254	ND		ug/l	0.083	0.039	A
Aroclor 1260	ND		ug/l	0.083	0.032	A
Aroclor 1262	ND		ug/l	0.083	0.035	A
Aroclor 1268	ND		ug/l	0.083	0.034	A
PCBs, Total	ND		ug/l	0.083	0.032	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	53		30-150	A
Decachlorobiphenyl	57		30-150	A
2,4,5,6-Tetrachloro-m-xylene	54		30-150	B
Decachlorobiphenyl	56		30-150	B

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8082A	Extraction Method:	EPA 3510C
Analytical Date:	08/14/19 12:19	Extraction Date:	08/13/19 18:28
Analyst:	WR	Cleanup Method:	EPA 3665A
		Cleanup Date:	08/14/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/14/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 05-07 Batch: WG1271946-1						
Aroclor 1016	ND		ug/l	0.083	0.034	A
Aroclor 1221	ND		ug/l	0.083	0.067	A
Aroclor 1232	ND		ug/l	0.083	0.046	A
Aroclor 1242	ND		ug/l	0.083	0.039	A
Aroclor 1248	ND		ug/l	0.083	0.049	A
Aroclor 1254	ND		ug/l	0.083	0.039	A
Aroclor 1262	ND		ug/l	0.083	0.035	A
Aroclor 1268	ND		ug/l	0.083	0.034	A
Aroclor 1260	0.035	J	ug/l	0.083	0.032	B
PCBs, Total	0.035	J	ug/l	0.083	0.032	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	93		30-150	A
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	90		30-150	B

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8082A	Extraction Method:	EPA 3510C
Analytical Date:	08/16/19 09:59	Extraction Date:	08/14/19 18:02
Analyst:	KB	Cleanup Method:	EPA 3665A
		Cleanup Date:	08/15/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/15/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 12-13 Batch: WG1272451-1						
Aroclor 1016	ND		ug/l	0.083	0.034	A
Aroclor 1221	ND		ug/l	0.083	0.067	A
Aroclor 1232	ND		ug/l	0.083	0.046	A
Aroclor 1242	ND		ug/l	0.083	0.039	A
Aroclor 1248	ND		ug/l	0.083	0.049	A
Aroclor 1254	ND		ug/l	0.083	0.039	A
Aroclor 1260	ND		ug/l	0.083	0.032	A
Aroclor 1262	ND		ug/l	0.083	0.035	A
Aroclor 1268	ND		ug/l	0.083	0.034	A
PCBs, Total	ND		ug/l	0.083	0.032	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		30-150	A
Decachlorobiphenyl	71		30-150	A
2,4,5,6-Tetrachloro-m-xylene	68		30-150	B
Decachlorobiphenyl	74		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/19/19 08:33
Analyst: HT

Extraction Method: EPA 3546
Extraction Date: 08/17/19 00:33
Cleanup Method: EPA 3665A
Cleanup Date: 08/17/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/18/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 08-09 Batch: WG1273527-1						
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	6.85	A
Aroclor 1242	ND		ug/kg	32.3	4.35	A
Aroclor 1248	ND		ug/kg	32.3	4.84	A
Aroclor 1254	ND		ug/kg	32.3	3.53	A
Aroclor 1260	ND		ug/kg	32.3	5.97	A
Aroclor 1262	ND		ug/kg	32.3	4.10	A
Aroclor 1268	ND		ug/kg	32.3	3.35	A
PCBs, Total	ND		ug/kg	32.3	2.87	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68		30-150	A
Decachlorobiphenyl	81		30-150	A
2,4,5,6-Tetrachloro-m-xylene	61		30-150	B
Decachlorobiphenyl	65		30-150	B

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8082A	Extraction Method:	EPA 3510C
Analytical Date:	08/19/19 01:45	Extraction Date:	08/17/19 13:59
Analyst:	WR	Cleanup Method:	EPA 3665A
		Cleanup Date:	08/17/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/17/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 10 Batch: WG1273679-1						
Aroclor 1016	ND		ug/l	0.083	0.034	A
Aroclor 1221	ND		ug/l	0.083	0.067	A
Aroclor 1232	ND		ug/l	0.083	0.046	A
Aroclor 1242	ND		ug/l	0.083	0.039	A
Aroclor 1248	ND		ug/l	0.083	0.049	A
Aroclor 1254	ND		ug/l	0.083	0.039	A
Aroclor 1260	ND		ug/l	0.083	0.032	A
Aroclor 1262	ND		ug/l	0.083	0.035	A
Aroclor 1268	ND		ug/l	0.083	0.034	A
PCBs, Total	ND		ug/l	0.083	0.032	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	77		30-150	A
Decachlorobiphenyl	83		30-150	A
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	77		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 03-04 Batch: WG1271086-2 WG1271086-3									
Aroclor 1016	71		68		40-140	4		50	A
Aroclor 1260	64		61		40-140	5		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	66		65		30-150	A
Decachlorobiphenyl	68		67		30-150	A
2,4,5,6-Tetrachloro-m-xylene	64		66		30-150	B
Decachlorobiphenyl	68		65		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 05-07 Batch: WG1271946-2 WG1271946-3									
Aroclor 1016	80		81		40-140	2		50	A
Aroclor 1260	75		78		40-140	4		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		81		30-150	A
Decachlorobiphenyl	84		88		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		78		30-150	B
Decachlorobiphenyl	83		87		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 12-13 Batch: WG1272451-2 WG1272451-3									
Aroclor 1016	75		69		40-140	8		50	A
Aroclor 1260	69		63		40-140	8		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70		64		30-150	A
Decachlorobiphenyl	83		75		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		62		30-150	B
Decachlorobiphenyl	74		69		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 08-09 Batch: WG1273527-2 WG1273527-3									
Aroclor 1016	68		76		40-140	11		50	A
Aroclor 1260	73		81		40-140	10		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68		77		30-150	A
Decachlorobiphenyl	79		89		30-150	A
2,4,5,6-Tetrachloro-m-xylene	64		71		30-150	B
Decachlorobiphenyl	70		78		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 10 Batch: WG1273679-2 WG1273679-3									
Aroclor 1016	75		80		40-140	6		50	A
Aroclor 1260	72		77		40-140	8		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		76		30-150	A
Decachlorobiphenyl	75		80		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		71		30-150	B
Decachlorobiphenyl	74		78		30-150	B

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 03-04 QC Batch ID: WG1271086-4 WG1271086-5 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807													
Aroclor 1016	ND	1.78	0.820	46		0.926	52		40-140	12		50	A
Aroclor 1260	ND	1.78	0.802	45		0.942	53		40-140	16		50	A

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	44		52		30-150	A
Decachlorobiphenyl	50		61		30-150	A
2,4,5,6-Tetrachloro-m-xylene	42		51		30-150	B
Decachlorobiphenyl	47		54		30-150	B

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 05-07 QC Batch ID: WG1271946-4 WG1271946-5 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808													
Aroclor 1016	ND	1.78	1.22	68		1.39	78		40-140	13		50	A
Aroclor 1260	ND	1.78	1.14	64		1.62	91		40-140	35		50	A

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	63		78		30-150	A
Decachlorobiphenyl	76		123		30-150	A
2,4,5,6-Tetrachloro-m-xylene	62		77		30-150	B
Decachlorobiphenyl	75		109		30-150	B

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273527-4 WG1273527-5 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808													
Aroclor 1016	ND	242	197	81		174	72		40-140	12		50	A
Aroclor 1260	ND	242	189	78		168	69		40-140	12		50	A

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		69		30-150	A
Decachlorobiphenyl	79		70		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		61		30-150	B
Decachlorobiphenyl	70		62		30-150	B

PESTICIDES

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-05
Client ID: HVRA-MW100-190808
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/08/19 13:20
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 08/16/19 08:06
Analyst: SL

Extraction Method: EPA 3510C
Extraction Date: 08/14/19 03:34

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:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-05	Date Collected:	08/08/19 13:20
Client ID:	HVRA-MW100-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	67		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	75		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-06
Client ID: HVRA-FD01-190808
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/08/19 00:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 08/16/19 09:22
Analyst: SL

Extraction Method: EPA 3510C
Extraction Date: 08/14/19 03:34

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:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-06	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	74		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		30-150	B
Decachlorobiphenyl	85		30-150	B

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8081B	Extraction Date:	08/14/19 03:34
Analytical Date:	08/16/19 09:34		
Analyst:	SL		

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: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	63		30-150	A
Decachlorobiphenyl	52		30-150	A
2,4,5,6-Tetrachloro-m-xylene	60		30-150	B
Decachlorobiphenyl	53		30-150	B

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-08	Date Collected:	08/08/19 16:00
Client ID:	HVRA-OF1-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8081B	Extraction Date:	08/17/19 02:18
Analytical Date:	08/19/19 13:53	Cleanup Method:	EPA 3620B
Analyst:	AMC	Cleanup Date:	08/18/19
Percent Solids:	84%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.85	0.362	1	A
Lindane	ND		ug/kg	0.770	0.344	1	A
Alpha-BHC	ND		ug/kg	0.770	0.219	1	A
Beta-BHC	ND		ug/kg	1.85	0.701	1	A
Heptachlor	ND		ug/kg	0.924	0.414	1	A
Aldrin	ND		ug/kg	1.85	0.651	1	A
Heptachlor epoxide	ND		ug/kg	3.47	1.04	1	A
Endrin	ND		ug/kg	0.770	0.316	1	A
Endrin aldehyde	207	E	ug/kg	2.31	0.809	1	B
Endrin ketone	ND		ug/kg	1.85	0.476	1	A
Dieldrin	ND		ug/kg	1.16	0.578	1	A
4,4'-DDE	1.65	J	ug/kg	1.85	0.428	1	B
4,4'-DDD	ND		ug/kg	1.85	0.659	1	B
4,4'-DDT	ND		ug/kg	3.47	1.49	1	A
Endosulfan I	ND		ug/kg	1.85	0.437	1	A
Endosulfan II	ND		ug/kg	1.85	0.618	1	A
Endosulfan sulfate	ND		ug/kg	0.770	0.367	1	A
Methoxychlor	ND		ug/kg	3.47	1.08	1	A
Toxaphene	ND		ug/kg	34.7	9.70	1	A
cis-Chlordane	ND		ug/kg	2.31	0.644	1	A
trans-Chlordane	ND		ug/kg	2.31	0.610	1	A
Chlordane	ND		ug/kg	15.0	6.12	1	A

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-08	Date Collected:	08/08/19 16:00
Client ID:	HVRA-OF1-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	B
Decachlorobiphenyl	90		30-150	B
2,4,5,6-Tetrachloro-m-xylene	68		30-150	A
Decachlorobiphenyl	74		30-150	A

Project Name: HVRA
Lab Number: L1935927
Project Number: 18.8090
Report Date: 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-08 D
Client ID: HVRA-OF1-190808
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/08/19 16:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 08/20/19 15:11
Analyst: AMC
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 02:18
Cleanup Method: EPA 3620B
Cleanup Date: 08/18/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Endrin aldehyde	206		ug/kg	4.62	1.62	2	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-09	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD02-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8081B	Extraction Date:	08/17/19 02:18
Analytical Date:	08/19/19 14:30	Cleanup Method:	EPA 3620B
Analyst:	AMC	Cleanup Date:	08/18/19
Percent Solids:	86%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.81	0.355	1	A
Lindane	ND		ug/kg	0.755	0.338	1	A
Alpha-BHC	ND		ug/kg	0.755	0.214	1	A
Beta-BHC	ND		ug/kg	1.81	0.687	1	A
Heptachlor	ND		ug/kg	0.906	0.406	1	A
Aldrin	ND		ug/kg	1.81	0.638	1	A
Heptachlor epoxide	ND		ug/kg	3.40	1.02	1	A
Endrin	ND		ug/kg	0.755	0.310	1	A
Endrin aldehyde	ND		ug/kg	2.26	0.793	1	A
Endrin ketone	ND		ug/kg	1.81	0.467	1	A
Dieldrin	ND		ug/kg	1.13	0.566	1	A
4,4'-DDE	1.86		ug/kg	1.81	0.419	1	A
4,4'-DDD	ND		ug/kg	1.81	0.646	1	A
4,4'-DDT	ND		ug/kg	3.40	1.46	1	A
Endosulfan I	ND		ug/kg	1.81	0.428	1	A
Endosulfan II	ND		ug/kg	1.81	0.606	1	A
Endosulfan sulfate	ND		ug/kg	0.755	0.359	1	A
Methoxychlor	ND		ug/kg	3.40	1.06	1	A
Toxaphene	ND		ug/kg	34.0	9.51	1	A
cis-Chlordane	ND		ug/kg	2.26	0.631	1	A
trans-Chlordane	ND		ug/kg	2.26	0.598	1	A
Chlordane	ND		ug/kg	14.7	6.00	1	A

Project Name: HVRA | **Lab Number:** L1935927
Project Number: 18.8090 | **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-09	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD02-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	102		30-150	B
Decachlorobiphenyl	109		30-150	B
2,4,5,6-Tetrachloro-m-xylene	119		30-150	A
Decachlorobiphenyl	82		30-150	A

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8081B	Extraction Date:	08/15/19 00:57
Analytical Date:	08/16/19 08:44		
Analyst:	SL		

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: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	84		30-150	A
Decachlorobiphenyl	72		30-150	A
2,4,5,6-Tetrachloro-m-xylene	66		30-150	B
Decachlorobiphenyl	78		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8081B	Extraction Date:	08/15/19 00:57
Analytical Date:	08/16/19 08:57		
Analyst:	SL		

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: HVRA | **Lab Number:** L1935927
Project Number: 18.8090 | **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	83		30-150	A
Decachlorobiphenyl	81		30-150	A
2,4,5,6-Tetrachloro-m-xylene	71		30-150	B
Decachlorobiphenyl	86		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-13
Client ID: HVRA-MW101-190809
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/09/19 09:15
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 08/16/19 09:09
Analyst: SL
Extraction Method: EPA 3510C
Extraction Date: 08/15/19 00:57

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: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-13	Date Collected:	08/09/19 09:15
Client ID:	HVRA-MW101-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	85		30-150	A
Decachlorobiphenyl	88		30-150	A
2,4,5,6-Tetrachloro-m-xylene	73		30-150	B
Decachlorobiphenyl	94		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/16/19 06:51
Analyst: AMC

Extraction Method: EPA 3510C
Extraction Date: 08/14/19 03:34

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 05-07,10,12-13 Batch: WG1272050-1						
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: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/16/19 06:51
Analyst: AMC

Extraction Method: EPA 3510C
Extraction Date: 08/14/19 03:34

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 05-07,10,12-13 Batch: WG1272050-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		30-150	A
Decachlorobiphenyl	69		30-150	A
2,4,5,6-Tetrachloro-m-xylene	62		30-150	B
Decachlorobiphenyl	79		30-150	B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/19/19 02:50
Analyst: BM

Extraction Method: EPA 3546
Extraction Date: 08/17/19 02:18
Cleanup Method: EPA 3620B
Cleanup Date: 08/18/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 08-09 Batch: WG1273532-1						
Delta-BHC	ND		ug/kg	1.59	0.312	A
Lindane	ND		ug/kg	0.664	0.297	A
Alpha-BHC	ND		ug/kg	0.664	0.188	A
Beta-BHC	ND		ug/kg	1.59	0.604	A
Heptachlor	ND		ug/kg	0.797	0.357	A
Aldrin	ND		ug/kg	1.59	0.561	A
Heptachlor epoxide	ND		ug/kg	2.99	0.896	A
Endrin	ND		ug/kg	0.664	0.272	A
Endrin aldehyde	ND		ug/kg	1.99	0.697	A
Endrin ketone	ND		ug/kg	1.59	0.410	A
Dieldrin	ND		ug/kg	0.996	0.498	A
4,4'-DDE	ND		ug/kg	1.59	0.368	A
4,4'-DDD	ND		ug/kg	1.59	0.568	A
4,4'-DDT	ND		ug/kg	2.99	1.28	A
Endosulfan I	ND		ug/kg	1.59	0.376	A
Endosulfan II	ND		ug/kg	1.59	0.532	A
Endosulfan sulfate	ND		ug/kg	0.664	0.316	A
Methoxychlor	ND		ug/kg	2.99	0.930	A
Toxaphene	ND		ug/kg	29.9	8.37	A
cis-Chlordane	ND		ug/kg	1.99	0.555	A
trans-Chlordane	ND		ug/kg	1.99	0.526	A
Chlordane	ND		ug/kg	12.9	5.28	A

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/19/19 02:50
Analyst: BM

Extraction Method: EPA 3546
Extraction Date: 08/17/19 02:18
Cleanup Method: EPA 3620B
Cleanup Date: 08/18/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 08-09 Batch: WG1273532-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	57		30-150	B
Decachlorobiphenyl	84		30-150	B
2,4,5,6-Tetrachloro-m-xylene	59		30-150	A
Decachlorobiphenyl	67		30-150	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 05-07,10,12-13 Batch: WG1272050-2 WG1272050-3									
Delta-BHC	73		88		30-150	18		20	A
Lindane	74		88		30-150	18		20	A
Alpha-BHC	73		85		30-150	15		20	A
Beta-BHC	75		90		30-150	19		20	A
Heptachlor	69		84		30-150	19		20	A
Aldrin	64		75		30-150	15		20	A
Heptachlor epoxide	75		89		30-150	18		20	A
Endrin	76		93		30-150	**21**	Q	20	A
Endrin aldehyde	56		73		30-150	**26**	Q	20	A
Endrin ketone	73		95		30-150	**26**	Q	20	A
Dieldrin	74		91		30-150	20		20	A
4,4'-DDE	75		90		30-150	18		20	A
4,4'-DDD	78		96		30-150	**21**	Q	20	A
4,4'-DDT	78		95		30-150	20		20	A
Endosulfan I	66		80		30-150	19		20	A
Endosulfan II	71		88		30-150	**22**	Q	20	A
Endosulfan sulfate	66		83		30-150	**23**	Q	20	A
Methoxychlor	71		88		30-150	**22**	Q	20	A
cis-Chlordane	71		82		30-150	14		20	A
trans-Chlordane	70		84		30-150	18		20	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 05-07,10,12-13 Batch: WG1272050-2 WG1272050-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	63		75		30-150	A
Decachlorobiphenyl	58		75		30-150	A
2,4,5,6-Tetrachloro-m-xylene	62		69		30-150	B
Decachlorobiphenyl	68		83		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 08-09 Batch: WG1273532-2 WG1273532-3									
Delta-BHC	94		87		30-150	8		30	A
Lindane	96		88		30-150	9		30	A
Alpha-BHC	96		88		30-150	9		30	A
Beta-BHC	95		87		30-150	9		30	A
Heptachlor	84		74		30-150	13		30	A
Aldrin	84		77		30-150	9		30	A
Heptachlor epoxide	90		84		30-150	7		30	A
Endrin	98		92		30-150	6		30	A
Endrin aldehyde	63		59		30-150	7		30	A
Endrin ketone	92		85		30-150	8		30	A
Dieldrin	95		89		30-150	7		30	A
4,4'-DDE	89		84		30-150	6		30	A
4,4'-DDD	101		94		30-150	7		30	A
4,4'-DDT	99		93		30-150	6		30	A
Endosulfan I	81		74		30-150	9		30	A
Endosulfan II	91		84		30-150	8		30	A
Endosulfan sulfate	79		76		30-150	4		30	A
Methoxychlor	85		80		30-150	6		30	A
cis-Chlordane	81		74		30-150	9		30	A
trans-Chlordane	92		88		30-150	4		30	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 08-09 Batch: WG1273532-2 WG1273532-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	94		88		30-150	B
Decachlorobiphenyl	120		116		30-150	B
2,4,5,6-Tetrachloro-m-xylene	95		88		30-150	A
Decachlorobiphenyl	99		77		30-150	A

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 05-07,10,12-13 QC Batch ID: WG1272050-4 WG1272050-5 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808													
Delta-BHC	ND	0.357	0.281	79		0.259	72		30-150	8		30	A
Lindane	ND	0.357	0.282	79		0.270	76		30-150	4		30	A
Alpha-BHC	ND	0.357	0.281	79		0.268	75		30-150	5		30	A
Beta-BHC	ND	0.357	0.286	80		0.277	78		30-150	3		30	A
Heptachlor	ND	0.357	0.268	75		0.253	71		30-150	6		30	A
Aldrin	ND	0.357	0.254	71		0.242	68		30-150	5		30	A
Heptachlor epoxide	ND	0.357	0.288	81		0.273	76		30-150	5		30	A
Endrin	ND	0.357	0.301	84		0.281	79		30-150	7		30	A
Endrin aldehyde	ND	0.357	0.241	68		0.238	67		30-150	1		30	A
Endrin ketone	ND	0.357	0.302	85		0.292	82		30-150	3		30	A
Dieldrin	ND	0.357	0.290	81		0.277	78		30-150	5		30	A
4,4'-DDE	ND	0.357	0.293	82		0.280	78		30-150	5		30	A
4,4'-DDD	ND	0.357	0.306	86		0.294	82		30-150	4		30	A
4,4'-DDT	ND	0.357	0.307	86		0.299	84		30-150	3		30	A
Endosulfan I	ND	0.357	0.260	73		0.248	69		30-150	5		30	A
Endosulfan II	ND	0.357	0.282	79		0.268	75		30-150	5		30	A
Endosulfan sulfate	ND	0.357	0.266	74		0.251	70		30-150	6		30	A
Methoxychlor	ND	0.357	0.284	80		0.274	77		30-150	4		30	A
cis-Chlordane	ND	0.357	0.282	79		0.262	73		30-150	7		30	A
trans-Chlordane	ND	0.357	0.273	76		0.258	72		30-150	6		30	A

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 05-07,10,12-13 QC Batch ID: WG1272050-4 WG1272050-5 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68		62		30-150	A
Decachlorobiphenyl	72		70		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		59		30-150	B
Decachlorobiphenyl	80		77		30-150	B

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273532-6 WG1273532-7 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808													
Delta-BHC	ND	37.5	35.3	94		20.3	54		30-150	**54**	Q	50	A
Lindane	ND	37.5	37.0	99		21.2	56		30-150	**54**	Q	50	A
Alpha-BHC	ND	37.5	37.4	100		21.9	58		30-150	**52**	Q	50	A
Beta-BHC	ND	37.5	37.4	100		25.5	67		30-150	38		50	A
Heptachlor	ND	37.5	28.8	77		17.6	47		30-150	48		50	A
Aldrin	ND	37.5	29.5	79		17.4	46		30-150	**52**	Q	50	A
Heptachlor epoxide	ND	37.5	32.6	87		19.4	51		30-150	**51**	Q	50	A
Endrin	ND	37.5	35.6	95		21.4	57		30-150	50		50	A
Endrin aldehyde	207E	37.5	29.0	**0**	Q	16.0	**0**	Q	30-150	**58**	Q	50	B
Endrin ketone	ND	37.5	31.4	84		16.8	44		30-150	**61**	Q	50	A
Dieldrin	ND	37.5	34.1	91		19.9	53		30-150	**53**	Q	50	A
4,4'-DDE	1.65J	37.5	41.2	110		23.2	61		30-150	**56**	Q	50	B
4,4'-DDD	ND	37.5	37.2	99		21.4	57		30-150	**54**	Q	50	B
4,4'-DDT	ND	37.5	36.8	98		22.3	59		30-150	49		50	A
Endosulfan I	ND	37.5	28.7	77		17.6	47		30-150	48		50	A
Endosulfan II	ND	37.5	32.2	86		18.2	48		30-150	**56**	Q	50	A
Endosulfan sulfate	ND	37.5	25.3	68		12.5	33		30-150	**68**	Q	50	A
Methoxychlor	ND	37.5	29.0	77		17.2	45		30-150	**51**	Q	50	A
cis-Chlordane	ND	37.5	27.5	73		19.1	51		30-150	36		50	A
trans-Chlordane	ND	37.5	36.6	98		22.4	59		30-150	48		50	A

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Organochlorine Pesticides by GC - Westborough Lab   Associated sample(s): 08-09   QC Batch ID: WG1273532-6 WG1273532-7   QC Sample: L1935927-08   Client ID: HVRA-OF1-190808

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	111		61		30-150	B
Decachlorobiphenyl	128		83		30-150	B
2,4,5,6-Tetrachloro-m-xylene	100		60		30-150	A
Decachlorobiphenyl	100		60		30-150	A

METALS

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-03	Date Collected:	08/07/19 15:00
Client ID:	HVRA-MAINTBLDG-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	ND		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Antimony, Total	0.00125	J	mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00810		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Barium, Total	0.1521		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Calcium, Total	148.		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Copper, Total	0.00093	J	mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Iron, Total	0.434		mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Magnesium, Total	42.7		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Manganese, Total	0.2582		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/15/19 14:42	08/15/19 23:05	EPA 7470A	1,7470A	MG
Nickel, Total	0.00112	J	mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Potassium, Total	3.04		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Sodium, Total	86.9		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Thallium, Total	0.00018	J	mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 14:35	EPA 3005A	1,6020B	AM

Project Name: HVRA
Lab Number: L1935927
Project Number: 18.8090
Report Date: 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-04
Date Collected: 08/07/19 00:00
Client ID: HVRA-FD01-190807
Date Received: 08/09/19
Sample Location: WAPPINGERS FALLS, NY
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	ND		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Antimony, Total	0.00072	J	mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00718		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Barium, Total	0.1411		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Calcium, Total	138.		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Copper, Total	0.00057	J	mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Iron, Total	0.436		mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Magnesium, Total	41.0		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Manganese, Total	0.2434		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/15/19 14:42	08/15/19 23:34	EPA 7470A	1,7470A	MG
Nickel, Total	0.00124	J	mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Potassium, Total	2.88		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Sodium, Total	82.9		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Thallium, Total	0.00043	J	mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 15:00	EPA 3005A	1,6020B	AM

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-05	Date Collected:	08/08/19 13:20
Client ID:	HVRA-MW100-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	0.0100		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00032	J	mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Barium, Total	0.01562		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Calcium, Total	37.4		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Chromium, Total	0.00069	J	mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Copper, Total	0.00095	J	mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Iron, Total	0.0211	J	mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Magnesium, Total	7.72		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Manganese, Total	0.03920		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/15/19 14:42	08/15/19 23:28	EPA 7470A	1,7470A	MG
Nickel, Total	0.00057	J	mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Potassium, Total	3.16		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Sodium, Total	135.		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 14:39	EPA 3005A	1,6020B	AM

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-06	Date Collected:	08/08/19 00:00
Client ID:	HVRA-FD01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	0.00618	J	mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Antimony, Total	0.00076	J	mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00039	J	mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Barium, Total	0.01500		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Calcium, Total	36.8		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Chromium, Total	0.00057	J	mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Copper, Total	0.00090	J	mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Iron, Total	0.0395	J	mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Magnesium, Total	7.69		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Manganese, Total	0.03624		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/15/19 14:42	08/15/19 23:36	EPA 7470A	1,7470A	MG
Nickel, Total	0.00061	J	mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Potassium, Total	3.09		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Sodium, Total	134.		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Thallium, Total	0.00045	J	mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 15:35	EPA 3005A	1,6020B	AM

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-07 Date Collected: 08/08/19 14:20
Client ID: HVRA-EB01-190808 Date Received: 08/09/19
Sample Location: WAPPINGERS FALLS, NY 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	ND		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Calcium, Total	0.202		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Iron, Total	0.0210	J	mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/15/19 14:42	08/15/19 23:43	EPA 7470A	1,7470A	MG
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-08 Date Collected: 08/08/19 16:00
Client ID: HVRA-OF1-190808 Date Received: 08/09/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	8980		mg/kg	9.03	2.44	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Antimony, Total	0.777	J	mg/kg	4.52	0.343	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Arsenic, Total	5.14		mg/kg	0.903	0.188	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Barium, Total	64.5		mg/kg	0.903	0.157	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Beryllium, Total	0.253	J	mg/kg	0.452	0.030	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Cadmium, Total	0.641	J	mg/kg	0.903	0.089	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Calcium, Total	19600		mg/kg	9.03	3.16	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Chromium, Total	9.22		mg/kg	0.903	0.087	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Cobalt, Total	6.50		mg/kg	1.81	0.150	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Copper, Total	16.4		mg/kg	0.903	0.233	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Iron, Total	18600		mg/kg	4.52	0.816	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Lead, Total	21.9		mg/kg	4.52	0.242	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Magnesium, Total	13000		mg/kg	9.03	1.39	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Manganese, Total	891		mg/kg	0.903	0.144	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Mercury, Total	ND		mg/kg	0.075	0.049	1	08/15/19 05:50	08/15/19 17:22	EPA 7471B	1,7471B	GD
Nickel, Total	13.9		mg/kg	2.26	0.219	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Potassium, Total	283		mg/kg	226	13.0	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Selenium, Total	ND		mg/kg	1.81	0.233	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Silver, Total	ND		mg/kg	0.903	0.256	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Sodium, Total	87.5	J	mg/kg	181	2.84	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	1.81	0.284	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Vanadium, Total	10.4		mg/kg	0.903	0.183	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB
Zinc, Total	77.6		mg/kg	4.52	0.265	2	08/14/19 21:28	08/15/19 15:58	EPA 3050B	1,6010D	AB

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-09 Date Collected: 08/08/19 00:00
Client ID: HVRA-FD02-190808 Date Received: 08/09/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	7020		mg/kg	8.97	2.42	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Antimony, Total	0.789	J	mg/kg	4.48	0.341	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Arsenic, Total	6.40		mg/kg	0.897	0.186	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Barium, Total	48.1		mg/kg	0.897	0.156	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Beryllium, Total	0.224	J	mg/kg	0.448	0.030	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Cadmium, Total	0.735	J	mg/kg	0.897	0.088	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Calcium, Total	55100		mg/kg	8.97	3.14	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Chromium, Total	7.50		mg/kg	0.897	0.086	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Cobalt, Total	5.05		mg/kg	1.79	0.149	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Copper, Total	25.2		mg/kg	0.897	0.231	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Iron, Total	21100		mg/kg	4.48	0.810	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Lead, Total	20.0		mg/kg	4.48	0.240	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Magnesium, Total	15100		mg/kg	8.97	1.38	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Manganese, Total	1250		mg/kg	0.897	0.143	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Mercury, Total	ND		mg/kg	0.073	0.048	1	08/15/19 05:50	08/15/19 18:12	EPA 7471B	1,7471B	GD
Nickel, Total	10.8		mg/kg	2.24	0.217	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Potassium, Total	186	J	mg/kg	224	12.9	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Selenium, Total	ND		mg/kg	1.79	0.231	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Silver, Total	0.287	J	mg/kg	0.897	0.254	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Sodium, Total	73.9	J	mg/kg	179	2.82	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	1.79	0.282	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Vanadium, Total	9.82		mg/kg	0.897	0.182	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB
Zinc, Total	88.2		mg/kg	4.48	0.263	2	08/14/19 21:28	08/15/19 16:23	EPA 3050B	1,6010D	AB

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-10	Date Collected:	08/09/19 08:40
Client ID:	HVRA-NW102-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	0.472		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Antimony, Total	0.00052	J	mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00152		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Barium, Total	0.07084		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Cadmium, Total	0.00010	J	mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Calcium, Total	206.		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Chromium, Total	0.00173		mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Cobalt, Total	0.00630		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Copper, Total	0.00274		mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Iron, Total	2.00		mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Lead, Total	0.00113		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Magnesium, Total	66.8		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Manganese, Total	9.436		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/15/19 14:42	08/15/19 23:44	EPA 7470A	1,7470A	MG
Nickel, Total	0.01134		mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Potassium, Total	3.52		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Sodium, Total	15.9		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Thallium, Total	0.00016	J	mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM
Zinc, Total	0.01336		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 15:39	EPA 3005A	1,6020B	AM

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-12	Date Collected:	08/09/19 10:00
Client ID:	HVRA-MW103-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	0.172		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00479		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Barium, Total	0.05380		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Calcium, Total	72.2		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Chromium, Total	0.00070	J	mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Cobalt, Total	0.00114		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Copper, Total	0.00117		mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Iron, Total	7.80		mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Lead, Total	0.00075	J	mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Magnesium, Total	16.9		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Manganese, Total	3.741		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/15/19 14:42	08/15/19 23:46	EPA 7470A	1,7470A	MG
Nickel, Total	0.00081	J	mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Potassium, Total	1.55		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Sodium, Total	68.5		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM
Zinc, Total	0.00414	J	mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 15:44	EPA 3005A	1,6020B	AM

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-13
Client ID: HVRA-MW101-190809
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/09/19 09:15
Date Received: 08/09/19
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	3.05		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Antimony, Total	0.00062	J	mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Arsenic, Total	0.00428		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Barium, Total	0.07828		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Beryllium, Total	0.00019	J	mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Cadmium, Total	0.00009	J	mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Calcium, Total	74.9		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Chromium, Total	0.00642		mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Cobalt, Total	0.00395		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Copper, Total	0.01337		mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Iron, Total	7.69		mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Lead, Total	0.00542		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Magnesium, Total	24.3		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Manganese, Total	1.657		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/15/19 14:42	08/15/19 23:48	EPA 7470A	1,7470A	MG
Nickel, Total	0.00755		mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Potassium, Total	1.70		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Sodium, Total	10.4		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Vanadium, Total	0.00455	J	mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM
Zinc, Total	0.03004		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 15:48	EPA 3005A	1,6020B	AM

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

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): 03-07,10,12-13 Batch: WG1271502-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Calcium, Total	ND		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM

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): 08-09 Batch: WG1272465-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Antimony, Total	ND		mg/kg	2.00	0.152	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Arsenic, Total	0.100	J	mg/kg	0.400	0.083	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Method Blank Analysis
Batch Quality Control

Barium, Total	ND		mg/kg	0.400	0.070	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Beryllium, Total	ND		mg/kg	0.200	0.013	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Cadmium, Total	ND		mg/kg	0.400	0.039	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Calcium, Total	ND		mg/kg	4.00	1.40	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Chromium, Total	ND		mg/kg	0.400	0.038	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Cobalt, Total	ND		mg/kg	0.800	0.066	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Copper, Total	ND		mg/kg	0.400	0.103	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Iron, Total	ND		mg/kg	2.00	0.361	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Lead, Total	ND		mg/kg	2.00	0.107	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Magnesium, Total	ND		mg/kg	4.00	0.616	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Manganese, Total	ND		mg/kg	0.400	0.064	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Nickel, Total	ND		mg/kg	1.00	0.097	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Potassium, Total	ND		mg/kg	100	5.76	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Selenium, Total	ND		mg/kg	0.800	0.103	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Silver, Total	ND		mg/kg	0.400	0.113	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Sodium, Total	ND		mg/kg	80.0	1.26	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Thallium, Total	ND		mg/kg	0.800	0.126	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Vanadium, Total	ND		mg/kg	0.400	0.081	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Zinc, Total	ND		mg/kg	2.00	0.117	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB

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): 08-09 Batch: WG1272591-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	08/15/19 05:50	08/15/19 17:18	1,7471B	GD

Prep Information

Digestion Method: EPA 7471B

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

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): 03-07,10,12-13 Batch: WG1272866-1										
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/15/19 14:42	08/15/19 23:01	1,7470A	MG

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 03-07,10,12-13 Batch: WG1271502-2								
Aluminum, Total	108		-		80-120	-		
Antimony, Total	93		-		80-120	-		
Arsenic, Total	109		-		80-120	-		
Barium, Total	108		-		80-120	-		
Beryllium, Total	109		-		80-120	-		
Cadmium, Total	113		-		80-120	-		
Calcium, Total	114		-		80-120	-		
Chromium, Total	105		-		80-120	-		
Cobalt, Total	104		-		80-120	-		
Copper, Total	100		-		80-120	-		
Iron, Total	112		-		80-120	-		
Lead, Total	108		-		80-120	-		
Magnesium, Total	108		-		80-120	-		
Manganese, Total	104		-		80-120	-		
Nickel, Total	108		-		80-120	-		
Potassium, Total	110		-		80-120	-		
Selenium, Total	112		-		80-120	-		
Silver, Total	102		-		80-120	-		
Sodium, Total	108		-		80-120	-		
Thallium, Total	107		-		80-120	-		
Vanadium, Total	105		-		80-120	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 03-07,10,12-13 Batch: WG1271502-2					
Zinc, Total	112	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 08-09 Batch: WG1272465-2 SRM Lot Number: D105-540					
Aluminum, Total	62	-	51-149	-	
Antimony, Total	159	-	19-249	-	
Arsenic, Total	102	-	70-130	-	
Barium, Total	90	-	75-125	-	
Beryllium, Total	90	-	75-125	-	
Cadmium, Total	89	-	75-125	-	
Calcium, Total	80	-	73-127	-	
Chromium, Total	88	-	70-130	-	
Cobalt, Total	90	-	75-125	-	
Copper, Total	94	-	75-125	-	
Iron, Total	76	-	38-162	-	
Lead, Total	89	-	71-128	-	
Magnesium, Total	80	-	63-137	-	
Manganese, Total	86	-	76-124	-	
Nickel, Total	91	-	70-131	-	
Potassium, Total	80	-	60-140	-	
Selenium, Total	97	-	63-137	-	
Silver, Total	95	-	69-131	-	
Sodium, Total	101	-	37-162	-	
Thallium, Total	88	-	68-132	-	
Vanadium, Total	89	-	65-135	-	

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 08-09 Batch: WG1272465-2 SRM Lot Number: D105-540					
Zinc, Total	92	-	70-130	-	
Total Metals - Mansfield Lab Associated sample(s): 08-09 Batch: WG1272591-2 SRM Lot Number: D105-540					
Mercury, Total	101	-	60-141	-	
Total Metals - Mansfield Lab Associated sample(s): 03-07,10,12-13 Batch: WG1272866-2					
Mercury, Total	97	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

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): 03-07,10,12-13 QC Batch ID: WG1271502-3 WG1271502-4 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807												
Aluminum, Total	ND	2	2.09	104		2.16	108		75-125	3		20
Antimony, Total	0.00125J	0.5	0.4393	88		0.4867	97		75-125	10		20
Arsenic, Total	0.00810	0.12	0.1390	109		0.1377	108		75-125	1		20
Barium, Total	0.1521	2	2.260	105		2.359	110		75-125	4		20
Beryllium, Total	ND	0.05	0.05027	100		0.05284	106		75-125	5		20
Cadmium, Total	ND	0.051	0.05822	114		0.06010	118		75-125	3		20
Calcium, Total	148.	10	142	**0**	Q	147	**0**	Q	75-125	3		20
Chromium, Total	ND	0.2	0.2105	105		0.2185	109		75-125	4		20
Cobalt, Total	ND	0.5	0.5412	108		0.5532	111		75-125	2		20
Copper, Total	0.00093J	0.25	0.2577	103		0.2587	103		75-125	0		20
Iron, Total	0.434	1	1.58	115		1.58	115		75-125	0		20
Lead, Total	ND	0.51	0.5548	109		0.5836	114		75-125	5		20
Magnesium, Total	42.7	10	49.9	**72**	Q	51.1	84		75-125	2		20
Manganese, Total	0.2582	0.5	0.7640	101		0.7783	104		75-125	2		20
Nickel, Total	0.00112J	0.5	0.5324	106		0.5666	113		75-125	6		20
Potassium, Total	3.04	10	13.3	103		13.8	108		75-125	4		20
Selenium, Total	ND	0.12	0.125	104		0.138	115		75-125	10		20
Silver, Total	ND	0.05	0.05292	106		0.05378	108		75-125	2		20
Sodium, Total	86.9	10	89.7	**28**	Q	91.5	**46**	Q	75-125	2		20
Thallium, Total	0.00018J	0.12	0.1297	108		0.1353	113		75-125	4		20
Vanadium, Total	ND	0.5	0.5446	109		0.5554	111		75-125	2		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

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): 03-07,10,12-13 QC Batch ID: WG1271502-3 WG1271502-4 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807									
Zinc, Total	ND	0.5	0.5575	112	0.5692	114	75-125	2	20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

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): 03-07,10,12-13 QC Batch ID: WG1271502-7 WG1271502-8 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808											
Aluminum, Total	0.0100	2	1.99	99		2.22	110		75-125	11	20
Antimony, Total	ND	0.5	0.4019	80		0.4579	92		75-125	13	20
Arsenic, Total	0.00032J	0.12	0.1248	104		0.1283	107		75-125	3	20
Barium, Total	0.01562	2	2.012	100		2.147	106		75-125	6	20
Beryllium, Total	ND	0.05	0.05898	118		0.05549	111		75-125	6	20
Cadmium, Total	ND	0.051	0.05334	104		0.05600	110		75-125	5	20
Calcium, Total	37.4	10	41.4	**40**	Q	45.0	76		75-125	8	20
Chromium, Total	0.00069J	0.2	0.1996	100		0.2156	108		75-125	8	20
Cobalt, Total	ND	0.5	0.5023	100		0.5347	107		75-125	6	20
Copper, Total	0.00095J	0.25	0.2401	96		0.2516	101		75-125	5	20
Iron, Total	0.0211J	1	1.12	112		1.14	114		75-125	2	20
Lead, Total	ND	0.51	0.5286	104		0.5648	111		75-125	7	20
Magnesium, Total	7.72	10	17.1	94		18.5	108		75-125	8	20
Manganese, Total	0.03920	0.5	0.5259	97		0.5702	106		75-125	8	20
Nickel, Total	0.00057J	0.5	0.5061	101		0.5414	108		75-125	7	20
Potassium, Total	3.16	10	12.7	95		13.7	105		75-125	8	20
Selenium, Total	ND	0.12	0.131	109		0.142	118		75-125	8	20
Silver, Total	ND	0.05	0.05033	101		0.05215	104		75-125	4	20
Sodium, Total	135.	10	127	**0**	Q	137	**20**	Q	75-125	8	20
Thallium, Total	ND	0.12	0.1241	103		0.1337	111		75-125	7	20
Vanadium, Total	ND	0.5	0.5003	100		0.5506	110		75-125	10	20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

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): 03-07,10,12-13 QC Batch ID: WG1271502-7 WG1271502-8 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808									
Zinc, Total	ND	0.5	0.5268	105	0.5546	111	75-125	5	20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

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): 08-09 QC Batch ID: WG1272465-3 WG1272465-4 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Aluminum, Total	8980	186	8440	**0**	Q	8490	**0**	Q	75-125	1		20
Antimony, Total	0.777J	46.6	45.7	98		46.5	101		75-125	2		20
Arsenic, Total	5.14	11.2	16.3	100		17.1	108		75-125	5		20
Barium, Total	64.5	186	220	83		226	88		75-125	3		20
Beryllium, Total	0.253J	4.66	4.59	98		4.46	97		75-125	3		20
Cadmium, Total	0.641J	4.76	4.99	105		4.79	102		75-125	4		20
Calcium, Total	19600	932	6690	**0**	Q	33000	**1460**	Q	75-125	**133**	Q	20
Chromium, Total	9.22	18.6	25.8	89		24.4	83		75-125	6		20
Cobalt, Total	6.50	46.6	45.5	84		43.1	80		75-125	5		20
Copper, Total	16.4	23.3	40.0	101		37.8	93		75-125	6		20
Iron, Total	18600	93.2	22000	**3640**	Q	18400	**0**	Q	75-125	18		20
Lead, Total	21.9	47.6	56.4	**72**	Q	56.8	**74**	Q	75-125	1		20
Magnesium, Total	13000	932	6630	**0**	Q	17000	**435**	Q	75-125	**88**	Q	20
Manganese, Total	891	46.6	516	**0**	Q	616	**0**	Q	75-125	18		20
Nickel, Total	13.9	46.6	52.2	82		49.4	77		75-125	6		20
Potassium, Total	283	932	1160	94		1180	98		75-125	2		20
Selenium, Total	ND	11.2	10.8	96		10.8	98		75-125	0		20
Silver, Total	ND	28	28.2	101		29.4	107		75-125	4		20
Sodium, Total	87.5J	932	1050	112		1080	118		75-125	3		20
Thallium, Total	ND	11.2	8.73	78		8.41	76		75-125	4		20
Vanadium, Total	10.4	46.6	54.4	94		54.5	96		75-125	0		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

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): 08-09 QC Batch ID: WG1272465-3 WG1272465-4 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808									
Zinc, Total	77.6	46.6	125	102	123	99	75-125	2	20
Total Metals - Mansfield Lab Associated sample(s): 08-09 QC Batch ID: WG1272591-3 WG1272591-4 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808									
Mercury, Total	ND	0.151	0.145	96	0.141	94	80-120	3	20
Total Metals - Mansfield Lab Associated sample(s): 03-07,10,12-13 QC Batch ID: WG1272866-3 WG1272866-4 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807									
Mercury, Total	ND	0.005	0.00434	87	0.00435	87	75-125	0	20
Total Metals - Mansfield Lab Associated sample(s): 03-07,10,12-13 QC Batch ID: WG1272866-5 WG1272866-6 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808									
Mercury, Total	ND	0.005	0.00439	88	0.00434	87	75-125	1	20

INORGANICS
&
MISCELLANEOUS

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-03
Client ID: HVRA-MAINTBLDG-190807
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/07/19 15:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	ND		mg/l	0.005	0.001	1	08/12/19 12:30	08/12/19 15:25	1,9010C/9012B	LH

Project Name: HVRA | **Lab Number:** L1935927
Project Number: 18.8090 | **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-04
Client ID: HVRA-FD01-190807
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/07/19 00:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	ND		mg/l	0.005	0.001	1	08/12/19 12:30	08/12/19 15:28	1,9010C/9012B	LH

Project Name: HVRA | **Lab Number:** L1935927
Project Number: 18.8090 | **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-05
Client ID: HVRA-MW100-190808
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/08/19 13:20
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	ND		mg/l	0.005	0.001	1	08/13/19 11:35	08/13/19 14:59	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-06 Date Collected: 08/08/19 00:00
Client ID: HVRA-FD01-190808 Date Received: 08/09/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	0.003	J	mg/l	0.005	0.001	1	08/12/19 12:30	08/12/19 15:29	1,9010C/9012B	LH

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	ND		mg/l	0.005	0.001	1	08/12/19 12:30	08/12/19 15:30	1,9010C/9012B	LH

SAMPLE RESULTS

Lab ID:	L1935927-08	Date Collected:	08/08/19 16:00
Client ID:	HVRA-OF1-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	-	08/10/19 22:35	121,2540G	YA
Cyanide, Total	ND		mg/kg	1.2	0.25	1	08/11/19 16:10	08/12/19 11:14	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-09
Client ID: HVRA-FD02-190808
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/08/19 00:00
Date Received: 08/09/19
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	85.5		%	0.100	NA	1	-	08/10/19 22:35	121,2540G	YA
Cyanide, Total	ND		mg/kg	1.1	0.23	1	08/11/19 16:10	08/12/19 11:19	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-10
Client ID: HVRA-NW102-190809
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/09/19 08:40
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	0.003	J	mg/l	0.005	0.001	1	08/12/19 12:30	08/12/19 15:33	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-12
Client ID: HVRA-MW103-190809
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/09/19 10:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	ND		mg/l	0.005	0.001	1	08/12/19 12:30	08/12/19 15:34	1,9010C/9012B	LH

Project Name: HVRA | **Lab Number:** L1935927
Project Number: 18.8090 | **Report Date:** 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-13
Client ID: HVRA-MW101-190809
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/09/19 09:15
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	ND		mg/l	0.005	0.001	1	08/12/19 12:30	08/12/19 15:35	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

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): 08-09 Batch: WG1271126-1										
Cyanide, Total	ND		mg/kg	0.91	0.19	1	08/11/19 16:10	08/12/19 11:00	1,9010C/9012B	LH
General Chemistry - Westborough Lab for sample(s): 03-04,06-07,10,12-13 Batch: WG1271313-1										
Cyanide, Total	ND		mg/l	0.005	0.001	1	08/12/19 12:30	08/12/19 15:39	1,9010C/9012B	LH
General Chemistry - Westborough Lab for sample(s): 05 Batch: WG1271717-1										
Cyanide, Total	ND		mg/l	0.005	0.001	1	08/13/19 11:35	08/13/19 14:22	1,9010C/9012B	LH

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 08-09 Batch: WG1271126-2 WG1271126-3								
Cyanide, Total	**75**	Q	**70**	Q	80-120	0		35
General Chemistry - Westborough Lab Associated sample(s): 03-04,06-07,10,12-13 Batch: WG1271313-2 WG1271313-3								
Cyanide, Total	109		108		85-115	1		20
General Chemistry - Westborough Lab Associated sample(s): 05 Batch: WG1271717-2 WG1271717-3								
Cyanide, Total	106		106		85-115	0		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1271126-4 WG1271126-5 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Cyanide, Total	ND	12	11	94		10	89		75-125	10		35
General Chemistry - Westborough Lab Associated sample(s): 03-04,06-07,10,12-13 QC Batch ID: WG1271313-4 WG1271313-5 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807												
Cyanide, Total	ND	0.2	0.192	96		0.194	97		80-120	1		20
General Chemistry - Westborough Lab Associated sample(s): 05 QC Batch ID: WG1271717-4 WG1271717-5 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
Cyanide, Total	ND	0.2	0.199	100		0.202	101		80-120	1		20

Project Name:	HVRA	***Lab Number:***	L1935927
Project Number:	18.8090	***Report Date:***	08/29/19

Lab Duplicate Analysis

Batch Quality Control

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1271041-1 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808						
Solids, Total	84.3	88.1	%	4		20

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1935927-01A	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-01B	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-01D	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-02A	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-03A	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-03A1	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-03A2	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-03B	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-03B1	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-03C	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8082-LVI(7)
L1935927-03C1	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8082-LVI(7)
L1935927-03C2	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8082-LVI(7)
L1935927-03D	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8082-LVI(7)
L1935927-03D1	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8082-LVI(7)
L1935927-03D2	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8082-LVI(7)
L1935927-03E	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-03E1	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-03E2	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-03F	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-03F1	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)

*Values in parentheses indicate holding time in days

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1935927-03F2	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-03G	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-03G1	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-03G2	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-03H	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-03H1	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-03H2	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-03I	Plastic 250ml NaOH preserved	B	>12	>12	3.5	Y	Absent		TCN-9010(14)
L1935927-03I1	Plastic 250ml NaOH preserved	B	>12	>12	3.5	Y	Absent		TCN-9010(14)
L1935927-03I2	Plastic 250ml NaOH preserved	B	>12	>12	3.5	Y	Absent		TCN-9010(14)
L1935927-03J	Plastic 250ml HNO3 preserved	B	<2	<2	3.5	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935927-03J1	Plastic 250ml HNO3 preserved	B	<2	<2	3.5	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935927-03J2	Plastic 250ml HNO3 preserved	B	<2	<2	3.5	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935927-04A	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-04B	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-04C	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8082-LVI(7)

*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(*)
L1935927-04D	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8082-LVI(7)
L1935927-04E	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-04F	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-04G	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-04H	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-04I	Plastic 250ml NaOH preserved	B	>12	>12	3.5	Y	Absent		TCN-9010(14)
L1935927-04J	Plastic 250ml HNO3 preserved	B	<2	<2	3.5	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935927-05A	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-05A1	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-05A2	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-05B	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-05B1	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-05B2	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-05C	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-05C1	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-05C2	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-05D	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-05D1	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-05D2	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-05E	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-05E1	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-05E2	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-05F	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-05F1	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)

*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(*)
L1935927-05F2	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-05G	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-05G1	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-05G2	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-05H	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-05H1	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-05H2	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-05I	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-05I1	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-05I2	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-05J	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-05J1	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-05J2	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-05K	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-05K1	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-05K2	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-05L	Plastic 250ml NaOH preserved	B	>12	>12	3.5	Y	Absent		TCN-9010(14)
L1935927-05L1	Plastic 250ml NaOH preserved	B	>12	>12	3.5	Y	Absent		TCN-9010(14)
L1935927-05L2	Plastic 250ml NaOH preserved	B	>12	>12	3.5	Y	Absent		TCN-9010(14)
L1935927-05M	Plastic 250ml HNO3 preserved	B	<2	<2	3.5	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)

*Values in parentheses indicate holding time in days

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1935927-05M1	Plastic 250ml HNO3 preserved	B	<2	<2	3.5	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935927-05M2	Plastic 250ml HNO3 preserved	B	<2	<2	3.5	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935927-05N	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-05N1	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-05N2	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-05O	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-05O1	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-05O2	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-06A	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-06B	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-06C	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-06D	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-06E	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-06F	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-06G	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-06H	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-06I	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-06J	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-06K	Amber 250ml unpreserved	B	7	7	3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-06L	Plastic 250ml NaOH preserved	B	>12	>12	3.5	Y	Absent		TCN-9010(14)

*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(*)
L1935927-06M	Plastic 250ml HNO3 preserved	B	<2	<2	3.5	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935927-06N	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-06O	Amber 120ml unpreserved	B	7	7	3.5	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-07A	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-07B	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-07C	Vial HCl preserved	B	NA		3.5	Y	Absent		NYTCL-8260-R2(14)
L1935927-07D	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-07E	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-07F	Amber 120ml unpreserved	C	7	7	4.2	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-07G	Amber 120ml unpreserved	C	7	7	4.2	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-07H	Amber 250ml unpreserved	C	7	7	4.2	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-07I	Amber 250ml unpreserved	C	7	7	4.2	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-07J	Amber 250ml unpreserved	C	7	7	4.2	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-07K	Amber 250ml unpreserved	C	7	7	4.2	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-07L	Plastic 250ml NaOH preserved	C	>12	>12	4.2	Y	Absent		TCN-9010(14)
L1935927-07M	Plastic 250ml HNO3 preserved	C	<2	<2	4.2	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935927-07N	Amber 120ml unpreserved	C	7	7	4.2	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-07O	Amber 120ml unpreserved	C	7	7	4.2	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-08A	Vial MeOH preserved	C	NA		4.2	Y	Absent		NYTCL-8260HLW-R2(14)
L1935927-08A1	Vial MeOH preserved	C	NA		4.2	Y	Absent		NYTCL-8260HLW-R2(14)

*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(*)
L1935927-08A2	Vial MeOH preserved	C	NA		4.2	Y	Absent		NYTCL-8260HLW-R2(14)
L1935927-08B	Vial water preserved	C	NA		4.2	Y	Absent	10-AUG-19 09:35	NYTCL-8260HLW-R2(14)
L1935927-08B1	Vial water preserved	C	NA		4.2	Y	Absent	10-AUG-19 09:35	NYTCL-8260HLW-R2(14)
L1935927-08B2	Vial water preserved	C	NA		4.2	Y	Absent	10-AUG-19 09:35	NYTCL-8260HLW-R2(14)
L1935927-08C	Vial water preserved	C	NA		4.2	Y	Absent	10-AUG-19 09:35	NYTCL-8260HLW-R2(14)
L1935927-08C1	Vial water preserved	C	NA		4.2	Y	Absent	10-AUG-19 09:35	NYTCL-8260HLW-R2(14)
L1935927-08C2	Vial water preserved	C	NA		4.2	Y	Absent	10-AUG-19 09:35	NYTCL-8260HLW-R2(14)
L1935927-08D	Plastic 8oz unpreserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1935927-08D1	Plastic 8oz unpreserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1935927-08D2	Plastic 8oz unpreserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1935927-08E	Plastic 2oz unpreserved for TS	A	NA		4.8	Y	Absent		TS(7)
L1935927-08E1	Plastic 2oz unpreserved for TS	A	NA		4.8	Y	Absent		TS(7)
L1935927-08E2	Plastic 2oz unpreserved for TS	A	NA		4.8	Y	Absent		TS(7)
L1935927-08F	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.2	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1935927-08F1	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.2	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1935927-08F2	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.2	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1935927-08G	Glass 250ml/8oz unpreserved	C	NA		4.2	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1935927-08G1	Glass 250ml/8oz unpreserved	C	NA		4.2	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1935927-08G2	Glass 500ml/16oz unpreserved	C	NA		4.2	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1935927-09A	Vial MeOH preserved	C	NA		4.2	Y	Absent		NYTCL-8260HLW-R2(14)

*Values in parentheses indicate holding time in days

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1935927-09B	Vial water preserved	C	NA		4.2	Y	Absent	**10-AUG-19 09:35**	NYTCL-8260HLW-R2(14)
L1935927-09C	Vial water preserved	C	NA		4.2	Y	Absent	**10-AUG-19 09:35**	NYTCL-8260HLW-R2(14)
L1935927-09D	Plastic 8oz unpreserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(28)
L1935927-09E	Plastic 2oz unpreserved for TS	A	NA		4.8	Y	Absent		TS(7)
L1935927-09F	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.2	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1935927-09G	Glass 250ml/8oz unpreserved	C	NA		4.2	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1935927-10A	Vial HCl preserved	D	NA		3.9	Y	Absent		NYTCL-8260-R2(14)
L1935927-10B	Vial HCl preserved	D	NA		3.9	Y	Absent		NYTCL-8260-R2(14)
L1935927-10C	Vial HCl preserved	D	NA		3.9	Y	Absent		NYTCL-8260-R2(14)
L1935927-10D	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-10E	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-10F	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-10G	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-10H	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-10I	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-10J	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-10K	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-10L	Plastic 250ml NaOH preserved	D	>12	>12	3.9	Y	Absent		TCN-9010(14)
L1935927-10M	Plastic 250ml HNO3 preserved	D	<2	<2	3.9	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935927-10N	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-10O	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)

*Values in parentheses indicate holding time in days

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1935927-11D	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-11E	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-11J	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-11K	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-12A	Vial HCl preserved	D	NA		3.9	Y	Absent		NYTCL-8260-R2(14)
L1935927-12B	Vial HCl preserved	D	NA		3.9	Y	Absent		NYTCL-8260-R2(14)
L1935927-12C	Vial HCl preserved	D	NA		3.9	Y	Absent		NYTCL-8260-R2(14)
L1935927-12D	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-12E	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-12F	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-12G	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-12H	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-12I	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L1935927-12J	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-12K	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-12L	Plastic 250ml NaOH preserved	D	>12	>12	3.9	Y	Absent		TCN-9010(14)
L1935927-12M	Plastic 250ml HNO3 preserved	D	<2	<2	3.9	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935927-12N	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-12O	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-13D	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-13E	Plastic 250ml Trizma preserved	A	NA		4.8	Y	Absent		A2-NY-537-ISOTOPE(14)
L1935927-13F	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-13G	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-13J	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		A2-1,4-DIOXANE-SIM(7)

*Values in parentheses indicate holding time in days

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1935927-13K	Amber 250ml unpreserved	D	7	7	3.9	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1935927-13L	Plastic 250ml NaOH preserved	D	>12	>12	3.9	Y	Absent		TCN-9010(14)
L1935927-13M	Plastic 250ml HNO3 preserved	D	<2	<2	3.9	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1935927-13N	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)
L1935927-13O	Amber 120ml unpreserved	D	7	7	3.9	Y	Absent		NYTCL-8081(7),NYTCL-8082-LVI(7)

*Values in parentheses indicate holding time in days

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 08/29/19

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.
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.

Footnotes

Report Format: DU Report with 'J' Qualifiers

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.

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. If a 'Total' result is requested, the results of its individual components will also be reported.

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.

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.

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

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

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
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; 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.**

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.

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.

Serial_No:08291914:33

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Westborough, MA 01581
8 Walkup Dr.
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FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Page 1 of 2

Date Rec'd in Lab: 8/9/19

ALPHA Job #: L1935927

Project Information

Project Name: HVRA
Project Location: Wappingers Falls, NY
Project # 18.8090
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
ALPHAQuote #:

Turn-Around Time

Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information

Client: C.T. Male Associates
Address: 50 Century Hill Dr.
Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

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:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Run VOCs ☑

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	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pest.	TAL Metals	CN	PFAS	1,4-Dioxane	Sample Specific Comments	Total Bottles
35927-01	HVRA-LTB01-190807	8/7/19	—	Water	CB	~~✓~~						✓		~~MS/MSD~~	[illegible]
-02	HVRA-FTB01-190807	8/7/19	1435	Water	CB							✓			1
-03	HVRA-MaintBldg-190807	8/7/19	1500	Drinking Water	DK		✓	✓		✓	✓	✓	✓	MS/MSD here	29
-04	HVRA-FD01-190807	8/7/19	—	Drinking Water	DK		✓	✓		✓	✓	✓	✓		10
-05	HVRA-MW100-190808	8/8/19	1320	GW	CB	✓	✓	✓	✓	✓	✓	✓	✓	MS/MSD here	45
-06	HVRA-FD01-190808	8/8/19	—	GW	CB	✓	✓	✓	✓	✓	✓	✓	✓		15
-07	HVRA-EB01-190808	8/8/19	1420	Water	DK	✓	✓	✓	✓	✓	✓	✓	✓	(Peri. pump tubing)	15
-08	HVRA-OF1-190808	8/8/19	1600	Sediment	CB	✓	✓	✓	✓	✓	✓	✓	✓	MS/MSD here	21
-09	HVRA-FD02-190808	8/8/19	—	Sediment	CB	✓	✓	✓	✓	✓	✓	✓	✓		7
-10	HVRA-MW102-190809	8/9/19	0840	GW	DK	✓	✓	✓	✓	✓	✓	✓	✓		15
					Container Type	V	A	A	A	P	P	P	A		
					Preservative	B	A	A	A	C	E	O	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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	8/9/19 - 11:35	D. Lynt	8/9/19 - 11:35
D. Lynt	8/9/19 - 14:40	NEATOUDES (AAL)	8/9/19 14:40
NEATOUDES (AAL)	8/9/19 17:00	D.S.	8/9/19 19:30
D.S.	8/9/19 23:05	[signature]	8/9/19 23:05

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)

NEW YORK CHAIN OF CUSTODY

ALPHA

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

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

Page 2 of 2

Date Rec'd in Lab 8/9/19

ALPHA Job # L1935927

Project Information

Project Name: HVRA
Project Location: Wappingers Falls, NY
Project # 18.8090
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
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 #

Client Information

Client: C.T. Male Associates
Address: 50 Century Hill Dr.
Latham, NY
Phone: 518-786-7400
Fax:
Email: k.moline@ctmale.com

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:

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	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pest.	TAL Metals	CN	PFAS	1,4-Dioxane	Sample Specific Comments	Total Bottles
35927-11	HVRA-MW104-190809	8/9/19	0925	GW	DK							✓	✓		4
-12	HVRA-MW103-190809	8/9/19	1000	GW	DK	✓	✓	✓	✓	✓	✓	✓	✓		15
-13	HVRA-MW101-190809	8/9/19	0915	GW	CB			✓	✓	✓	✓	✓	✓		10
Container Type						V	A	A	A	P	P	P	A		
Preservative						B	A	A	A	C	E	O	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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	8/9/19-11:35	[signature]	8/9/19-11:35
[signature]	8/9/19-14:40	NKATOLPOS (AAL)	8/9/19 14:40
NKATOLPOS (AAL)	8/9/19-17:00	R.S., AAL	8/9/19 19:30
R.S.	8/9/19 23:05	[signature]	8/9/19 23:05

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:	L1936143
Client:	C.T. Male Associates 50 Century Hill Drive Latham, NY 12210
ATTN:	Kirk Moline
Phone:	(518) 786-7400
Project Name:	HVRA
Project Number:	18.8090
Report Date:	08/26/19

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: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1936143-01	HVRA-RB01-190812	WATER	WAPPINGERS FALLS, NY	08/12/19 09:30	08/12/19
L1936143-02	HVRA-MW100-1.0	SOIL	WAPPINGERS FALLS, NY	08/12/19 09:45	08/12/19
L1936143-03	HVRA-RB02-190812	WATER	WAPPINGERS FALLS, NY	08/12/19 10:00	08/12/19
L1936143-04	HVRA-MW101-1.5	SOIL	WAPPINGERS FALLS, NY	08/12/19 10:20	08/12/19
L1936143-05	HVRA-MW101-2.0	SOIL	WAPPINGERS FALLS, NY	08/12/19 10:30	08/12/19
L1936143-06	HVRA-RB03-190812	WATER	WAPPINGERS FALLS, NY	08/12/19 11:00	08/12/19
L1936143-07	HVRA-MW102-0.5	SOIL	WAPPINGERS FALLS, NY	08/12/19 11:15	08/12/19
L1936143-08	HVRA-MW102-2.0	SOIL	WAPPINGERS FALLS, NY	08/12/19 11:30	08/12/19
L1936143-09	HVRA-FTB01-190812	WATER	WAPPINGERS FALLS, NY	08/12/19 12:50	08/12/19
L1936143-10	HVRA-LTB01-190812	WATER	WAPPINGERS FALLS, NY	08/12/19 00:00	08/12/19
L1936143-11	HVRA-RB04-190812	WATER	WAPPINGERS FALLS, NY	08/12/19 11:45	08/12/19
L1936143-12	HVRA-MW103-0.5	SOIL	WAPPINGERS FALLS, NY	08/12/19 11:50	08/12/19
L1936143-13	HVRA-MW103-2.0	SOIL	WAPPINGERS FALLS, NY	08/12/19 12:00	08/12/19
L1936143-14	HVRA-RB05-190812	WATER	WAPPINGERS FALLS, NY	08/12/19 12:10	08/12/19
L1936143-15	HVRA-MW104-0.5	SOIL	WAPPINGERS FALLS, NY	08/12/19 12:15	08/12/19
L1936143-16	HVRA-MW104-2.0	SOIL	WAPPINGERS FALLS, NY	08/12/19 12:20	08/12/19
L1936143-17	HVRA-RB06-190812	WATER	WAPPINGERS FALLS, NY	08/12/19 12:30	08/12/19
L1936143-18	HVRA-MW105-0.5	SOIL	WAPPINGERS FALLS, NY	08/12/19 12:40	08/12/19
L1936143-19	HVRA-MW105-2.0	SOIL	WAPPINGERS FALLS, NY	08/12/19 12:46	08/12/19

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

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.

Case Narrative (continued)

Report Submission

August 26, 2019: This final report includes the results of all requested analyses.

August 22, 2019: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

1,4-Dioxane by 8270-SIM

The surrogate recovery for the WG1272498-2 LCS, associated with L1936143-02, is outside the acceptance criteria for 1,4-dioxane-d8 (114%). The LCS spike compounds are within overall method allowances; therefore, no further action was taken.

Perfluorinated Alkyl Acids by Isotope Dilution

L1936143-02, -05, -07, -08, -12, -15, -16, -18, -19 and WG1273984-2/-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L1936143-02: The sample was re-analyzed on dilution in order to quantify the results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound that exceeded the calibration range.

The WG1275389-3 LCS/LCSD RPD, associated with L1936143-01, -03, -06, -09, -10, -11, -14 and -17, is above the acceptance criteria for 1h,1h,2h,2h-perfluorodecanesulfonic acid (8:2fts) (41%).

The WG1273984-4 MS recovery, performed on L1936143-02, is outside the acceptance criteria for perfluorooctanesulfonic acid (pfos) (0%). The unacceptable percent recoveries are attributed to the elevated concentrations of target compounds present in the native sample.

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

Case Narrative (continued)

Total Metals

L1936143-02, -04,-05, -07, -08, -12, and -13: 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.

Cyanide, Total

The WG1271656-2/-3 LCS/LCSD recoveries (62%/71%), associated with L1936143-02,-04,-05,-07,-08,-12, and -13, are outside our in-house acceptance criteria, but within the vendor-certified acceptance limits. The results of the original analyses are 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: A Naik Amita Naik

Title: Technical Director/Representative Date: 08/26/19

ORGANICS

VOLATILES

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-02	Date Collected:	08/12/19 09:45
Client ID:	HVRA-MW100-1.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Matrix:	Soil
Analytical Method:	1,8260C
Analytical Date:	08/16/19 10:14
Analyst:	MV
Percent Solids:	92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.4	2.0	1
1,1-Dichloroethane	ND		ug/kg	0.88	0.13	1
Chloroform	ND		ug/kg	1.3	0.12	1
Carbon tetrachloride	ND		ug/kg	0.88	0.20	1
1,2-Dichloropropane	ND		ug/kg	0.88	0.11	1
Dibromochloromethane	ND		ug/kg	0.88	0.12	1
1,1,2-Trichloroethane	ND		ug/kg	0.88	0.24	1
Tetrachloroethene	0.51		ug/kg	0.44	0.17	1
Chlorobenzene	ND		ug/kg	0.44	0.11	1
Trichlorofluoromethane	ND		ug/kg	3.5	0.61	1
1,2-Dichloroethane	ND		ug/kg	0.88	0.23	1
1,1,1-Trichloroethane	ND		ug/kg	0.44	0.15	1
Bromodichloromethane	ND		ug/kg	0.44	0.10	1
trans-1,3-Dichloropropene	ND		ug/kg	0.88	0.24	1
cis-1,3-Dichloropropene	ND		ug/kg	0.44	0.14	1
Bromoform	ND		ug/kg	3.5	0.22	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.44	0.15	1
Benzene	ND		ug/kg	0.44	0.15	1
Toluene	ND		ug/kg	0.88	0.48	1
Ethylbenzene	ND		ug/kg	0.88	0.12	1
Chloromethane	ND		ug/kg	3.5	0.82	1
Bromomethane	ND		ug/kg	1.8	0.51	1
Vinyl chloride	ND		ug/kg	0.88	0.30	1
Chloroethane	ND		ug/kg	1.8	0.40	1
1,1-Dichloroethene	ND		ug/kg	0.88	0.21	1
trans-1,2-Dichloroethene	ND		ug/kg	1.3	0.12	1
Trichloroethene	ND		ug/kg	0.44	0.12	1
1,2-Dichlorobenzene	ND		ug/kg	1.8	0.13	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-02	Date Collected:	08/12/19 09:45
Client ID:	HVRA-MW100-1.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
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	0.49	1
o-Xylene	ND		ug/kg	0.88	0.26	1
cis-1,2-Dichloroethene	ND		ug/kg	0.88	0.15	1
Styrene	ND		ug/kg	0.88	0.17	1
Dichlorodifluoromethane	ND		ug/kg	8.8	0.80	1
Acetone	19		ug/kg	8.8	4.2	1
Carbon disulfide	ND		ug/kg	8.8	4.0	1
2-Butanone	ND		ug/kg	8.8	2.0	1
4-Methyl-2-pentanone	ND		ug/kg	8.8	1.1	1
2-Hexanone	ND		ug/kg	8.8	1.0	1
Bromochloromethane	ND		ug/kg	1.8	0.18	1
1,2-Dibromoethane	ND		ug/kg	0.88	0.24	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.6	0.88	1
Isopropylbenzene	ND		ug/kg	0.88	0.10	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.8	0.28	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.8	0.24	1
Methyl Acetate	54		ug/kg	3.5	0.84	1
Cyclohexane	ND		ug/kg	8.8	0.48	1
1,4-Dioxane	ND		ug/kg	70	31.	1
Freon-113	ND		ug/kg	3.5	0.61	1
Methyl cyclohexane	ND		ug/kg	3.5	0.53	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	118		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	103		70-130

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-07	Date Collected:	08/12/19 11:15
Client ID:	HVRA-MW102-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 08/16/19 10:42
Analyst: MV
Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	5.3	2.4	1
1,1-Dichloroethane	ND		ug/kg	1.1	0.15	1
Chloroform	ND		ug/kg	1.6	0.15	1
Carbon tetrachloride	ND		ug/kg	1.1	0.24	1
1,2-Dichloropropane	ND		ug/kg	1.1	0.13	1
Dibromochloromethane	ND		ug/kg	1.1	0.15	1
1,1,2-Trichloroethane	ND		ug/kg	1.1	0.28	1
Tetrachloroethene	1.0		ug/kg	0.53	0.21	1
Chlorobenzene	ND		ug/kg	0.53	0.13	1
Trichlorofluoromethane	ND		ug/kg	4.2	0.74	1
1,2-Dichloroethane	ND		ug/kg	1.1	0.27	1
1,1,1-Trichloroethane	ND		ug/kg	0.53	0.18	1
Bromodichloromethane	ND		ug/kg	0.53	0.12	1
trans-1,3-Dichloropropene	ND		ug/kg	1.1	0.29	1
cis-1,3-Dichloropropene	ND		ug/kg	0.53	0.17	1
Bromoform	ND		ug/kg	4.2	0.26	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.53	0.18	1
Benzene	ND		ug/kg	0.53	0.18	1
Toluene	ND		ug/kg	1.1	0.58	1
Ethylbenzene	ND		ug/kg	1.1	0.15	1
Chloromethane	ND		ug/kg	4.2	0.99	1
Bromomethane	ND		ug/kg	2.1	0.62	1
Vinyl chloride	ND		ug/kg	1.1	0.36	1
Chloroethane	ND		ug/kg	2.1	0.48	1
1,1-Dichloroethene	ND		ug/kg	1.1	0.25	1
trans-1,2-Dichloroethene	ND		ug/kg	1.6	0.14	1
Trichloroethene	ND		ug/kg	0.53	0.14	1
1,2-Dichlorobenzene	ND		ug/kg	2.1	0.15	1

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-07	Date Collected:	08/12/19 11:15
Client ID:	HVRA-MW102-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	2.1	0.16	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	0.60	1
o-Xylene	ND		ug/kg	1.1	0.31	1
cis-1,2-Dichloroethene	ND		ug/kg	1.1	0.18	1
Styrene	ND		ug/kg	1.1	0.21	1
Dichlorodifluoromethane	ND		ug/kg	11	0.97	1
Acetone	ND		ug/kg	11	5.1	1
Carbon disulfide	ND		ug/kg	11	4.8	1
2-Butanone	ND		ug/kg	11	2.4	1
4-Methyl-2-pentanone	ND		ug/kg	11	1.4	1
2-Hexanone	ND		ug/kg	11	1.2	1
Bromochloromethane	ND		ug/kg	2.1	0.22	1
1,2-Dibromoethane	ND		ug/kg	1.1	0.30	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.2	1.1	1
Isopropylbenzene	ND		ug/kg	1.1	0.12	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.1	0.34	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.1	0.29	1
Methyl Acetate	ND		ug/kg	4.2	1.0	1
Cyclohexane	ND		ug/kg	11	0.58	1
1,4-Dioxane	ND		ug/kg	85	37.	1
Freon-113	ND		ug/kg	4.2	0.74	1
Methyl cyclohexane	ND		ug/kg	4.2	0.64	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	104		70-130

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-08	Date Collected:	08/12/19 11:30
Client ID:	HVRA-MW102-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Matrix:	Soil
Analytical Method:	1,8260C
Analytical Date:	08/16/19 11:09
Analyst:	MV
Percent Solids:	94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.8	2.2	1
1,1-Dichloroethane	ND		ug/kg	0.95	0.14	1
Chloroform	ND		ug/kg	1.4	0.13	1
Carbon tetrachloride	ND		ug/kg	0.95	0.22	1
1,2-Dichloropropane	ND		ug/kg	0.95	0.12	1
Dibromochloromethane	ND		ug/kg	0.95	0.13	1
1,1,2-Trichloroethane	ND		ug/kg	0.95	0.25	1
Tetrachloroethene	0.35	J	ug/kg	0.48	0.19	1
Chlorobenzene	ND		ug/kg	0.48	0.12	1
Trichlorofluoromethane	ND		ug/kg	3.8	0.66	1
1,2-Dichloroethane	ND		ug/kg	0.95	0.24	1
1,1,1-Trichloroethane	ND		ug/kg	0.48	0.16	1
Bromodichloromethane	ND		ug/kg	0.48	0.10	1
trans-1,3-Dichloropropene	ND		ug/kg	0.95	0.26	1
cis-1,3-Dichloropropene	ND		ug/kg	0.48	0.15	1
Bromoform	ND		ug/kg	3.8	0.23	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.48	0.16	1
Benzene	ND		ug/kg	0.48	0.16	1
Toluene	ND		ug/kg	0.95	0.52	1
Ethylbenzene	ND		ug/kg	0.95	0.13	1
Chloromethane	ND		ug/kg	3.8	0.89	1
Bromomethane	ND		ug/kg	1.9	0.55	1
Vinyl chloride	ND		ug/kg	0.95	0.32	1
Chloroethane	ND		ug/kg	1.9	0.43	1
1,1-Dichloroethene	ND		ug/kg	0.95	0.23	1
trans-1,2-Dichloroethene	ND		ug/kg	1.4	0.13	1
Trichloroethene	ND		ug/kg	0.48	0.13	1
1,2-Dichlorobenzene	ND		ug/kg	1.9	0.14	1

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-08	Date Collected:	08/12/19 11:30
Client ID:	HVRA-MW102-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	1.9	0.14	1
1,4-Dichlorobenzene	ND		ug/kg	1.9	0.16	1
Methyl tert butyl ether	ND		ug/kg	1.9	0.19	1
p/m-Xylene	ND		ug/kg	1.9	0.53	1
o-Xylene	ND		ug/kg	0.95	0.28	1
cis-1,2-Dichloroethene	ND		ug/kg	0.95	0.17	1
Styrene	ND		ug/kg	0.95	0.19	1
Dichlorodifluoromethane	ND		ug/kg	9.5	0.87	1
Acetone	ND		ug/kg	9.5	4.6	1
Carbon disulfide	ND		ug/kg	9.5	4.3	1
2-Butanone	ND		ug/kg	9.5	2.1	1
4-Methyl-2-pentanone	ND		ug/kg	9.5	1.2	1
2-Hexanone	ND		ug/kg	9.5	1.1	1
Bromochloromethane	ND		ug/kg	1.9	0.20	1
1,2-Dibromoethane	ND		ug/kg	0.95	0.26	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.8	0.95	1
Isopropylbenzene	ND		ug/kg	0.95	0.10	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.9	0.31	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.9	0.26	1
Methyl Acetate	ND		ug/kg	3.8	0.90	1
Cyclohexane	ND		ug/kg	9.5	0.52	1
1,4-Dioxane	ND		ug/kg	76	33.	1
Freon-113	ND		ug/kg	3.8	0.66	1
Methyl cyclohexane	ND		ug/kg	3.8	0.57	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	101		70-130

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-12
Client ID: HVRA-MW103-0.5
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/12/19 11:50
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 08/16/19 11:36
Analyst: MV
Percent Solids: 65%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	6.8	3.1	1
1,1-Dichloroethane	ND		ug/kg	1.4	0.20	1
Chloroform	ND		ug/kg	2.0	0.19	1
Carbon tetrachloride	ND		ug/kg	1.4	0.31	1
1,2-Dichloropropane	ND		ug/kg	1.4	0.17	1
Dibromochloromethane	ND		ug/kg	1.4	0.19	1
1,1,2-Trichloroethane	ND		ug/kg	1.4	0.36	1
Tetrachloroethene	0.65	J	ug/kg	0.68	0.27	1
Chlorobenzene	ND		ug/kg	0.68	0.17	1
Trichlorofluoromethane	ND		ug/kg	5.4	0.95	1
1,2-Dichloroethane	ND		ug/kg	1.4	0.35	1
1,1,1-Trichloroethane	ND		ug/kg	0.68	0.23	1
Bromodichloromethane	ND		ug/kg	0.68	0.15	1
trans-1,3-Dichloropropene	ND		ug/kg	1.4	0.37	1
cis-1,3-Dichloropropene	ND		ug/kg	0.68	0.22	1
Bromoform	ND		ug/kg	5.4	0.34	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.68	0.23	1
Benzene	ND		ug/kg	0.68	0.23	1
Toluene	ND		ug/kg	1.4	0.74	1
Ethylbenzene	ND		ug/kg	1.4	0.19	1
Chloromethane	ND		ug/kg	5.4	1.3	1
Bromomethane	ND		ug/kg	2.7	0.79	1
Vinyl chloride	ND		ug/kg	1.4	0.46	1
Chloroethane	ND		ug/kg	2.7	0.62	1
1,1-Dichloroethene	ND		ug/kg	1.4	0.32	1
trans-1,2-Dichloroethene	ND		ug/kg	2.0	0.19	1
Trichloroethene	ND		ug/kg	0.68	0.19	1
1,2-Dichlorobenzene	ND		ug/kg	2.7	0.20	1

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-12	Date Collected:	08/12/19 11:50
Client ID:	HVRA-MW103-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	2.7	0.20	1
1,4-Dichlorobenzene	ND		ug/kg	2.7	0.23	1
Methyl tert butyl ether	ND		ug/kg	2.7	0.27	1
p/m-Xylene	ND		ug/kg	2.7	0.76	1
o-Xylene	ND		ug/kg	1.4	0.40	1
cis-1,2-Dichloroethene	ND		ug/kg	1.4	0.24	1
Styrene	ND		ug/kg	1.4	0.27	1
Dichlorodifluoromethane	ND		ug/kg	14	1.2	1
Acetone	ND		ug/kg	14	6.6	1
Carbon disulfide	ND		ug/kg	14	6.2	1
2-Butanone	ND		ug/kg	14	3.0	1
4-Methyl-2-pentanone	ND		ug/kg	14	1.7	1
2-Hexanone	ND		ug/kg	14	1.6	1
Bromochloromethane	ND		ug/kg	2.7	0.28	1
1,2-Dibromoethane	ND		ug/kg	1.4	0.38	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	4.1	1.4	1
Isopropylbenzene	ND		ug/kg	1.4	0.15	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.7	0.44	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.7	0.37	1
Methyl Acetate	ND		ug/kg	5.4	1.3	1
Cyclohexane	ND		ug/kg	14	0.74	1
1,4-Dioxane	ND		ug/kg	110	48.	1
Freon-113	ND		ug/kg	5.4	0.94	1
Methyl cyclohexane	ND		ug/kg	5.4	0.82	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	116		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	100		70-130

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-13	Date Collected:	08/12/19 12:00
Client ID:	HVRA-MW103-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 08/16/19 12:04
Analyst: MV
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.7	2.1	1
1,1-Dichloroethane	ND		ug/kg	0.94	0.14	1
Chloroform	ND		ug/kg	1.4	0.13	1
Carbon tetrachloride	ND		ug/kg	0.94	0.22	1
1,2-Dichloropropane	ND		ug/kg	0.94	0.12	1
Dibromochloromethane	ND		ug/kg	0.94	0.13	1
1,1,2-Trichloroethane	ND		ug/kg	0.94	0.25	1
Tetrachloroethene	0.71		ug/kg	0.47	0.18	1
Chlorobenzene	ND		ug/kg	0.47	0.12	1
Trichlorofluoromethane	ND		ug/kg	3.7	0.65	1
1,2-Dichloroethane	ND		ug/kg	0.94	0.24	1
1,1,1-Trichloroethane	ND		ug/kg	0.47	0.16	1
Bromodichloromethane	ND		ug/kg	0.47	0.10	1
trans-1,3-Dichloropropene	ND		ug/kg	0.94	0.26	1
cis-1,3-Dichloropropene	ND		ug/kg	0.47	0.15	1
Bromoform	ND		ug/kg	3.7	0.23	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.47	0.16	1
Benzene	ND		ug/kg	0.47	0.16	1
Toluene	ND		ug/kg	0.94	0.51	1
Ethylbenzene	ND		ug/kg	0.94	0.13	1
Chloromethane	ND		ug/kg	3.7	0.87	1
Bromomethane	ND		ug/kg	1.9	0.54	1
Vinyl chloride	ND		ug/kg	0.94	0.31	1
Chloroethane	ND		ug/kg	1.9	0.42	1
1,1-Dichloroethene	ND		ug/kg	0.94	0.22	1
trans-1,2-Dichloroethene	ND		ug/kg	1.4	0.13	1
Trichloroethene	ND		ug/kg	0.47	0.13	1
1,2-Dichlorobenzene	ND		ug/kg	1.9	0.13	1

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-13	Date Collected:	08/12/19 12:00
Client ID:	HVRA-MW103-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/kg	1.9	0.14	1
1,4-Dichlorobenzene	ND		ug/kg	1.9	0.16	1
Methyl tert butyl ether	ND		ug/kg	1.9	0.19	1
p/m-Xylene	ND		ug/kg	1.9	0.52	1
o-Xylene	ND		ug/kg	0.94	0.27	1
cis-1,2-Dichloroethene	ND		ug/kg	0.94	0.16	1
Styrene	ND		ug/kg	0.94	0.18	1
Dichlorodifluoromethane	ND		ug/kg	9.4	0.86	1
Acetone	ND		ug/kg	9.4	4.5	1
Carbon disulfide	ND		ug/kg	9.4	4.3	1
2-Butanone	ND		ug/kg	9.4	2.1	1
4-Methyl-2-pentanone	ND		ug/kg	9.4	1.2	1
2-Hexanone	ND		ug/kg	9.4	1.1	1
Bromochloromethane	ND		ug/kg	1.9	0.19	1
1,2-Dibromoethane	ND		ug/kg	0.94	0.26	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.8	0.93	1
Isopropylbenzene	ND		ug/kg	0.94	0.10	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.9	0.30	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.9	0.25	1
Methyl Acetate	ND		ug/kg	3.7	0.89	1
Cyclohexane	ND		ug/kg	9.4	0.51	1
1,4-Dioxane	ND		ug/kg	75	33.	1
Freon-113	ND		ug/kg	3.7	0.65	1
Methyl cyclohexane	ND		ug/kg	3.7	0.56	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	117		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	102		70-130

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/16/19 06:35
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02,07-08,12-13 Batch: WG1273356-5					
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
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
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/16/19 06:35
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02,07-08,12-13 Batch: WG1273356-5					
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
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
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
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Isopropylbenzene	ND		ug/kg	1.0	0.11
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
Methyl Acetate	ND		ug/kg	4.0	0.95
Cyclohexane	ND		ug/kg	10	0.54
1,4-Dioxane	ND		ug/kg	80	35.
Freon-113	ND		ug/kg	4.0	0.69
Methyl cyclohexane	ND		ug/kg	4.0	0.60

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/16/19 06:35
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02,07-08,12-13 Batch: WG1273356-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	116		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	98		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,07-08,12-13 Batch: WG1273356-3 WG1273356-4								
Methylene chloride	88		86		70-130	2		30
1,1-Dichloroethane	98		93		70-130	5		30
Chloroform	95		93		70-130	2		30
Carbon tetrachloride	97		93		70-130	4		30
1,2-Dichloropropane	95		94		70-130	1		30
Dibromochloromethane	112		108		70-130	4		30
1,1,2-Trichloroethane	117		114		70-130	3		30
Tetrachloroethene	106		102		70-130	4		30
Chlorobenzene	106		103		70-130	3		30
Trichlorofluoromethane	99		92		70-139	7		30
1,2-Dichloroethane	102		101		70-130	1		30
1,1,1-Trichloroethane	99		95		70-130	4		30
Bromodichloromethane	100		98		70-130	2		30
trans-1,3-Dichloropropene	119		116		70-130	3		30
cis-1,3-Dichloropropene	101		98		70-130	3		30
Bromoform	111		113		70-130	2		30
1,1,2,2-Tetrachloroethane	117		116		70-130	1		30
Benzene	96		93		70-130	3		30
Toluene	113		108		70-130	5		30
Ethylbenzene	113		109		70-130	4		30
Chloromethane	96		90		52-130	6		30
Bromomethane	100		95		57-147	5		30
Vinyl chloride	107		104		67-130	3		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,07-08,12-13 Batch: WG1273356-3 WG1273356-4								
Chloroethane	100		93		50-151	7		30
1,1-Dichloroethene	135		128		65-135	5		30
trans-1,2-Dichloroethene	95		89		70-130	7		30
Trichloroethene	96		92		70-130	4		30
1,2-Dichlorobenzene	114		114		70-130	0		30
1,3-Dichlorobenzene	112		110		70-130	2		30
1,4-Dichlorobenzene	112		110		70-130	2		30
Methyl tert butyl ether	94		92		66-130	2		30
p/m-Xylene	114		111		70-130	3		30
o-Xylene	114		108		70-130	5		30
cis-1,2-Dichloroethene	94		91		70-130	3		30
Styrene	115		111		70-130	4		30
Dichlorodifluoromethane	96		92		30-146	4		30
Acetone	107		99		54-140	8		30
Carbon disulfide	**140**	Q	126		59-130	11		30
2-Butanone	98		99		70-130	1		30
4-Methyl-2-pentanone	104		102		70-130	2		30
2-Hexanone	101		100		70-130	1		30
Bromochloromethane	94		92		70-130	2		30
1,2-Dibromoethane	111		111		70-130	0		30
1,2-Dibromo-3-chloropropane	101		102		68-130	1		30
Isopropylbenzene	116		113		70-130	3		30
1,2,3-Trichlorobenzene	108		107		70-130	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,07-08,12-13 Batch: WG1273356-3 WG1273356-4								
1,2,4-Trichlorobenzene	108		106		70-130	2		30
Methyl Acetate	95		96		51-146	1		30
Cyclohexane	98		92		59-142	6		30
1,4-Dioxane	86		79		65-136	8		30
Freon-113	135		119		50-139	13		30
Methyl cyclohexane	89		86		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		108		70-130
Toluene-d8	113		113		70-130
4-Bromofluorobenzene	103		104		70-130
Dibromofluoromethane	99		97		70-130

SEMIVOLATILES

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-01
Client ID: HVRA-RB01-190812
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 09:30
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/23/19 15:29
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/22/19 07:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.82	0.372	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.82	0.361	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.82	0.299	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.343	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.82	0.215	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.82	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.628	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.285	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	0.460	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.591	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.894	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.529	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.734	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.226	1
PFOA/PFOS, Total	ND		ng/l	1.82	0.215	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-01	Date Collected:	08/12/19 09:30
Client ID:	HVRA-RB01-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	57		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	59		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		33-143

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-02	Date Collected:	08/12/19 09:45
Client ID:	HVRA-MW100-1.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8270D	Extraction Date:	08/18/19 00:45
Analytical Date:	08/20/19 06:09		
Analyst:	IM		
Percent Solids:	92%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	140	18.	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
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	53	J	ug/kg	110	20.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	19.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	27.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	220	31.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	190	18.	1
Hexachlorobutadiene	ND		ug/kg	180	26.	1
Hexachlorocyclopentadiene	ND		ug/kg	510	160	1
Hexachloroethane	ND		ug/kg	140	29.	1
Isophorone	ND		ug/kg	160	23.	1
Naphthalene	ND		ug/kg	180	22.	1
Nitrobenzene	ND		ug/kg	160	26.	1
NDPA/DPA	ND		ug/kg	140	20.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	28.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	62.	1
Butyl benzyl phthalate	ND		ug/kg	180	45.	1
Di-n-butylphthalate	ND		ug/kg	180	34.	1
Di-n-octylphthalate	ND		ug/kg	180	61.	1
Diethyl phthalate	ND		ug/kg	180	16.	1
Dimethyl phthalate	ND		ug/kg	180	38.	1
Benzo(a)anthracene	29	J	ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	140	44.	1

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-02 Date Collected: 08/12/19 09:45

Client ID: HVRA-MW100-1.0 Date Received: 08/12/19

Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	42	J	ug/kg	110	30.	1
Benzo(k)fluoranthene	ND		ug/kg	110	29.	1
Chrysene	34	J	ug/kg	110	19.	1
Acenaphthylene	ND		ug/kg	140	28.	1
Anthracene	ND		ug/kg	110	35.	1
Benzo(ghi)perylene	29	J	ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	17.	1
Phenanthrene	ND		ug/kg	110	22.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	21.	1
Indeno(1,2,3-cd)pyrene	29	J	ug/kg	140	25.	1
Pyrene	47	J	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	34.	1
3-Nitroaniline	ND		ug/kg	180	34.	1
4-Nitroaniline	ND		ug/kg	180	74.	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	59.	1
2-Nitrophenol	ND		ug/kg	390	67.	1
4-Nitrophenol	ND		ug/kg	250	73.	1
2,4-Dinitrophenol	ND		ug/kg	860	84.	1
4,6-Dinitro-o-cresol	ND		ug/kg	460	86.	1
Pentachlorophenol	ND		ug/kg	140	39.	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
2,4,5-Trichlorophenol	ND		ug/kg	180	34.	1
Carbazole	ND		ug/kg	180	17.	1
Atrazine	ND		ug/kg	140	63.	1
Benzaldehyde	ND		ug/kg	240	48.	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-02	Date Collected:	08/12/19 09:45
Client ID:	HVRA-MW100-1.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	180	54.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	180	36.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	77		25-120
Phenol-d6	82		10-120
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	66		30-120
2,4,6-Tribromophenol	92		10-136
4-Terphenyl-d14	62		18-120

Project Name: HVRA
Lab Number: L1936143
Project Number: 18.8090
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-02	Date Collected:	08/12/19 09:45
Client ID:	HVRA-MW100-1.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	08/14/19 22:00
Analytical Date:	08/21/19 18:46		
Analyst:	MA		
Percent Solids:	92%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	8.58	2.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	109		15-110

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-02	Date Collected:	08/12/19 09:45
Client ID:	HVRA-MW100-1.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/19/19 09:28
Analytical Date:	08/21/19 05:48		
Analyst:	AJ		
Percent Solids:	92%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.282	J	ug/kg	1.04	0.024	1
Perfluoropentanoic Acid (PFPeA)	0.767	J	ug/kg	1.04	0.048	1
Perfluorobutanesulfonic Acid (PFBS)	0.103	J	ug/kg	1.04	0.040	1
Perfluorohexanoic Acid (PFHxA)	0.823	J	ug/kg	1.04	0.054	1
Perfluoroheptanoic Acid (PFHpA)	0.243	J	ug/kg	1.04	0.047	1
Perfluorohexanesulfonic Acid (PFHxS)	4.38		ug/kg	1.04	0.063	1
Perfluorooctanoic Acid (PFOA)	0.438	J	ug/kg	1.04	0.043	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.13		ug/kg	1.04	0.186	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.82		ug/kg	1.04	0.142	1
Perfluorononanoic Acid (PFNA)	0.152	J	ug/kg	1.04	0.078	1
Perfluorooctanesulfonic Acid (PFOS)	369	E	ug/kg	1.04	0.135	1
Perfluorodecanoic Acid (PFDA)	1.37		ug/kg	1.04	0.070	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	42.6		ug/kg	1.04	0.298	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.04	0.209	1
Perfluoroundecanoic Acid (PFUnA)	0.254	J	ug/kg	1.04	0.049	1
Perfluorodecanesulfonic Acid (PFDS)	1.04		ug/kg	1.04	0.159	1
Perfluorooctanesulfonamide (FOSA)	4.71		ug/kg	1.04	0.102	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.279	J	ug/kg	1.04	0.088	1
Perfluorododecanoic Acid (PFDoA)	0.238	J	ug/kg	1.04	0.073	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.04	0.212	1
Perfluorotetradecanoic Acid (PFTA)	0.237	J	ug/kg	1.04	0.056	1
PFOA/PFOS, Total	363	J	ug/kg	1.04	0.043	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-02	Date Collected:	08/12/19 09:45
Client ID:	HVRA-MW100-1.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**295**	Q	70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	**283**	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**265**	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	117		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**305**	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	117		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	83		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	109		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	121		26-160

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-02 D
Client ID: HVRA-MW100-1.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 09:45
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/23/19 14:56
Analyst: JW
Percent Solids: 92%

Extraction Method: EPA 537(M)
Extraction Date: 08/19/19 09:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	363		ug/kg	5.18	0.674	5

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		65-151

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-03	Date Collected:	08/12/19 10:00
Client ID:	HVRA-RB02-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/22/19 07:26
Analytical Date:	08/23/19 15:46		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.89	0.386	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.89	0.375	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.225	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.89	0.311	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	0.213	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.356	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.89	0.223	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.652	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	0.295	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.477	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	0.288	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.15	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.614	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.246	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.928	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.549	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.761	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.352	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.310	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.235	1
PFOA/PFOS, Total	ND		ng/l	1.89	0.223	1

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-03	Date Collected:	08/12/19 10:00
Client ID:	HVRA-RB02-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	52		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	49		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		33-143

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-04	Date Collected:	08/12/19 10:20
Client ID:	HVRA-MW101-1.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	08/15/19 09:43
Analytical Date:	08/23/19 14:39		
Analyst:	MA		
Percent Solids:	97%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	7.24	1.85	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	65		15-110

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-04	Date Collected:	08/12/19 10:20
Client ID:	HVRA-MW101-1.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/19/19 09:28
Analytical Date:	08/21/19 06:22		
Analyst:	AJ		
Percent Solids:	97%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.072	J	ug/kg	1.02	0.023	1
Perfluoropentanoic Acid (PFPeA)	0.117	J	ug/kg	1.02	0.047	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.02	0.040	1
Perfluorohexanoic Acid (PFHxA)	0.164	J	ug/kg	1.02	0.054	1
Perfluoroheptanoic Acid (PFHpA)	0.105	J	ug/kg	1.02	0.046	1
Perfluorohexanesulfonic Acid (PFHxS)	0.288	J	ug/kg	1.02	0.062	1
Perfluorooctanoic Acid (PFOA)	0.132	J	ug/kg	1.02	0.043	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.02	0.184	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.02	0.140	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.02	0.077	1
Perfluorooctanesulfonic Acid (PFOS)	2.27		ug/kg	1.02	0.133	1
Perfluorodecanoic Acid (PFDA)	0.132	J	ug/kg	1.02	0.069	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.02	0.294	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.02	0.206	1
Perfluoroundecanoic Acid (PFUnA)	0.201	J	ug/kg	1.02	0.048	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.02	0.157	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.02	0.100	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.02	0.087	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.02	0.072	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.02	0.209	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.02	0.055	1
PFOA/PFOS, Total	2.40	J	ug/kg	1.02	0.043	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-04	Date Collected:	08/12/19 10:20
Client ID:	HVRA-MW101-1.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	70		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		26-160

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-05
Client ID: HVRA-MW101-2.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 10:30
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 08/23/19 15:03
Analyst: MA
Percent Solids: 87%

Extraction Method: EPA 3570
Extraction Date: 08/15/19 09:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	9.00	2.30	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	80		15-110

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-05
Client ID: HVRA-MW101-2.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 10:30
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/21/19 06:57
Analyst: AJ
Percent Solids: 87%

Extraction Method: EPA 537(M)
Extraction Date: 08/19/19 09:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.192	J	ug/kg	1.01	0.023	1
Perfluoropentanoic Acid (PFPeA)	0.509	J	ug/kg	1.01	0.047	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.01	0.040	1
Perfluorohexanoic Acid (PFHxA)	0.263	J	ug/kg	1.01	0.053	1
Perfluoroheptanoic Acid (PFHpA)	0.260	J	ug/kg	1.01	0.046	1
Perfluorohexanesulfonic Acid (PFHxS)	0.239	J	ug/kg	1.01	0.061	1
Perfluorooctanoic Acid (PFOA)	0.451	J	ug/kg	1.01	0.042	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.01	0.182	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.01	0.138	1
Perfluorononanoic Acid (PFNA)	0.746	J	ug/kg	1.01	0.076	1
Perfluorooctanesulfonic Acid (PFOS)	11.3		ug/kg	1.01	0.132	1
Perfluorodecanoic Acid (PFDA)	0.156	J	ug/kg	1.01	0.068	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.01	0.291	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.01	0.204	1
Perfluoroundecanoic Acid (PFUnA)	0.071	J	ug/kg	1.01	0.047	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.01	0.155	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.01	0.099	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.01	0.086	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.01	0.071	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.01	0.207	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.01	0.055	1
PFOA/PFOS, Total	11.8	J	ug/kg	1.01	0.042	1

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-05	Date Collected:	08/12/19 10:30
Client ID:	HVRA-MW101-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	69		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	66		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**33**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**22**	Q	26-160

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-06	Date Collected:	08/12/19 11:00
Client ID:	HVRA-RB03-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/22/19 07:26
Analytical Date:	08/23/19 16:03		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.01	0.410	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.01	0.398	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.01	0.239	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.01	0.329	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.01	0.226	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.01	0.378	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.01	0.237	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.01	1.34	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.01	0.691	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.01	0.313	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.01	0.506	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.01	0.305	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.01	1.22	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.01	0.651	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.01	0.261	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.01	0.984	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.01	0.582	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.01	0.807	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.01	0.373	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.01	0.328	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.01	0.249	1
PFOA/PFOS, Total	ND		ng/l	2.01	0.237	1

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-06	Date Collected:	08/12/19 11:00
Client ID:	HVRA-RB03-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	48		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	54		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		33-143

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-07
Client ID: HVRA-MW102-0.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 11:15
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 08/20/19 04:28
Analyst: IM
Percent Solids: 93%

Extraction Method: EPA 3546
Extraction Date: 08/18/19 00:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	140	18.	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
3,3'-Dichlorobenzidine	ND		ug/kg	180	47.	1
2,4-Dinitrotoluene	ND		ug/kg	180	36.	1
2,6-Dinitrotoluene	ND		ug/kg	180	30.	1
Fluoranthene	ND		ug/kg	110	20.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	19.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	27.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	210	30.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	190	18.	1
Hexachlorobutadiene	ND		ug/kg	180	26.	1
Hexachlorocyclopentadiene	ND		ug/kg	510	160	1
Hexachloroethane	ND		ug/kg	140	29.	1
Isophorone	ND		ug/kg	160	23.	1
Naphthalene	ND		ug/kg	180	22.	1
Nitrobenzene	ND		ug/kg	160	26.	1
NDPA/DPA	ND		ug/kg	140	20.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	27.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	61.	1
Butyl benzyl phthalate	ND		ug/kg	180	45.	1
Di-n-butylphthalate	ND		ug/kg	180	34.	1
Di-n-octylphthalate	ND		ug/kg	180	60.	1
Diethyl phthalate	ND		ug/kg	180	16.	1
Dimethyl phthalate	ND		ug/kg	180	37.	1
Benzo(a)anthracene	ND		ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-07 Date Collected: 08/12/19 11:15
Client ID: HVRA-MW102-0.5 Date Received: 08/12/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	ND		ug/kg	110	30.	1
Benzo(k)fluoranthene	ND		ug/kg	110	28.	1
Chrysene	ND		ug/kg	110	18.	1
Acenaphthylene	ND		ug/kg	140	27.	1
Anthracene	ND		ug/kg	110	35.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	17.	1
Phenanthrene	ND		ug/kg	110	22.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	20.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	140	25.	1
Pyrene	ND		ug/kg	110	18.	1
Biphenyl	ND		ug/kg	400	41.	1
4-Chloroaniline	ND		ug/kg	180	32.	1
2-Nitroaniline	ND		ug/kg	180	34.	1
3-Nitroaniline	ND		ug/kg	180	34.	1
4-Nitroaniline	ND		ug/kg	180	74.	1
Dibenzofuran	ND		ug/kg	180	17.	1
2-Methylnaphthalene	ND		ug/kg	210	21.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	18.	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	26.	1
2-Chlorophenol	ND		ug/kg	180	21.	1
2,4-Dichlorophenol	ND		ug/kg	160	28.	1
2,4-Dimethylphenol	ND		ug/kg	180	59.	1
2-Nitrophenol	ND		ug/kg	380	67.	1
4-Nitrophenol	ND		ug/kg	250	72.	1
2,4-Dinitrophenol	ND		ug/kg	850	83.	1
4,6-Dinitro-o-cresol	ND		ug/kg	460	85.	1
Pentachlorophenol	ND		ug/kg	140	39.	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
2,4,5-Trichlorophenol	ND		ug/kg	180	34.	1
Carbazole	ND		ug/kg	180	17.	1
Atrazine	ND		ug/kg	140	62.	1
Benzaldehyde	63	J	ug/kg	230	48.	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-07	Date Collected:	08/12/19 11:15
Client ID:	HVRA-MW102-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	180	54.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	180	36.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	70		25-120
Phenol-d6	78		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	74		30-120
2,4,6-Tribromophenol	71		10-136
4-Terphenyl-d14	69		18-120

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-07	Date Collected:	08/12/19 11:15
Client ID:	HVRA-MW102-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	08/15/19 09:43
Analytical Date:	08/23/19 15:28		
Analyst:	MA		
Percent Solids:	93%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	7.70	1.96	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	83		15-110

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-07	Date Collected:	08/12/19 11:15
Client ID:	HVRA-MW102-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/19/19 09:28
Analytical Date:	08/21/19 07:13		
Analyst:	AJ		
Percent Solids:	93%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.176	J	ug/kg	0.975	0.022	1
Perfluoropentanoic Acid (PFPeA)	0.118	J	ug/kg	0.975	0.045	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	0.975	0.038	1
Perfluorohexanoic Acid (PFHxA)	0.137	J	ug/kg	0.975	0.051	1
Perfluoroheptanoic Acid (PFHpA)	0.174	J	ug/kg	0.975	0.044	1
Perfluorohexanesulfonic Acid (PFHxS)	0.172	J	ug/kg	0.975	0.059	1
Perfluorooctanoic Acid (PFOA)	0.415	J	ug/kg	0.975	0.041	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	0.975	0.175	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	0.975	0.133	1
Perfluorononanoic Acid (PFNA)	0.146	J	ug/kg	0.975	0.073	1
Perfluorooctanesulfonic Acid (PFOS)	1.29		ug/kg	0.975	0.127	1
Perfluorodecanoic Acid (PFDA)	0.089	J	ug/kg	0.975	0.065	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	0.975	0.280	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	0.975	0.196	1
Perfluoroundecanoic Acid (PFUnA)	0.080	J	ug/kg	0.975	0.046	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	0.975	0.149	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	0.975	0.096	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	0.975	0.082	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	0.975	0.068	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	0.975	0.199	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	0.975	0.053	1
PFOA/PFOS, Total	1.71	J	ug/kg	0.975	0.041	1

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-07	Date Collected:	08/12/19 11:15
Client ID:	HVRA-MW102-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	64		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	124		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	98		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	71		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**29**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	46		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	40		26-160

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-08
Client ID: HVRA-MW102-2.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 11:30
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 08/20/19 03:38
Analyst: IM
Percent Solids: 94%

Extraction Method: EPA 3546
Extraction Date: 08/18/19 00:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	140	18.	1
Hexachlorobenzene	ND		ug/kg	100	19.	1
Bis(2-chloroethyl)ether	ND		ug/kg	160	24.	1
2-Chloronaphthalene	ND		ug/kg	170	17.	1
3,3'-Dichlorobenzidine	ND		ug/kg	170	46.	1
2,4-Dinitrotoluene	ND		ug/kg	170	35.	1
2,6-Dinitrotoluene	ND		ug/kg	170	30.	1
Fluoranthene	ND		ug/kg	100	20.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	170	19.	1
4-Bromophenyl phenyl ether	ND		ug/kg	170	26.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	210	30.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	190	17.	1
Hexachlorobutadiene	ND		ug/kg	170	25.	1
Hexachlorocyclopentadiene	ND		ug/kg	500	160	1
Hexachloroethane	ND		ug/kg	140	28.	1
Isophorone	ND		ug/kg	160	22.	1
Naphthalene	ND		ug/kg	170	21.	1
Nitrobenzene	ND		ug/kg	160	26.	1
NDPA/DPA	ND		ug/kg	140	20.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	170	27.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	170	60.	1
Butyl benzyl phthalate	ND		ug/kg	170	44.	1
Di-n-butylphthalate	ND		ug/kg	170	33.	1
Di-n-octylphthalate	ND		ug/kg	170	59.	1
Diethyl phthalate	ND		ug/kg	170	16.	1
Dimethyl phthalate	ND		ug/kg	170	36.	1
Benzo(a)anthracene	ND		ug/kg	100	20.	1
Benzo(a)pyrene	ND		ug/kg	140	42.	1

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-08	Date Collected:	08/12/19 11:30
Client ID:	HVRA-MW102-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	ND		ug/kg	100	29.	1
Benzo(k)fluoranthene	ND		ug/kg	100	28.	1
Chrysene	ND		ug/kg	100	18.	1
Acenaphthylene	ND		ug/kg	140	27.	1
Anthracene	ND		ug/kg	100	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	20.	1
Fluorene	ND		ug/kg	170	17.	1
Phenanthrene	ND		ug/kg	100	21.	1
Dibenzo(a,h)anthracene	ND		ug/kg	100	20.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	140	24.	1
Pyrene	ND		ug/kg	100	17.	1
Biphenyl	ND		ug/kg	400	40.	1
4-Chloroaniline	ND		ug/kg	170	32.	1
2-Nitroaniline	ND		ug/kg	170	34.	1
3-Nitroaniline	ND		ug/kg	170	33.	1
4-Nitroaniline	ND		ug/kg	170	72.	1
Dibenzofuran	ND		ug/kg	170	16.	1
2-Methylnaphthalene	ND		ug/kg	210	21.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	170	18.	1
Acetophenone	ND		ug/kg	170	22.	1
2,4,6-Trichlorophenol	ND		ug/kg	100	33.	1
p-Chloro-m-cresol	ND		ug/kg	170	26.	1
2-Chlorophenol	ND		ug/kg	170	20.	1
2,4-Dichlorophenol	ND		ug/kg	160	28.	1
2,4-Dimethylphenol	ND		ug/kg	170	57.	1
2-Nitrophenol	ND		ug/kg	380	65.	1
4-Nitrophenol	ND		ug/kg	240	71.	1
2,4-Dinitrophenol	ND		ug/kg	840	81.	1
4,6-Dinitro-o-cresol	ND		ug/kg	450	84.	1
Pentachlorophenol	ND		ug/kg	140	38.	1
Phenol	ND		ug/kg	170	26.	1
2-Methylphenol	ND		ug/kg	170	27.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	250	27.	1
2,4,5-Trichlorophenol	ND		ug/kg	170	33.	1
Carbazole	ND		ug/kg	170	17.	1
Atrazine	ND		ug/kg	140	61.	1
Benzaldehyde	ND		ug/kg	230	47.	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-08	Date Collected:	08/12/19 11:30
Client ID:	HVRA-MW102-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	170	53.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	170	35.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	78		25-120
Phenol-d6	88		10-120
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	73		30-120
2,4,6-Tribromophenol	83		10-136
4-Terphenyl-d14	67		18-120

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-08
Client ID: HVRA-MW102-2.0
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/12/19 11:30
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 08/23/19 15:54
Analyst: MA
Percent Solids: 94%
Extraction Method: EPA 3570
Extraction Date: 08/15/19 09:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	7.53	1.92	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	81		15-110

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-08
Client ID: HVRA-MW102-2.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 11:30
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/21/19 07:30
Analyst: AJ
Percent Solids: 94%

Extraction Method: EPA 537(M)
Extraction Date: 08/19/19 09:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.060	J	ug/kg	0.976	0.022	1
Perfluoropentanoic Acid (PFPeA)	0.045	J	ug/kg	0.976	0.045	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	0.976	0.038	1
Perfluorohexanoic Acid (PFHxA)	0.082	J	ug/kg	0.976	0.051	1
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	0.976	0.044	1
Perfluorohexanesulfonic Acid (PFHxS)	0.063	J	ug/kg	0.976	0.059	1
Perfluorooctanoic Acid (PFOA)	0.127	J	ug/kg	0.976	0.041	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	0.976	0.175	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	0.976	0.133	1
Perfluorononanoic Acid (PFNA)	ND		ug/kg	0.976	0.073	1
Perfluorooctanesulfonic Acid (PFOS)	0.213	J	ug/kg	0.976	0.127	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	0.976	0.065	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	0.976	0.280	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	0.976	0.197	1
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	0.976	0.046	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	0.976	0.149	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	0.976	0.096	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	0.976	0.082	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	0.976	0.068	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	0.976	0.200	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	0.976	0.053	1
PFOA/PFOS, Total	0.340	J	ug/kg	0.976	0.041	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-08	Date Collected:	08/12/19 11:30
Client ID:	HVRA-MW102-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	66		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**28**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**28**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	43		26-160

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-09	Date Collected:	08/12/19 12:50
Client ID:	HVRA-FTB01-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/22/19 07:26
Analytical Date:	08/23/19 16:19		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.76	0.359	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.76	0.348	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.76	0.210	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.76	0.289	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.76	0.198	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.76	0.331	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.76	0.208	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.76	1.17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.76	0.606	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.76	0.275	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.76	0.444	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.76	0.268	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.76	1.07	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.76	0.570	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.76	0.229	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.76	0.863	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.76	0.510	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.76	0.708	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.76	0.327	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.76	0.288	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.76	0.218	1
PFOA/PFOS, Total	ND		ng/l	1.76	0.208	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-09	Date Collected:	08/12/19 12:50
Client ID:	HVRA-FTB01-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	45		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	65		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		33-143

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-10	Date Collected:	08/12/19 00:00
Client ID:	HVRA-LTB01-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/22/19 07:26
Analytical Date:	08/23/19 16:36		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.78	0.364	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.78	0.354	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	0.212	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.78	0.293	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	0.201	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.336	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.78	0.211	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.78	1.19	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.614	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	0.278	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.78	0.450	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.271	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.578	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.232	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.875	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.518	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.718	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.332	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.292	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221	1
PFOA/PFOS, Total	ND		ng/l	1.78	0.211	1

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-10	Date Collected:	08/12/19 00:00
Client ID:	HVRA-LTB01-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	49		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	42		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	33		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		33-143

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-11
Client ID: HVRA-RB04-190812
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 11:45
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/23/19 16:52
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/22/19 07:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.86	0.379	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.86	0.368	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.86	0.221	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.86	0.305	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.86	0.209	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.86	0.349	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.86	0.219	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.86	0.639	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.86	0.290	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.86	0.468	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	0.282	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	1.13	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.602	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.242	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	0.911	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	0.539	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	0.747	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.346	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.304	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	0.230	1
PFOA/PFOS, Total	ND		ng/l	1.86	0.219	1

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-11	Date Collected:	08/12/19 11:45
Client ID:	HVRA-RB04-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	38		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	39		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	75		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		33-143

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-12
Client ID: HVRA-MW103-0.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 11:50
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 08/20/19 04:53
Analyst: IM
Percent Solids: 65%

Extraction Method: EPA 3546
Extraction Date: 08/18/19 00:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	200	26.	1
Hexachlorobenzene	ND		ug/kg	150	28.	1
Bis(2-chloroethyl)ether	ND		ug/kg	230	34.	1
2-Chloronaphthalene	ND		ug/kg	250	25.	1
3,3'-Dichlorobenzidine	ND		ug/kg	250	68.	1
2,4-Dinitrotoluene	ND		ug/kg	250	51.	1
2,6-Dinitrotoluene	ND		ug/kg	250	44.	1
Fluoranthene	39	J	ug/kg	150	29.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	250	27.	1
4-Bromophenyl phenyl ether	ND		ug/kg	250	39.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	300	43.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	270	25.	1
Hexachlorobutadiene	ND		ug/kg	250	37.	1
Hexachlorocyclopentadiene	ND		ug/kg	730	230	1
Hexachloroethane	ND		ug/kg	200	41.	1
Isophorone	ND		ug/kg	230	33.	1
Naphthalene	ND		ug/kg	250	31.	1
Nitrobenzene	ND		ug/kg	230	38.	1
NDPA/DPA	ND		ug/kg	200	29.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	250	39.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	250	88.	1
Butyl benzyl phthalate	ND		ug/kg	250	64.	1
Di-n-butylphthalate	ND		ug/kg	250	48.	1
Di-n-octylphthalate	ND		ug/kg	250	86.	1
Diethyl phthalate	ND		ug/kg	250	24.	1
Dimethyl phthalate	ND		ug/kg	250	53.	1
Benzo(a)anthracene	ND		ug/kg	150	29.	1
Benzo(a)pyrene	ND		ug/kg	200	62.	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-12	Date Collected:	08/12/19 11:50
Client ID:	HVRA-MW103-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	ND		ug/kg	150	43.	1
Benzo(k)fluoranthene	ND		ug/kg	150	41.	1
Chrysene	ND		ug/kg	150	26.	1
Acenaphthylene	ND		ug/kg	200	39.	1
Anthracene	ND		ug/kg	150	50.	1
Benzo(ghi)perylene	ND		ug/kg	200	30.	1
Fluorene	ND		ug/kg	250	25.	1
Phenanthrene	ND		ug/kg	150	31.	1
Dibenzo(a,h)anthracene	ND		ug/kg	150	29.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	200	35.	1
Pyrene	33	J	ug/kg	150	25.	1
Biphenyl	ND		ug/kg	580	59.	1
4-Chloroaniline	ND		ug/kg	250	46.	1
2-Nitroaniline	ND		ug/kg	250	49.	1
3-Nitroaniline	ND		ug/kg	250	48.	1
4-Nitroaniline	ND		ug/kg	250	100	1
Dibenzofuran	ND		ug/kg	250	24.	1
2-Methylnaphthalene	ND		ug/kg	300	31.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	250	26.	1
Acetophenone	ND		ug/kg	250	31.	1
2,4,6-Trichlorophenol	ND		ug/kg	150	48.	1
p-Chloro-m-cresol	ND		ug/kg	250	38.	1
2-Chlorophenol	ND		ug/kg	250	30.	1
2,4-Dichlorophenol	ND		ug/kg	230	41.	1
2,4-Dimethylphenol	ND		ug/kg	250	84.	1
2-Nitrophenol	ND		ug/kg	550	96.	1
4-Nitrophenol	ND		ug/kg	360	100	1
2,4-Dinitrophenol	ND		ug/kg	1200	120	1
4,6-Dinitro-o-cresol	ND		ug/kg	660	120	1
Pentachlorophenol	ND		ug/kg	200	56.	1
Phenol	ND		ug/kg	250	38.	1
2-Methylphenol	ND		ug/kg	250	39.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	370	40.	1
2,4,5-Trichlorophenol	ND		ug/kg	250	49.	1
Carbazole	ND		ug/kg	250	25.	1
Atrazine	ND		ug/kg	200	89.	1
Benzaldehyde	290	J	ug/kg	340	69.	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-12	Date Collected:	08/12/19 11:50
Client ID:	HVRA-MW103-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	250	77.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	250	51.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	59		25-120
Phenol-d6	72		10-120
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	68		30-120
2,4,6-Tribromophenol	72		10-136
4-Terphenyl-d14	58		18-120

Project Name: HVRA | **Lab Number:** L1936143

Project Number: 18.8090 | **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-12	Date Collected:	08/12/19 11:50
Client ID:	HVRA-MW103-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	08/15/19 09:44
Analytical Date:	08/23/19 16:20		
Analyst:	MA		
Percent Solids:	65%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	10.3	2.63	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	82		15-110

Project Name: HVRA | **Lab Number:** L1936143
Project Number: 18.8090 | **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-12	Date Collected:	08/12/19 11:50
Client ID:	HVRA-MW103-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/19/19 09:28
Analytical Date:	08/21/19 07:47		
Analyst:	AJ		
Percent Solids:	65%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.252	J	ug/kg	1.47	0.033	1
Perfluoropentanoic Acid (PFPeA)	0.178	J	ug/kg	1.47	0.068	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.47	0.057	1
Perfluorohexanoic Acid (PFHxA)	0.244	J	ug/kg	1.47	0.077	1
Perfluoroheptanoic Acid (PFHpA)	0.250	J	ug/kg	1.47	0.066	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.47	0.089	1
Perfluorooctanoic Acid (PFOA)	0.850	J	ug/kg	1.47	0.062	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.47	0.264	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.47	0.201	1
Perfluorononanoic Acid (PFNA)	0.391	J	ug/kg	1.47	0.110	1
Perfluorooctanesulfonic Acid (PFOS)	0.958	J	ug/kg	1.47	0.191	1
Perfluorodecanoic Acid (PFDA)	0.140	J	ug/kg	1.47	0.099	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.47	0.422	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.47	0.296	1
Perfluoroundecanoic Acid (PFUnA)	0.200	J	ug/kg	1.47	0.069	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.47	0.225	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.47	0.144	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.47	0.124	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.47	0.103	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.47	0.301	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.47	0.079	1
PFOA/PFOS, Total	1.81	J	ug/kg	1.47	0.062	1

Project Name: HVRA | **Lab Number:** L1936143

Project Number: 18.8090 | **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-12	Date Collected:	08/12/19 11:50
Client ID:	HVRA-MW103-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	61		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	69		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**44**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		26-160

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-13
Client ID: HVRA-MW103-2.0
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/12/19 12:00
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 08/20/19 04:03
Analyst: IM
Percent Solids: 87%
Extraction Method: EPA 3546
Extraction Date: 08/18/19 00:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	150	19.	1
Hexachlorobenzene	ND		ug/kg	110	21.	1
Bis(2-chloroethyl)ether	ND		ug/kg	170	25.	1
2-Chloronaphthalene	ND		ug/kg	190	19.	1
3,3'-Dichlorobenzidine	ND		ug/kg	190	50.	1
2,4-Dinitrotoluene	ND		ug/kg	190	38.	1
2,6-Dinitrotoluene	ND		ug/kg	190	32.	1
Fluoranthene	34	J	ug/kg	110	22.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	190	20.	1
4-Bromophenyl phenyl ether	ND		ug/kg	190	29.	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	190	28.	1
Hexachlorocyclopentadiene	ND		ug/kg	540	170	1
Hexachloroethane	ND		ug/kg	150	30.	1
Isophorone	ND		ug/kg	170	24.	1
Naphthalene	ND		ug/kg	190	23.	1
Nitrobenzene	ND		ug/kg	170	28.	1
NDPA/DPA	ND		ug/kg	150	21.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	190	29.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	190	65.	1
Butyl benzyl phthalate	ND		ug/kg	190	47.	1
Di-n-butylphthalate	ND		ug/kg	190	36.	1
Di-n-octylphthalate	ND		ug/kg	190	64.	1
Diethyl phthalate	ND		ug/kg	190	17.	1
Dimethyl phthalate	ND		ug/kg	190	39.	1
Benzo(a)anthracene	ND		ug/kg	110	21.	1
Benzo(a)pyrene	ND		ug/kg	150	46.	1

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-13	Date Collected:	08/12/19 12:00
Client ID:	HVRA-MW103-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	ND		ug/kg	110	32.	1
Benzo(k)fluoranthene	ND		ug/kg	110	30.	1
Chrysene	ND		ug/kg	110	20.	1
Acenaphthylene	ND		ug/kg	150	29.	1
Anthracene	ND		ug/kg	110	37.	1
Benzo(ghi)perylene	ND		ug/kg	150	22.	1
Fluorene	ND		ug/kg	190	18.	1
Phenanthrene	ND		ug/kg	110	23.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	22.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	150	26.	1
Pyrene	31	J	ug/kg	110	19.	1
Biphenyl	ND		ug/kg	430	44.	1
4-Chloroaniline	ND		ug/kg	190	34.	1
2-Nitroaniline	ND		ug/kg	190	36.	1
3-Nitroaniline	ND		ug/kg	190	35.	1
4-Nitroaniline	ND		ug/kg	190	78.	1
Dibenzofuran	ND		ug/kg	190	18.	1
2-Methylnaphthalene	ND		ug/kg	220	23.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	190	20.	1
Acetophenone	ND		ug/kg	190	23.	1
2,4,6-Trichlorophenol	ND		ug/kg	110	36.	1
p-Chloro-m-cresol	ND		ug/kg	190	28.	1
2-Chlorophenol	ND		ug/kg	190	22.	1
2,4-Dichlorophenol	ND		ug/kg	170	30.	1
2,4-Dimethylphenol	ND		ug/kg	190	62.	1
2-Nitrophenol	ND		ug/kg	400	71.	1
4-Nitrophenol	ND		ug/kg	260	77.	1
2,4-Dinitrophenol	ND		ug/kg	900	88.	1
4,6-Dinitro-o-cresol	ND		ug/kg	490	90.	1
Pentachlorophenol	ND		ug/kg	150	41.	1
Phenol	ND		ug/kg	190	28.	1
2-Methylphenol	ND		ug/kg	190	29.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	270	29.	1
2,4,5-Trichlorophenol	ND		ug/kg	190	36.	1
Carbazole	ND		ug/kg	190	18.	1
Atrazine	ND		ug/kg	150	66.	1
Benzaldehyde	140	J	ug/kg	250	51.	1

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-13	Date Collected:	08/12/19 12:00
Client ID:	HVRA-MW103-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Caprolactam	ND		ug/kg	190	57.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	190	38.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	54		25-120
Phenol-d6	70		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	70		30-120
2,4,6-Tribromophenol	77		10-136
4-Terphenyl-d14	61		18-120

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-13	Date Collected:	08/12/19 12:00
Client ID:	HVRA-MW103-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	08/15/19 09:44
Analytical Date:	08/23/19 16:45		
Analyst:	MA		
Percent Solids:	87%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	7.67	1.96	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	82		15-110

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-13	Date Collected:	08/12/19 12:00
Client ID:	HVRA-MW103-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/19/19 09:28
Analytical Date:	08/21/19 08:04		
Analyst:	AJ		
Percent Solids:	87%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.093	J	ug/kg	1.02	0.023	1
Perfluoropentanoic Acid (PFPeA)	0.089	J	ug/kg	1.02	0.047	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.02	0.040	1
Perfluorohexanoic Acid (PFHxA)	0.144	J	ug/kg	1.02	0.053	1
Perfluoroheptanoic Acid (PFHpA)	0.085	J	ug/kg	1.02	0.046	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.02	0.062	1
Perfluorooctanoic Acid (PFOA)	0.570	J	ug/kg	1.02	0.043	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.02	0.182	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.02	0.139	1
Perfluorononanoic Acid (PFNA)	0.239	J	ug/kg	1.02	0.076	1
Perfluorooctanesulfonic Acid (PFOS)	0.550	J	ug/kg	1.02	0.132	1
Perfluorodecanoic Acid (PFDA)	0.075	J	ug/kg	1.02	0.068	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.02	0.292	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.02	0.205	1
Perfluoroundecanoic Acid (PFUnA)	0.053	J	ug/kg	1.02	0.048	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.02	0.155	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.02	0.100	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.02	0.086	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.02	0.071	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.02	0.208	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.02	0.055	1
PFOA/PFOS, Total	1.12	J	ug/kg	1.02	0.043	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-13	Date Collected:	08/12/19 12:00
Client ID:	HVRA-MW103-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	45		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	37		26-160

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-14	Date Collected:	08/12/19 12:10
Client ID:	HVRA-RB05-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/22/19 07:26
Analytical Date:	08/26/19 12:32		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.95	0.398	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.95	0.387	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.95	0.232	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.95	0.320	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.95	0.220	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.95	0.367	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.95	0.230	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.95	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.95	0.672	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.95	0.305	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.95	0.492	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.95	0.297	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.95	1.18	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.95	0.633	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.95	0.254	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.95	0.957	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.95	0.566	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.95	0.785	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.95	0.363	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.95	0.320	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.95	0.242	1
PFOA/PFOS, Total	ND		ng/l	1.95	0.230	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-14	Date Collected:	08/12/19 12:10
Client ID:	HVRA-RB05-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	45		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	44		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		33-143

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-15	Date Collected:	08/12/19 12:15
Client ID:	HVRA-MW104-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	08/15/19 09:44
Analytical Date:	08/23/19 17:10		
Analyst:	MA		
Percent Solids:	93%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	7.56	1.93	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	83		15-110

Project Name: HVRA | **Lab Number:** L1936143
Project Number: 18.8090 | **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-15	Date Collected:	08/12/19 12:15
Client ID:	HVRA-MW104-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 537(M)
Analytical Method:	122,537(M)	Extraction Date:	08/19/19 09:28
Analytical Date:	08/21/19 08:21		
Analyst:	AJ		
Percent Solids:	93%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.934	J	ug/kg	1.04	0.024	1
Perfluoropentanoic Acid (PFPeA)	0.954	J	ug/kg	1.04	0.048	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.04	0.041	1
Perfluorohexanoic Acid (PFHxA)	1.91		ug/kg	1.04	0.055	1
Perfluoroheptanoic Acid (PFHpA)	0.431	J	ug/kg	1.04	0.047	1
Perfluorohexanesulfonic Acid (PFHxS)	16.6		ug/kg	1.04	0.063	1
Perfluorooctanoic Acid (PFOA)	2.42		ug/kg	1.04	0.044	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.441	J	ug/kg	1.04	0.187	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.428	J	ug/kg	1.04	0.142	1
Perfluorononanoic Acid (PFNA)	1.43		ug/kg	1.04	0.078	1
Perfluorooctanesulfonic Acid (PFOS)	129		ug/kg	1.04	0.136	1
Perfluorodecanoic Acid (PFDA)	0.174	J	ug/kg	1.04	0.070	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.04	0.300	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.04	0.210	1
Perfluoroundecanoic Acid (PFUnA)	0.318	J	ug/kg	1.04	0.049	1
Perfluorodecanesulfonic Acid (PFDS)	2.89		ug/kg	1.04	0.160	1
Perfluorooctanesulfonamide (FOSA)	6.47		ug/kg	1.04	0.102	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.04	0.088	1
Perfluorododecanoic Acid (PFDoA)	0.128	J	ug/kg	1.04	0.073	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.04	0.214	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.04	0.056	1
PFOA/PFOS, Total	131		ug/kg	1.04	0.044	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-15	Date Collected:	08/12/19 12:15
Client ID:	HVRA-MW104-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**192**	Q	70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	**188**	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	137		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	148		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	145		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**44**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	83		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		26-160

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-16	Date Collected:	08/12/19 12:20
Client ID:	HVRA-MW104-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	08/15/19 09:44
Analytical Date:	08/23/19 17:35		
Analyst:	MA		
Percent Solids:	94%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	7.43	1.89	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	81		15-110

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-16
Client ID: HVRA-MW104-2.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 12:20
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/21/19 22:55
Analyst: AJ
Percent Solids: 94%

Extraction Method: EPA 537(M)
Extraction Date: 08/19/19 09:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.268	J	ug/kg	1.06	0.024	1
Perfluoropentanoic Acid (PFPeA)	0.335	J	ug/kg	1.06	0.049	1
Perfluorobutanesulfonic Acid (PFBS)	0.111	J	ug/kg	1.06	0.041	1
Perfluorohexanoic Acid (PFHxA)	0.795	J	ug/kg	1.06	0.056	1
Perfluoroheptanoic Acid (PFHpA)	0.143	J	ug/kg	1.06	0.048	1
Perfluorohexanesulfonic Acid (PFHxS)	12.1		ug/kg	1.06	0.064	1
Perfluorooctanoic Acid (PFOA)	0.688	J	ug/kg	1.06	0.044	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.06	0.190	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.516	J	ug/kg	1.06	0.144	1
Perfluorononanoic Acid (PFNA)	0.398	J	ug/kg	1.06	0.079	1
Perfluorooctanesulfonic Acid (PFOS)	109		ug/kg	1.06	0.137	1
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.06	0.071	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.06	0.303	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.06	0.213	1
Perfluoroundecanoic Acid (PFUnA)	0.081	J	ug/kg	1.06	0.049	1
Perfluorodecanesulfonic Acid (PFDS)	0.730	J	ug/kg	1.06	0.162	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.06	0.104	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.06	0.089	1
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.06	0.074	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.06	0.216	1
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.06	0.057	1
PFOA/PFOS, Total	110	J	ug/kg	1.06	0.044	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-16	Date Collected:	08/12/19 12:20
Client ID:	HVRA-MW104-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	113		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	147		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	69		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	50		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**36**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**41**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	122		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		26-160

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-17	Date Collected:	08/12/19 12:30
Client ID:	HVRA-RB06-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/22/19 07:26
Analytical Date:	08/26/19 12:49		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.91	0.389	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.91	0.378	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.91	0.227	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.91	0.313	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.91	0.215	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.91	0.359	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.91	0.225	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.91	1.27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.91	0.656	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.91	0.298	1
Perfluorooctanesulfonic Acid (PFOS)	0.542	J	ng/l	1.91	0.481	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.91	0.290	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.91	1.16	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.91	0.618	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.91	0.248	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.91	0.935	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.91	0.553	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.91	0.767	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.91	0.355	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.91	0.312	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.91	0.237	1
PFOA/PFOS, Total	0.542	J	ng/l	1.91	0.225	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-17	Date Collected:	08/12/19 12:30
Client ID:	HVRA-RB06-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	41		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	49		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		33-143

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-18	Date Collected:	08/12/19 12:40
Client ID:	HVRA-MW105-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	08/15/19 09:44
Analytical Date:	08/23/19 18:00		
Analyst:	MA		
Percent Solids:	69%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	10.8	2.76	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	79		15-110

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-18
Client ID: HVRA-MW105-0.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 12:40
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/21/19 23:12
Analyst: AJ
Percent Solids: 69%

Extraction Method: EPA 537(M)
Extraction Date: 08/19/19 09:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.46		ug/kg	1.45	0.033	1
Perfluoropentanoic Acid (PFPeA)	2.00		ug/kg	1.45	0.067	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.45	0.057	1
Perfluorohexanoic Acid (PFHxA)	0.964	J	ug/kg	1.45	0.076	1
Perfluoroheptanoic Acid (PFHpA)	0.304	J	ug/kg	1.45	0.065	1
Perfluorohexanesulfonic Acid (PFHxS)	6.16		ug/kg	1.45	0.088	1
Perfluorooctanoic Acid (PFOA)	1.10	J	ug/kg	1.45	0.061	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.45	0.260	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.45	0.198	1
Perfluorononanoic Acid (PFNA)	0.878	J	ug/kg	1.45	0.109	1
Perfluorooctanesulfonic Acid (PFOS)	89.5		ug/kg	1.45	0.188	1
Perfluorodecanoic Acid (PFDA)	0.953	J	ug/kg	1.45	0.097	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.45	0.416	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.45	0.292	1
Perfluoroundecanoic Acid (PFUnA)	0.648	J	ug/kg	1.45	0.068	1
Perfluorodecanesulfonic Acid (PFDS)	2.47		ug/kg	1.45	0.222	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.45	0.142	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.262	J	ug/kg	1.45	0.122	1
Perfluorododecanoic Acid (PFDoA)	0.492	J	ug/kg	1.45	0.102	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.45	0.297	1
Perfluorotetradecanoic Acid (PFTA)	0.137	J	ug/kg	1.45	0.078	1
PFOA/PFOS, Total	90.6	J	ug/kg	1.45	0.061	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-18	Date Collected:	08/12/19 12:40
Client ID:	HVRA-MW105-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	122		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	42		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	49		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**40**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**40**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		26-160

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-19	Date Collected:	08/12/19 12:46
Client ID:	HVRA-MW105-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3570
Analytical Method:	1,8270D-SIM	Extraction Date:	08/15/19 09:44
Analytical Date:	08/23/19 18:25		
Analyst:	MA		
Percent Solids:	94%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ug/kg	8.24	2.10	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	85		15-110

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-19
Client ID: HVRA-MW105-2.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 12:46
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/21/19 23:29
Analyst: AJ
Percent Solids: 94%

Extraction Method: EPA 537(M)
Extraction Date: 08/19/19 09:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.807	J	ug/kg	0.953	0.022	1
Perfluoropentanoic Acid (PFPeA)	1.34		ug/kg	0.953	0.044	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	0.953	0.037	1
Perfluorohexanoic Acid (PFHxA)	0.723	J	ug/kg	0.953	0.050	1
Perfluoroheptanoic Acid (PFHpA)	0.185	J	ug/kg	0.953	0.043	1
Perfluorohexanesulfonic Acid (PFHxS)	5.57		ug/kg	0.953	0.058	1
Perfluorooctanoic Acid (PFOA)	0.648	J	ug/kg	0.953	0.040	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	0.953	0.171	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.223	J	ug/kg	0.953	0.130	1
Perfluorononanoic Acid (PFNA)	0.838	J	ug/kg	0.953	0.072	1
Perfluorooctanesulfonic Acid (PFOS)	113		ug/kg	0.953	0.124	1
Perfluorodecanoic Acid (PFDA)	0.529	J	ug/kg	0.953	0.064	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	0.953	0.274	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	0.953	0.192	1
Perfluoroundecanoic Acid (PFUnA)	0.519	J	ug/kg	0.953	0.045	1
Perfluorodecanesulfonic Acid (PFDS)	0.796	J	ug/kg	0.953	0.146	1
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	0.953	0.093	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	0.953	0.081	1
Perfluorododecanoic Acid (PFDoA)	0.279	J	ug/kg	0.953	0.067	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	0.953	0.195	1
Perfluorotetradecanoic Acid (PFTA)	0.071	J	ug/kg	0.953	0.052	1
PFOA/PFOS, Total	114	J	ug/kg	0.953	0.040	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-19	Date Collected:	08/12/19 12:46
Client ID:	HVRA-MW105-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	**49**	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	**59**	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	76		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	**57**	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	**57**	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	63		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**25**	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	**57**	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	33		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**15**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	66		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**16**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	65		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	31		26-160

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/21/19 16:24
Analyst: MA

Extraction Method: EPA 3570
Extraction Date: 08/14/19 22:00

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 02 Batch: WG1272498-1					
1,4-Dioxane	ND		ug/kg	8.00	2.04

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	107		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/22/19 12:31
Analyst: MA
Extraction Method: EPA 3570
Extraction Date: 08/15/19 09:43

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 04-05,07-08,12-13,15-16,18-19 Batch: WG1272650-1					
1,4-Dioxane	ND		ug/kg	8.00	2.04

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	82		15-110

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/19/19 23:02
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 08/18/19 00:45

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,07-08,12-13 Batch: WG1273741-1					
Acenaphthene	ND		ug/kg	130	17.
Hexachlorobenzene	ND		ug/kg	99	18.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	160	16.
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	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.
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.

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/19/19 23:02
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 08/18/19 00:45

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,07-08,12-13 Batch: WG1273741-1					
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.
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.

Project Name: HVRA | **Lab Number:** L1936143
Project Number: 18.8090 | **Report Date:** 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/19/19 23:02
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 08/18/19 00:45

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,07-08,12-13 Batch: WG1273741-1					
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.
Carbazole	ND		ug/kg	160	16.
Atrazine	ND		ug/kg	130	58.
Benzaldehyde	ND		ug/kg	220	45.
Caprolactam	ND		ug/kg	160	50.
2,3,4,6-Tetrachlorophenol	ND		ug/kg	160	33.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	95		25-120
Phenol-d6	98		10-120
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	83		30-120
2,4,6-Tribromophenol	89		10-136
4-Terphenyl-d14	88		18-120

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/21/19 04:23
Analyst: AJ

Extraction Method: EPA 537(M)
Extraction Date: 08/19/19 09:28

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04-05,07-08,12-13,15-16,18-19 Batch: WG1273984-1					
Perfluorobutanoic Acid (PFBA)	0.092	J	ug/kg	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/21/19 04:23
Analyst: AJ

Extraction Method: EPA 537(M)
Extraction Date: 08/19/19 09:28

Parameter	Result	Qualifier	Units	RL	MDL

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04-05,07-08,12-13,15-16,18-19 Batch: WG1273984-1

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	100		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	86		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99		26-160

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/23/19 17:09
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/22/19 07:26

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03,06,09-11,14,17 Batch: WG1275389-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	122,537(M)	Extraction Method:	EPA 537
Analytical Date:	08/23/19 17:09	Extraction Date:	08/22/19 07:26
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03,06,09-11,14,17 Batch: WG1275389-1

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	45		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	43		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	47		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 02 Batch: WG1272498-2 WG1272498-3								
1,4-Dioxane	97		101		40-140	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	**114**	Q	108		15-110

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 04-05,07-08,12-13,15-16,18-19 Batch: WG1272650-2 WG1272650-3								
1,4-Dioxane	103		106		40-140	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	88		87		15-110

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,07-08,12-13 Batch: WG1273741-2 WG1273741-3								
Acenaphthene	69		76		31-137	10		50
Hexachlorobenzene	71		79		40-140	11		50
Bis(2-chloroethyl)ether	74		78		40-140	5		50
2-Chloronaphthalene	68		74		40-140	8		50
3,3'-Dichlorobenzidine	67		74		40-140	10		50
2,4-Dinitrotoluene	83		90		40-132	8		50
2,6-Dinitrotoluene	81		87		40-140	7		50
Fluoranthene	72		78		40-140	8		50
4-Chlorophenyl phenyl ether	69		74		40-140	7		50
4-Bromophenyl phenyl ether	73		77		40-140	5		50
Bis(2-chloroisopropyl)ether	57		61		40-140	7		50
Bis(2-chloroethoxy)methane	73		82		40-117	12		50
Hexachlorobutadiene	66		71		40-140	7		50
Hexachlorocyclopentadiene	61		70		40-140	14		50
Hexachloroethane	71		76		40-140	7		50
Isophorone	79		86		40-140	8		50
Naphthalene	69		76		40-140	10		50
Nitrobenzene	76		81		40-140	6		50
NDPA/DPA	74		80		36-157	8		50
n-Nitrosodi-n-propylamine	79		86		32-121	8		50
Bis(2-ethylhexyl)phthalate	83		93		40-140	11		50
Butyl benzyl phthalate	84		93		40-140	10		50
Di-n-butylphthalate	86		93		40-140	8		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,07-08,12-13 Batch: WG1273741-2 WG1273741-3								
Di-n-octylphthalate	92		102		40-140	10		50
Diethyl phthalate	76		81		40-140	6		50
Dimethyl phthalate	72		80		40-140	11		50
Benzo(a)anthracene	75		84		40-140	11		50
Benzo(a)pyrene	65		73		40-140	12		50
Benzo(b)fluoranthene	70		78		40-140	11		50
Benzo(k)fluoranthene	67		77		40-140	14		50
Chrysene	68		75		40-140	10		50
Acenaphthylene	71		78		40-140	9		50
Anthracene	75		82		40-140	9		50
Benzo(ghi)perylene	76		84		40-140	10		50
Fluorene	72		79		40-140	9		50
Phenanthrene	70		77		40-140	10		50
Dibenzo(a,h)anthracene	79		88		40-140	11		50
Indeno(1,2,3-cd)pyrene	76		85		40-140	11		50
Pyrene	69		77		35-142	11		50
Biphenyl	72		80		37-127	11		50
4-Chloroaniline	56		64		40-140	13		50
2-Nitroaniline	82		88		47-134	7		50
3-Nitroaniline	66		69		26-129	4		50
4-Nitroaniline	71		76		41-125	7		50
Dibenzofuran	73		79		40-140	8		50
2-Methylnaphthalene	69		77		40-140	11		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,07-08,12-13 Batch: WG1273741-2 WG1273741-3								
1,2,4,5-Tetrachlorobenzene	71		78		40-117	9		50
Acetophenone	78		84		14-144	7		50
2,4,6-Trichlorophenol	75		83		30-130	10		50
p-Chloro-m-cresol	81		89		26-103	9		50
2-Chlorophenol	79		85		25-102	7		50
2,4-Dichlorophenol	78		86		30-130	10		50
2,4-Dimethylphenol	78		87		30-130	11		50
2-Nitrophenol	81		88		30-130	8		50
4-Nitrophenol	84		90		11-114	7		50
2,4-Dinitrophenol	74		78		4-130	5		50
4,6-Dinitro-o-cresol	91		96		10-130	5		50
Pentachlorophenol	73		78		17-109	7		50
Phenol	71		84		26-90	17		50
2-Methylphenol	81		90		30-130.	11		50
3-Methylphenol/4-Methylphenol	79		88		30-130	11		50
2,4,5-Trichlorophenol	80		89		30-130	11		50
Carbazole	75		83		54-128	10		50
Atrazine	84		88		40-140	5		50
Benzaldehyde	80		80		40-140	0		50
Caprolactam	76		82		15-130	8		50
2,3,4,6-Tetrachlorophenol	75		80		40-140	6		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,07-08,12-13 Batch: WG1273741-2 WG1273741-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	75		78		25-120
Phenol-d6	77		84		10-120
Nitrobenzene-d5	74		78		23-120
2-Fluorobiphenyl	64		70		30-120
2,4,6-Tribromophenol	73		78		10-136
4-Terphenyl-d14	67		72		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05,07-08,12-13,15-16,18-19 Batch: WG1273984-2 WG1273984-3								
Perfluorobutanoic Acid (PFBA)	108		107		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	108		107		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	109		109		72-128	0		30
Perfluorohexanoic Acid (PFHxA)	108		108		70-132	0		30
Perfluoroheptanoic Acid (PFHpA)	108		108		71-131	0		30
Perfluorohexanesulfonic Acid (PFHxS)	106		105		67-130	1		30
Perfluorooctanoic Acid (PFOA)	107		105		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	128		115		64-140	11		30
Perfluoroheptanesulfonic Acid (PFHpS)	115		111		70-132	4		30
Perfluorononanoic Acid (PFNA)	108		103		72-129	5		30
Perfluorooctanesulfonic Acid (PFOS)	113		114		68-136	1		30
Perfluorodecanoic Acid (PFDA)	109		108		69-133	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	91		108		65-137	17		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	108		132		63-144	20		30
Perfluoroundecanoic Acid (PFUnA)	104		105		64-136	1		30
Perfluorodecanesulfonic Acid (PFDS)	119		125		59-134	5		30
Perfluorooctanesulfonamide (FOSA)	112		93		67-137	19		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	107		109		61-139	2		30
Perfluorododecanoic Acid (PFDoA)	110		108		69-135	2		30
Perfluorotridecanoic Acid (PFTrDA)	103		100		66-139	3		30
Perfluorotetradecanoic Acid (PFTA)	116		114		69-133	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05,07-08,12-13,15-16,18-19 Batch: WG1273984-2 WG1273984-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		83		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		87		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		80		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		81		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		80		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		91		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		85		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	37		35		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		89		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		86		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		84		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	44		43		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72		65		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		81		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		61		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		78		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		63		26-160

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03,06,09-11,14,17 Batch: WG1275389-2 WG1275389-3								
Perfluorobutanoic Acid (PFBA)	104		103		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	106		104		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	108		104		65-157	4		30
Perfluorohexanoic Acid (PFHxA)	105		104		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	107		106		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	108		109		69-177	1		30
Perfluorooctanoic Acid (PFOA)	104		102		63-159	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	100		97		49-187	3		30
Perfluoroheptanesulfonic Acid (PFHpS)	107		107		61-179	0		30
Perfluorononanoic Acid (PFNA)	103		103		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	110		109		52-151	1		30
Perfluorodecanoic Acid (PFDA)	107		104		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	123		81		56-173	**41**	Q	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	107		98		60-166	9		30
Perfluoroundecanoic Acid (PFUnA)	104		101		60-153	3		30
Perfluorodecanesulfonic Acid (PFDS)	95		113		38-156	17		30
Perfluorooctanesulfonamide (FOSA)	110		111		46-170	1		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	113		109		45-170	4		30
Perfluorododecanoic Acid (PFDoA)	108		109		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	98		98		48-158	0		30
Perfluorotetradecanoic Acid (PFTA)	112		112		59-182	0		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03,06,09-11,14,17 Batch: WG1275389-2 WG1275389-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		97		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		108		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		93		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		93		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		90		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		93		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		95		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	43		43		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		95		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		92		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		84		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	39		44		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		73		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	47		41		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		76		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		71		33-143

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05,07-08,12-13,15-16,18-19 QC Batch ID: WG1273984-4 QC Sample: L1936143-02 Client ID: HVRA-MW100-1.0												
Perfluorooctanesulfonic Acid (PFOS)	363	4.71	362	**0**	Q	-	-		68-136	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90				65-151

Lab Duplicate Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05,07-08,12-13,15-16,18-19 QC Batch ID: WG1273984-5 QC Sample: L1936143-04 Client ID: HVRA-MW101-1.5						
Perfluorobutanoic Acid (PFBA)	0.072J	0.065J	ug/kg	NC		30
Perfluoropentanoic Acid (PFPeA)	0.117J	0.128J	ug/kg	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ug/kg	NC		30
Perfluorohexanoic Acid (PFHxA)	0.164J	0.158J	ug/kg	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.105J	0.077J	ug/kg	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	0.288J	0.318J	ug/kg	NC		30
Perfluorooctanoic Acid (PFOA)	0.132J	0.158J	ug/kg	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ug/kg	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ug/kg	NC		30
Perfluorononanoic Acid (PFNA)	ND	0.109J	ug/kg	NC		30
Perfluorooctanesulfonic Acid (PFOS)	2.27	2.34	ug/kg	3		30
Perfluorodecanoic Acid (PFDA)	0.132J	0.182J	ug/kg	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ug/kg	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ug/kg	NC		30
Perfluoroundecanoic Acid (PFUnA)	0.201J	0.261J	ug/kg	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ug/kg	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ug/kg	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ug/kg	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	0.075J	ug/kg	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ug/kg	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05,07-08,12-13,15-16,18-19 QC Batch ID: WG1273984-5 QC Sample: L1936143-04 Client ID: HVRA-MW101-1.5						
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ug/kg	NC		30
PFOA/PFOS, Total	2.40J	2.50J	ug/kg	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		83		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		94		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		109		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		86		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		91		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		109		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		88		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		90		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		95		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		96		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		98		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	70		78		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		78		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		104		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	2		1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		89		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		98		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		91		26-160

PCBS

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-02	Date Collected:	08/12/19 09:45
Client ID:	HVRA-MW100-1.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	08/17/19 21:16
Analytical Date:	08/20/19 10:51	Cleanup Method:	EPA 3665A
Analyst:	JW	Cleanup Date:	08/19/19
Percent Solids:	92%	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	34.9	3.10	1	A
Aroclor 1221	ND		ug/kg	34.9	3.50	1	A
Aroclor 1232	ND		ug/kg	34.9	7.39	1	A
Aroclor 1242	ND		ug/kg	34.9	4.70	1	A
Aroclor 1248	ND		ug/kg	34.9	5.23	1	A
Aroclor 1254	ND		ug/kg	34.9	3.82	1	A
Aroclor 1260	ND		ug/kg	34.9	6.45	1	A
Aroclor 1262	ND		ug/kg	34.9	4.43	1	A
Aroclor 1268	ND		ug/kg	34.9	3.61	1	A
PCBs, Total	ND		ug/kg	34.9	3.10	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	88		30-150	A
Decachlorobiphenyl	69		30-150	A
2,4,5,6-Tetrachloro-m-xylene	88		30-150	B
Decachlorobiphenyl	86		30-150	B

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-04	Date Collected:	08/12/19 10:20
Client ID:	HVRA-MW101-1.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	08/17/19 21:16
Analytical Date:	08/20/19 01:03	Cleanup Method:	EPA 3665A
Analyst:	WR	Cleanup Date:	08/19/19
Percent Solids:	97%	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	33.9	3.01	1	A
Aroclor 1221	ND		ug/kg	33.9	3.40	1	A
Aroclor 1232	ND		ug/kg	33.9	7.19	1	A
Aroclor 1242	ND		ug/kg	33.9	4.57	1	A
Aroclor 1248	ND		ug/kg	33.9	5.08	1	A
Aroclor 1254	ND		ug/kg	33.9	3.71	1	A
Aroclor 1260	ND		ug/kg	33.9	6.26	1	A
Aroclor 1262	ND		ug/kg	33.9	4.31	1	A
Aroclor 1268	ND		ug/kg	33.9	3.51	1	A
PCBs, Total	ND		ug/kg	33.9	3.01	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		30-150	A
Decachlorobiphenyl	58		30-150	A
2,4,5,6-Tetrachloro-m-xylene	84		30-150	B
Decachlorobiphenyl	76		30-150	B

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-05	Date Collected:	08/12/19 10:30
Client ID:	HVRA-MW101-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	08/17/19 21:16
Analytical Date:	08/20/19 10:39	Cleanup Method:	EPA 3665A
Analyst:	JW	Cleanup Date:	08/19/19
Percent Solids:	87%	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	36.2	3.21	1	A
Aroclor 1221	ND		ug/kg	36.2	3.63	1	A
Aroclor 1232	ND		ug/kg	36.2	7.67	1	A
Aroclor 1242	ND		ug/kg	36.2	4.88	1	A
Aroclor 1248	ND		ug/kg	36.2	5.43	1	A
Aroclor 1254	ND		ug/kg	36.2	3.96	1	A
Aroclor 1260	ND		ug/kg	36.2	6.69	1	A
Aroclor 1262	ND		ug/kg	36.2	4.60	1	A
Aroclor 1268	ND		ug/kg	36.2	3.75	1	A
PCBs, Total	ND		ug/kg	36.2	3.21	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	72		30-150	A
Decachlorobiphenyl	62		30-150	A
2,4,5,6-Tetrachloro-m-xylene	73		30-150	B
Decachlorobiphenyl	78		30-150	B

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-07	Date Collected:	08/12/19 11:15
Client ID:	HVRA-MW102-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	08/17/19 21:16
Analytical Date:	08/20/19 11:03	Cleanup Method:	EPA 3665A
Analyst:	JW	Cleanup Date:	08/19/19
Percent Solids:	93%	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/19/19

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	4.80	1	A
Aroclor 1248	ND		ug/kg	35.6	5.34	1	A
Aroclor 1254	ND		ug/kg	35.6	3.89	1	A
Aroclor 1260	ND		ug/kg	35.6	6.58	1	A
Aroclor 1262	ND		ug/kg	35.6	4.52	1	A
Aroclor 1268	ND		ug/kg	35.6	3.69	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	63		30-150	A
2,4,5,6-Tetrachloro-m-xylene	80		30-150	B
Decachlorobiphenyl	82		30-150	B

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-08
Client ID: HVRA-MW102-2.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 11:30
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 08/20/19 11:16
Analyst: JW
Percent Solids: 94%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 21:16
Cleanup Method: EPA 3665A
Cleanup Date: 08/19/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	35.2	3.13	1	A
Aroclor 1221	ND		ug/kg	35.2	3.53	1	A
Aroclor 1232	ND		ug/kg	35.2	7.46	1	A
Aroclor 1242	ND		ug/kg	35.2	4.75	1	A
Aroclor 1248	ND		ug/kg	35.2	5.28	1	A
Aroclor 1254	ND		ug/kg	35.2	3.85	1	A
Aroclor 1260	ND		ug/kg	35.2	6.51	1	A
Aroclor 1262	ND		ug/kg	35.2	4.47	1	A
Aroclor 1268	ND		ug/kg	35.2	3.65	1	A
PCBs, Total	ND		ug/kg	35.2	3.13	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	64		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		30-150	B
Decachlorobiphenyl	83		30-150	B

Project Name: HVRA | **Lab Number:** L1936143
Project Number: 18.8090 | **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-12	Date Collected:	08/12/19 11:50
Client ID:	HVRA-MW103-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	08/17/19 21:16
Analytical Date:	08/20/19 11:28	Cleanup Method:	EPA 3665A
Analyst:	JW	Cleanup Date:	08/19/19
Percent Solids:	65%	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	50.4	4.48	1	A
Aroclor 1221	ND		ug/kg	50.4	5.05	1	A
Aroclor 1232	ND		ug/kg	50.4	10.7	1	A
Aroclor 1242	ND		ug/kg	50.4	6.80	1	A
Aroclor 1248	ND		ug/kg	50.4	7.56	1	A
Aroclor 1254	ND		ug/kg	50.4	5.52	1	A
Aroclor 1260	ND		ug/kg	50.4	9.32	1	A
Aroclor 1262	ND		ug/kg	50.4	6.40	1	A
Aroclor 1268	ND		ug/kg	50.4	5.22	1	A
PCBs, Total	ND		ug/kg	50.4	4.48	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	61		30-150	A
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	79		30-150	B

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-13	Date Collected:	08/12/19 12:00
Client ID:	HVRA-MW103-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8082A	Extraction Date:	08/17/19 21:16
Analytical Date:	08/20/19 11:40	Cleanup Method:	EPA 3665A
Analyst:	JW	Cleanup Date:	08/19/19
Percent Solids:	87%	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	37.6	3.34	1	A
Aroclor 1221	ND		ug/kg	37.6	3.77	1	A
Aroclor 1232	ND		ug/kg	37.6	7.98	1	A
Aroclor 1242	ND		ug/kg	37.6	5.07	1	A
Aroclor 1248	ND		ug/kg	37.6	5.65	1	A
Aroclor 1254	ND		ug/kg	37.6	4.12	1	A
Aroclor 1260	ND		ug/kg	37.6	6.96	1	A
Aroclor 1262	ND		ug/kg	37.6	4.78	1	A
Aroclor 1268	ND		ug/kg	37.6	3.90	1	A
PCBs, Total	ND		ug/kg	37.6	3.34	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68		30-150	A
Decachlorobiphenyl	56		30-150	A
2,4,5,6-Tetrachloro-m-xylene	70		30-150	B
Decachlorobiphenyl	73		30-150	B

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8082A	Extraction Method:	EPA 3546
Analytical Date:	08/20/19 01:15	Extraction Date:	08/17/19 21:16
Analyst:	WR	Cleanup Method:	EPA 3665A
		Cleanup Date:	08/19/19
		Cleanup Method:	EPA 3660B
		Cleanup Date:	08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 02,04-05,07-08,12-13 Batch: WG1273727-1						
Aroclor 1016	ND		ug/kg	33.1	2.94	A
Aroclor 1221	ND		ug/kg	33.1	3.31	A
Aroclor 1232	ND		ug/kg	33.1	7.01	A
Aroclor 1242	ND		ug/kg	33.1	4.46	A
Aroclor 1248	ND		ug/kg	33.1	4.96	A
Aroclor 1254	ND		ug/kg	33.1	3.62	A
Aroclor 1260	ND		ug/kg	33.1	6.11	A
Aroclor 1262	ND		ug/kg	33.1	4.20	A
Aroclor 1268	ND		ug/kg	33.1	3.42	A
PCBs, Total	ND		ug/kg	33.1	2.94	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	79		30-150	A
Decachlorobiphenyl	59		30-150	A
2,4,5,6-Tetrachloro-m-xylene	81		30-150	B
Decachlorobiphenyl	75		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 02,04-05,07-08,12-13 Batch: WG1273727-2 WG1273727-3									
Aroclor 1016	90		76		40-140	17		50	A
Aroclor 1260	74		62		40-140	18		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	89		72		30-150	A
Decachlorobiphenyl	63		53		30-150	A
2,4,5,6-Tetrachloro-m-xylene	89		71		30-150	B
Decachlorobiphenyl	82		69		30-150	B

PESTICIDES

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-02
Client ID: HVRA-MW100-1.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 09:45
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 08/20/19 02:51
Analyst: BM
Percent Solids: 92%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 20:01
Cleanup Method: EPA 3620B
Cleanup Date: 08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.71	0.335	1	A
Lindane	ND		ug/kg	0.713	0.319	1	A
Alpha-BHC	ND		ug/kg	0.713	0.202	1	A
Beta-BHC	ND		ug/kg	1.71	0.649	1	A
Heptachlor	ND		ug/kg	0.856	0.384	1	A
Aldrin	ND		ug/kg	1.71	0.603	1	A
Heptachlor epoxide	ND		ug/kg	3.21	0.963	1	A
Endrin	ND		ug/kg	0.713	0.292	1	A
Endrin aldehyde	ND		ug/kg	2.14	0.749	1	A
Endrin ketone	ND		ug/kg	1.71	0.441	1	A
Dieldrin	ND		ug/kg	1.07	0.535	1	A
4,4'-DDE	1.32	J	ug/kg	1.71	0.396	1	B
4,4'-DDD	ND		ug/kg	1.71	0.610	1	A
4,4'-DDT	1.46	J	ug/kg	3.21	1.38	1	B
Endosulfan I	ND		ug/kg	1.71	0.404	1	A
Endosulfan II	ND		ug/kg	1.71	0.572	1	A
Endosulfan sulfate	ND		ug/kg	0.713	0.340	1	A
Methoxychlor	ND		ug/kg	3.21	0.998	1	A
Toxaphene	ND		ug/kg	32.1	8.99	1	A
cis-Chlordane	ND		ug/kg	2.14	0.596	1	A
trans-Chlordane	ND		ug/kg	2.14	0.565	1	A
Chlordane	ND		ug/kg	13.9	5.67	1	A

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-02	Date Collected:	08/12/19 09:45
Client ID:	HVRA-MW100-1.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	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	78		30-150	B
Decachlorobiphenyl	104		30-150	B
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	68		30-150	A

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-04	Date Collected:	08/12/19 10:20
Client ID:	HVRA-MW101-1.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8081B	Extraction Date:	08/17/19 20:01
Analytical Date:	08/20/19 03:04	Cleanup Method:	EPA 3620B
Analyst:	BM	Cleanup Date:	08/19/19
Percent Solids:	97%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.64	0.321	1	A
Lindane	ND		ug/kg	0.683	0.306	1	A
Alpha-BHC	ND		ug/kg	0.683	0.194	1	A
Beta-BHC	ND		ug/kg	1.64	0.622	1	A
Heptachlor	ND		ug/kg	0.820	0.368	1	A
Aldrin	ND		ug/kg	1.64	0.578	1	A
Heptachlor epoxide	ND		ug/kg	3.08	0.923	1	A
Endrin	ND		ug/kg	0.683	0.280	1	A
Endrin aldehyde	ND		ug/kg	2.05	0.718	1	A
Endrin ketone	ND		ug/kg	1.64	0.422	1	A
Dieldrin	ND		ug/kg	1.02	0.513	1	A
4,4'-DDE	ND		ug/kg	1.64	0.379	1	A
4,4'-DDD	ND		ug/kg	1.64	0.585	1	A
4,4'-DDT	ND		ug/kg	3.08	1.32	1	A
Endosulfan I	ND		ug/kg	1.64	0.388	1	A
Endosulfan II	ND		ug/kg	1.64	0.548	1	A
Endosulfan sulfate	ND		ug/kg	0.683	0.325	1	A
Methoxychlor	ND		ug/kg	3.08	0.957	1	A
Toxaphene	ND		ug/kg	30.8	8.61	1	A
cis-Chlordane	ND		ug/kg	2.05	0.571	1	A
trans-Chlordane	ND		ug/kg	2.05	0.541	1	A
Chlordane	ND		ug/kg	13.3	5.43	1	A

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-04	Date Collected:	08/12/19 10:20
Client ID:	HVRA-MW101-1.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	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	90		30-150	B
Decachlorobiphenyl	112		30-150	B
2,4,5,6-Tetrachloro-m-xylene	81		30-150	A
Decachlorobiphenyl	71		30-150	A

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-05
Client ID: HVRA-MW101-2.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 10:30
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 08/20/19 03:16
Analyst: BM
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 20:01
Cleanup Method: EPA 3620B
Cleanup Date: 08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.81	0.355	1	A
Lindane	ND		ug/kg	0.755	0.338	1	A
Alpha-BHC	ND		ug/kg	0.755	0.214	1	A
Beta-BHC	ND		ug/kg	1.81	0.687	1	A
Heptachlor	ND		ug/kg	0.906	0.406	1	A
Aldrin	ND		ug/kg	1.81	0.638	1	A
Heptachlor epoxide	ND		ug/kg	3.40	1.02	1	A
Endrin	ND		ug/kg	0.755	0.310	1	A
Endrin aldehyde	ND		ug/kg	2.27	0.793	1	A
Endrin ketone	ND		ug/kg	1.81	0.467	1	A
Dieldrin	ND		ug/kg	1.13	0.566	1	A
4,4'-DDE	ND		ug/kg	1.81	0.419	1	B
4,4'-DDD	ND		ug/kg	1.81	0.647	1	A
4,4'-DDT	ND		ug/kg	3.40	1.46	1	A
Endosulfan I	ND		ug/kg	1.81	0.428	1	A
Endosulfan II	ND		ug/kg	1.81	0.606	1	A
Endosulfan sulfate	ND		ug/kg	0.755	0.360	1	A
Methoxychlor	ND		ug/kg	3.40	1.06	1	A
Toxaphene	ND		ug/kg	34.0	9.52	1	A
cis-Chlordane	ND		ug/kg	2.27	0.632	1	A
trans-Chlordane	ND		ug/kg	2.27	0.598	1	A
Chlordane	ND		ug/kg	14.7	6.00	1	A

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-05	Date Collected:	08/12/19 10:30
Client ID:	HVRA-MW101-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	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	86		30-150	B
Decachlorobiphenyl	110		30-150	B
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	68		30-150	A

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-07
Client ID: HVRA-MW102-0.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 11:15
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 08/20/19 03:29
Analyst: BM
Percent Solids: 93%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 20:01
Cleanup Method: EPA 3620B
Cleanup Date: 08/19/19

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	0.320	1	A
Alpha-BHC	ND		ug/kg	0.717	0.204	1	A
Beta-BHC	ND		ug/kg	1.72	0.652	1	A
Heptachlor	ND		ug/kg	0.860	0.386	1	A
Aldrin	ND		ug/kg	1.72	0.606	1	A
Heptachlor epoxide	ND		ug/kg	3.23	0.968	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	B
Endosulfan I	ND		ug/kg	1.72	0.406	1	A
Endosulfan II	ND		ug/kg	1.72	0.575	1	A
Endosulfan sulfate	ND		ug/kg	0.717	0.341	1	A
Methoxychlor	ND		ug/kg	3.23	1.00	1	A
Toxaphene	ND		ug/kg	32.3	9.03	1	A
cis-Chlordane	ND		ug/kg	2.15	0.599	1	A
trans-Chlordane	ND		ug/kg	2.15	0.568	1	A
Chlordane	ND		ug/kg	14.0	5.70	1	A

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-07	Date Collected:	08/12/19 11:15
Client ID:	HVRA-MW102-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	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	91		30-150	B
Decachlorobiphenyl	119		30-150	B
2,4,5,6-Tetrachloro-m-xylene	84		30-150	A
Decachlorobiphenyl	84		30-150	A

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-08	Date Collected:	08/12/19 11:30
Client ID:	HVRA-MW102-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8081B	Extraction Date:	08/17/19 20:01
Analytical Date:	08/20/19 03:41	Cleanup Method:	EPA 3620B
Analyst:	BM	Cleanup Date:	08/19/19
Percent Solids:	94%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.67	0.328	1	A
Lindane	ND		ug/kg	0.697	0.312	1	A
Alpha-BHC	ND		ug/kg	0.697	0.198	1	A
Beta-BHC	ND		ug/kg	1.67	0.634	1	A
Heptachlor	ND		ug/kg	0.837	0.375	1	A
Aldrin	ND		ug/kg	1.67	0.589	1	A
Heptachlor epoxide	ND		ug/kg	3.14	0.941	1	A
Endrin	ND		ug/kg	0.697	0.286	1	A
Endrin aldehyde	ND		ug/kg	2.09	0.732	1	A
Endrin ketone	ND		ug/kg	1.67	0.431	1	A
Dieldrin	ND		ug/kg	1.04	0.523	1	A
4,4'-DDE	ND		ug/kg	1.67	0.387	1	B
4,4'-DDD	ND		ug/kg	1.67	0.597	1	A
4,4'-DDT	ND		ug/kg	3.14	1.34	1	A
Endosulfan I	ND		ug/kg	1.67	0.395	1	A
Endosulfan II	ND		ug/kg	1.67	0.559	1	A
Endosulfan sulfate	ND		ug/kg	0.697	0.332	1	A
Methoxychlor	ND		ug/kg	3.14	0.976	1	A
Toxaphene	ND		ug/kg	31.4	8.78	1	A
cis-Chlordane	ND		ug/kg	2.09	0.583	1	A
trans-Chlordane	ND		ug/kg	2.09	0.552	1	A
Chlordane	ND		ug/kg	13.6	5.54	1	A

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-08	Date Collected:	08/12/19 11:30
Client ID:	HVRA-MW102-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	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	93		30-150	B
Decachlorobiphenyl	119		30-150	B
2,4,5,6-Tetrachloro-m-xylene	83		30-150	A
Decachlorobiphenyl	74		30-150	A

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-12
Client ID: HVRA-MW103-0.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 11:50
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 08/20/19 03:54
Analyst: BM
Percent Solids: 65%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 20:01
Cleanup Method: EPA 3620B
Cleanup Date: 08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	2.41	0.471	1	A
Lindane	ND		ug/kg	1.00	0.448	1	A
Alpha-BHC	ND		ug/kg	1.00	0.285	1	A
Beta-BHC	ND		ug/kg	2.41	0.913	1	A
Heptachlor	ND		ug/kg	1.20	0.540	1	A
Aldrin	ND		ug/kg	2.41	0.848	1	A
Heptachlor epoxide	ND		ug/kg	4.51	1.35	1	A
Endrin	ND		ug/kg	1.00	0.411	1	A
Endrin aldehyde	ND		ug/kg	3.01	1.05	1	A
Endrin ketone	ND		ug/kg	2.41	0.620	1	A
Dieldrin	ND		ug/kg	1.50	0.752	1	A
4,4'-DDE	0.886	JP	ug/kg	2.41	0.557	1	A
4,4'-DDD	ND		ug/kg	2.41	0.859	1	A
4,4'-DDT	ND		ug/kg	4.51	1.94	1	B
Endosulfan I	ND		ug/kg	2.41	0.569	1	A
Endosulfan II	ND		ug/kg	2.41	0.804	1	A
Endosulfan sulfate	ND		ug/kg	1.00	0.477	1	A
Methoxychlor	ND		ug/kg	4.51	1.40	1	A
Toxaphene	ND		ug/kg	45.1	12.6	1	A
cis-Chlordane	ND		ug/kg	3.01	0.838	1	A
trans-Chlordane	ND		ug/kg	3.01	0.794	1	A
Chlordane	ND		ug/kg	19.6	7.97	1	A

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-12	Date Collected:	08/12/19 11:50
Client ID:	HVRA-MW103-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	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	79		30-150	B
Decachlorobiphenyl	103		30-150	B
2,4,5,6-Tetrachloro-m-xylene	72		30-150	A
Decachlorobiphenyl	72		30-150	A

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-13	Date Collected:	08/12/19 12:00
Client ID:	HVRA-MW103-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8081B	Extraction Date:	08/17/19 20:01
Analytical Date:	08/20/19 04:06	Cleanup Method:	EPA 3620B
Analyst:	BM	Cleanup Date:	08/19/19
Percent Solids:	87%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.80	0.352	1	A
Lindane	ND		ug/kg	0.748	0.334	1	A
Alpha-BHC	ND		ug/kg	0.748	0.212	1	A
Beta-BHC	ND		ug/kg	1.80	0.681	1	A
Heptachlor	ND		ug/kg	0.898	0.402	1	A
Aldrin	ND		ug/kg	1.80	0.632	1	A
Heptachlor epoxide	ND		ug/kg	3.36	1.01	1	A
Endrin	ND		ug/kg	0.748	0.307	1	A
Endrin aldehyde	ND		ug/kg	2.24	0.785	1	A
Endrin ketone	ND		ug/kg	1.80	0.462	1	A
Dieldrin	ND		ug/kg	1.12	0.561	1	A
4,4'-DDE	0.520	J	ug/kg	1.80	0.415	1	A
4,4'-DDD	ND		ug/kg	1.80	0.640	1	A
4,4'-DDT	ND		ug/kg	3.36	1.44	1	B
Endosulfan I	ND		ug/kg	1.80	0.424	1	A
Endosulfan II	ND		ug/kg	1.80	0.600	1	A
Endosulfan sulfate	ND		ug/kg	0.748	0.356	1	A
Methoxychlor	ND		ug/kg	3.36	1.05	1	A
Toxaphene	ND		ug/kg	33.6	9.42	1	A
cis-Chlordane	ND		ug/kg	2.24	0.625	1	A
trans-Chlordane	ND		ug/kg	2.24	0.592	1	A
Chlordane	ND		ug/kg	14.6	5.95	1	A

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-13	Date Collected:	08/12/19 12:00
Client ID:	HVRA-MW103-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	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	84		30-150	B
Decachlorobiphenyl	110		30-150	B
2,4,5,6-Tetrachloro-m-xylene	77		30-150	A
Decachlorobiphenyl	70		30-150	A

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/19/19 22:53
Analyst: BM

Extraction Method: EPA 3546
Extraction Date: 08/17/19 20:01
Cleanup Method: EPA 3620B
Cleanup Date: 08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 02,04-05,07-08,12-13 Batch: WG1273722-1						
Delta-BHC	ND		ug/kg	1.60	0.313	A
Lindane	ND		ug/kg	0.665	0.297	A
Alpha-BHC	ND		ug/kg	0.665	0.189	A
Beta-BHC	ND		ug/kg	1.60	0.605	A
Heptachlor	ND		ug/kg	0.798	0.358	A
Aldrin	ND		ug/kg	1.60	0.562	A
Heptachlor epoxide	ND		ug/kg	2.99	0.898	A
Endrin	ND		ug/kg	0.665	0.273	A
Endrin aldehyde	ND		ug/kg	2.00	0.699	A
Endrin ketone	ND		ug/kg	1.60	0.411	A
Dieldrin	ND		ug/kg	0.998	0.499	A
4,4'-DDE	ND		ug/kg	1.60	0.369	A
4,4'-DDD	ND		ug/kg	1.60	0.570	A
4,4'-DDT	ND		ug/kg	2.99	1.28	A
Endosulfan I	ND		ug/kg	1.60	0.377	A
Endosulfan II	ND		ug/kg	1.60	0.534	A
Endosulfan sulfate	ND		ug/kg	0.665	0.317	A
Methoxychlor	ND		ug/kg	2.99	0.931	A
Toxaphene	ND		ug/kg	29.9	8.38	A
cis-Chlordane	ND		ug/kg	2.00	0.556	A
trans-Chlordane	ND		ug/kg	2.00	0.527	A
Chlordane	ND		ug/kg	13.0	5.29	A

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 08/19/19 22:53
Analyst: BM

Extraction Method: EPA 3546
Extraction Date: 08/17/19 20:01
Cleanup Method: EPA 3620B
Cleanup Date: 08/19/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 02,04-05,07-08,12-13 Batch: WG1273722-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	97		30-150	B
Decachlorobiphenyl	100		30-150	B
2,4,5,6-Tetrachloro-m-xylene	92		30-150	A
Decachlorobiphenyl	96		30-150	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 02,04-05,07-08,12-13 Batch: WG1273722-2 WG1273722-3									
Delta-BHC	96		95		30-150	1		30	A
Lindane	94		91		30-150	3		30	A
Alpha-BHC	101		100		30-150	1		30	A
Beta-BHC	100		94		30-150	6		30	A
Heptachlor	98		101		30-150	3		30	A
Aldrin	90		90		30-150	0		30	A
Heptachlor epoxide	92		95		30-150	3		30	A
Endrin	101		104		30-150	3		30	A
Endrin aldehyde	90		94		30-150	4		30	A
Endrin ketone	100		105		30-150	5		30	A
Dieldrin	101		104		30-150	3		30	A
4,4'-DDE	92		94		30-150	2		30	A
4,4'-DDD	101		107		30-150	6		30	A
4,4'-DDT	101		105		30-150	4		30	A
Endosulfan I	84		85		30-150	1		30	A
Endosulfan II	96		98		30-150	2		30	A
Endosulfan sulfate	106		111		30-150	5		30	A
Methoxychlor	91		96		30-150	5		30	A
cis-Chlordane	73		72		30-150	1		30	A
trans-Chlordane	81		84		30-150	4		30	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 02,04-05,07-08,12-13 Batch: WG1273722-2 WG1273722-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	98		98		30-150	B
Decachlorobiphenyl	95		102		30-150	B
2,4,5,6-Tetrachloro-m-xylene	96		94		30-150	A
Decachlorobiphenyl	71		85		30-150	A

METALS

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-02 Date Collected: 08/12/19 09:45
Client ID: HVRA-MW100-1.0 Date Received: 08/12/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	11300		mg/kg	8.60	2.32	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Antimony, Total	0.946	J	mg/kg	4.30	0.327	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Arsenic, Total	3.73		mg/kg	0.860	0.179	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Barium, Total	59.6		mg/kg	0.860	0.150	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Beryllium, Total	0.396	J	mg/kg	0.430	0.028	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Cadmium, Total	ND		mg/kg	0.860	0.084	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Calcium, Total	809		mg/kg	8.60	3.01	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Chromium, Total	10.6		mg/kg	0.860	0.083	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Cobalt, Total	6.79		mg/kg	1.72	0.143	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Copper, Total	17.3		mg/kg	0.860	0.222	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Iron, Total	19000		mg/kg	4.30	0.777	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Lead, Total	57.8		mg/kg	4.30	0.231	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Magnesium, Total	3320		mg/kg	8.60	1.32	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Manganese, Total	728		mg/kg	0.860	0.137	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Mercury, Total	0.094		mg/kg	0.068	0.044	1	08/17/19 06:20	08/19/19 17:01	EPA 7471B	1,7471B	AL
Nickel, Total	13.8		mg/kg	2.15	0.208	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Potassium, Total	305		mg/kg	215	12.4	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Selenium, Total	ND		mg/kg	1.72	0.222	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Silver, Total	ND		mg/kg	0.860	0.244	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Sodium, Total	79.8	J	mg/kg	172	2.71	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	1.72	0.271	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Vanadium, Total	11.7		mg/kg	0.860	0.175	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB
Zinc, Total	76.6		mg/kg	4.30	0.252	2	08/15/19 22:40	08/19/19 15:40	EPA 3050B	1,6010D	AB

Project Name: HVRA | **Lab Number:** L1936143

Project Number: 18.8090 | **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-04 | Date Collected: 08/12/19 10:20

Client ID: HVRA-MW101-1.5 | Date Received: 08/12/19

Sample Location: WAPPINGERS FALLS, NY | Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	2130		mg/kg	7.89	2.13	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Antimony, Total	0.363	J	mg/kg	3.94	0.300	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Arsenic, Total	4.27		mg/kg	0.789	0.164	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Barium, Total	10.8		mg/kg	0.789	0.137	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Beryllium, Total	0.126	J	mg/kg	0.394	0.026	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Cadmium, Total	ND		mg/kg	0.789	0.077	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Calcium, Total	122000		mg/kg	78.9	27.6	20	08/15/19 22:40	08/19/19 16:49	EPA 3050B	1,6010D	AB
Chromium, Total	3.72		mg/kg	0.789	0.076	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Cobalt, Total	2.80		mg/kg	1.58	0.131	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Copper, Total	8.36		mg/kg	0.789	0.204	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Iron, Total	7120		mg/kg	3.94	0.712	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Lead, Total	4.71		mg/kg	3.94	0.211	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Magnesium, Total	55500		mg/kg	7.89	1.21	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Manganese, Total	185		mg/kg	0.789	0.125	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Mercury, Total	ND		mg/kg	0.065	0.042	1	08/17/19 06:20	08/19/19 17:03	EPA 7471B	1,7471B	AL
Nickel, Total	4.84		mg/kg	1.97	0.191	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Potassium, Total	228		mg/kg	197	11.4	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Selenium, Total	0.497	J	mg/kg	1.58	0.204	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Silver, Total	ND		mg/kg	0.789	0.223	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Sodium, Total	110	J	mg/kg	158	2.48	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	1.58	0.248	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Vanadium, Total	6.92		mg/kg	0.789	0.160	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB
Zinc, Total	12.7		mg/kg	3.94	0.231	2	08/15/19 22:40	08/19/19 15:44	EPA 3050B	1,6010D	AB

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-05	Date Collected:	08/12/19 10:30
Client ID:	HVRA-MW101-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil		
Percent Solids:	87%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	11800		mg/kg	8.91	2.40	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Antimony, Total	1.04	J	mg/kg	4.46	0.339	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Arsenic, Total	2.55		mg/kg	0.891	0.185	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Barium, Total	55.9		mg/kg	0.891	0.155	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Beryllium, Total	0.401	J	mg/kg	0.446	0.029	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Cadmium, Total	ND		mg/kg	0.891	0.087	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Calcium, Total	8050		mg/kg	8.91	3.12	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Chromium, Total	12.3		mg/kg	0.891	0.086	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Cobalt, Total	7.60		mg/kg	1.78	0.148	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Copper, Total	13.9		mg/kg	0.891	0.230	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Iron, Total	20000		mg/kg	4.46	0.805	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Lead, Total	11.5		mg/kg	4.46	0.239	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Magnesium, Total	7550		mg/kg	8.91	1.37	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Manganese, Total	568		mg/kg	0.891	0.142	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Mercury, Total	ND		mg/kg	0.073	0.048	1	08/17/19 06:20	08/19/19 17:05	EPA 7471B	1,7471B	AL
Nickel, Total	14.7		mg/kg	2.23	0.216	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Potassium, Total	330		mg/kg	223	12.8	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Selenium, Total	ND		mg/kg	1.78	0.230	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Silver, Total	ND		mg/kg	0.891	0.252	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Sodium, Total	32.6	J	mg/kg	178	2.81	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	1.78	0.281	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Vanadium, Total	12.8		mg/kg	0.891	0.181	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB
Zinc, Total	47.7		mg/kg	4.46	0.261	2	08/15/19 22:40	08/19/19 16:01	EPA 3050B	1,6010D	AB

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-07 Date Collected: 08/12/19 11:15
Client ID: HVRA-MW102-0.5 Date Received: 08/12/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	9550		mg/kg	8.59	2.32	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Antimony, Total	0.834	J	mg/kg	4.30	0.326	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Arsenic, Total	3.15		mg/kg	0.859	0.179	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Barium, Total	42.4		mg/kg	0.859	0.150	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Beryllium, Total	0.370	J	mg/kg	0.430	0.028	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Cadmium, Total	ND		mg/kg	0.859	0.084	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Calcium, Total	1410		mg/kg	8.59	3.01	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Chromium, Total	10.6		mg/kg	0.859	0.083	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Cobalt, Total	6.46		mg/kg	1.72	0.143	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Copper, Total	20.1		mg/kg	0.859	0.222	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Iron, Total	17400		mg/kg	4.30	0.776	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Lead, Total	13.2		mg/kg	4.30	0.230	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Magnesium, Total	3370		mg/kg	8.59	1.32	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Manganese, Total	415		mg/kg	0.859	0.137	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Mercury, Total	ND		mg/kg	0.068	0.044	1	08/17/19 06:20	08/19/19 17:07	EPA 7471B	1,7471B	AL
Nickel, Total	14.5		mg/kg	2.15	0.208	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Potassium, Total	358		mg/kg	215	12.4	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Selenium, Total	ND		mg/kg	1.72	0.222	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Silver, Total	ND		mg/kg	0.859	0.243	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Sodium, Total	19.4	J	mg/kg	172	2.71	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	1.72	0.271	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Vanadium, Total	14.0		mg/kg	0.859	0.174	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB
Zinc, Total	46.1		mg/kg	4.30	0.252	2	08/15/19 22:40	08/19/19 16:05	EPA 3050B	1,6010D	AB

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-08
Client ID: HVRA-MW102-2.0
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/12/19 11:30
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	11200		mg/kg	8.41	2.27	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Antimony, Total	1.06	J	mg/kg	4.21	0.320	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Arsenic, Total	4.34		mg/kg	0.841	0.175	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Barium, Total	41.2		mg/kg	0.841	0.146	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Beryllium, Total	0.387	J	mg/kg	0.421	0.028	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Cadmium, Total	ND		mg/kg	0.841	0.083	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Calcium, Total	8520		mg/kg	8.41	2.94	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Chromium, Total	15.8		mg/kg	0.841	0.081	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Cobalt, Total	9.48		mg/kg	1.68	0.140	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Copper, Total	26.5		mg/kg	0.841	0.217	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Iron, Total	21800		mg/kg	4.21	0.760	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Lead, Total	10.9		mg/kg	4.21	0.226	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Magnesium, Total	5080		mg/kg	8.41	1.30	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Manganese, Total	636		mg/kg	0.841	0.134	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Mercury, Total	ND		mg/kg	0.067	0.044	1	08/17/19 06:20	08/19/19 17:12	EPA 7471B	1,7471B	AL
Nickel, Total	19.9		mg/kg	2.10	0.204	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Potassium, Total	448		mg/kg	210	12.1	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Selenium, Total	ND		mg/kg	1.68	0.217	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Silver, Total	ND		mg/kg	0.841	0.238	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Sodium, Total	29.2	J	mg/kg	168	2.65	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	1.68	0.265	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Vanadium, Total	13.2		mg/kg	0.841	0.171	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB
Zinc, Total	57.0		mg/kg	4.21	0.246	2	08/15/19 22:40	08/19/19 16:10	EPA 3050B	1,6010D	AB

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-12	Date Collected:	08/12/19 11:50
Client ID:	HVRA-MW103-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil		
Percent Solids:	65%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	15500		mg/kg	12.0	3.26	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Antimony, Total	1.20	J	mg/kg	6.03	0.458	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Arsenic, Total	5.53		mg/kg	1.20	0.251	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Barium, Total	54.7		mg/kg	1.20	0.210	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Beryllium, Total	0.494	J	mg/kg	0.603	0.040	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Cadmium, Total	ND		mg/kg	1.20	0.118	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Calcium, Total	3610		mg/kg	12.0	4.22	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Chromium, Total	15.8		mg/kg	1.20	0.116	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Cobalt, Total	10.5		mg/kg	2.41	0.200	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Copper, Total	32.0		mg/kg	1.20	0.311	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Iron, Total	29400		mg/kg	6.03	1.09	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Lead, Total	25.5		mg/kg	6.03	0.323	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Magnesium, Total	6400		mg/kg	12.0	1.86	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Manganese, Total	974		mg/kg	1.20	0.192	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Mercury, Total	ND		mg/kg	0.097	0.063	1	08/17/19 06:20	08/19/19 17:14	EPA 7471B	1,7471B	AL
Nickel, Total	22.3		mg/kg	3.01	0.292	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Potassium, Total	519		mg/kg	301	17.4	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Selenium, Total	ND		mg/kg	2.41	0.311	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Silver, Total	ND		mg/kg	1.20	0.341	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Sodium, Total	37.1	J	mg/kg	241	3.80	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	2.41	0.380	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Vanadium, Total	20.1		mg/kg	1.20	0.245	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB
Zinc, Total	75.5		mg/kg	6.03	0.353	2	08/15/19 22:40	08/19/19 16:14	EPA 3050B	1,6010D	AB

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-13	Date Collected:	08/12/19 12:00
Client ID:	HVRA-MW103-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil		
Percent Solids:	87%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	10200		mg/kg	8.91	2.41	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Antimony, Total	0.918	J	mg/kg	4.46	0.339	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Arsenic, Total	3.80		mg/kg	0.891	0.185	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Barium, Total	36.8		mg/kg	0.891	0.155	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Beryllium, Total	0.365	J	mg/kg	0.446	0.029	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Cadmium, Total	ND		mg/kg	0.891	0.087	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Calcium, Total	2360		mg/kg	8.91	3.12	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Chromium, Total	11.6		mg/kg	0.891	0.086	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Cobalt, Total	7.98		mg/kg	1.78	0.148	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Copper, Total	24.0		mg/kg	0.891	0.230	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Iron, Total	19700		mg/kg	4.46	0.805	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Lead, Total	19.7		mg/kg	4.46	0.239	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Magnesium, Total	4280		mg/kg	8.91	1.37	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Manganese, Total	573		mg/kg	0.891	0.142	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Mercury, Total	ND		mg/kg	0.072	0.047	1	08/17/19 06:20	08/19/19 17:15	EPA 7471B	1,7471B	AL
Nickel, Total	17.2		mg/kg	2.23	0.216	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Potassium, Total	376		mg/kg	223	12.8	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Selenium, Total	ND		mg/kg	1.78	0.230	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Silver, Total	ND		mg/kg	0.891	0.252	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Sodium, Total	23.2	J	mg/kg	178	2.81	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Thallium, Total	ND		mg/kg	1.78	0.281	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Vanadium, Total	14.9		mg/kg	0.891	0.181	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB
Zinc, Total	60.3		mg/kg	4.46	0.261	2	08/15/19 22:40	08/19/19 16:18	EPA 3050B	1,6010D	AB

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

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): 02,04-05,07-08,12-13 Batch: WG1272975-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Antimony, Total	ND		mg/kg	2.00	0.152	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Arsenic, Total	ND		mg/kg	0.400	0.083	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Barium, Total	ND		mg/kg	0.400	0.070	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Beryllium, Total	ND		mg/kg	0.200	0.013	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Cadmium, Total	ND		mg/kg	0.400	0.039	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Calcium, Total	ND		mg/kg	4.00	1.40	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Chromium, Total	ND		mg/kg	0.400	0.038	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Cobalt, Total	ND		mg/kg	0.800	0.066	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Copper, Total	ND		mg/kg	0.400	0.103	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Iron, Total	0.692	J	mg/kg	2.00	0.361	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Lead, Total	ND		mg/kg	2.00	0.107	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Magnesium, Total	ND		mg/kg	4.00	0.616	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Manganese, Total	ND		mg/kg	0.400	0.064	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Nickel, Total	ND		mg/kg	1.00	0.097	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Potassium, Total	ND		mg/kg	100	5.76	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Selenium, Total	ND		mg/kg	0.800	0.103	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Silver, Total	ND		mg/kg	0.400	0.113	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Sodium, Total	2.74	J	mg/kg	80.0	1.26	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Thallium, Total	ND		mg/kg	0.800	0.126	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Vanadium, Total	ND		mg/kg	0.400	0.081	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Zinc, Total	ND		mg/kg	2.00	0.117	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC

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): 02,04-05,07-08,12-13 Batch: WG1273559-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	08/17/19 06:20	08/19/19 15:20	1,7471B	AL

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04-05,07-08,12-13 Batch: WG1272975-2 SRM Lot Number: D105-540								
Aluminum, Total	67		-		51-149	-		
Antimony, Total	133		-		19-249	-		
Arsenic, Total	103		-		70-130	-		
Barium, Total	97		-		75-125	-		
Beryllium, Total	91		-		75-125	-		
Cadmium, Total	92		-		75-125	-		
Calcium, Total	88		-		73-127	-		
Chromium, Total	96		-		70-130	-		
Cobalt, Total	92		-		75-125	-		
Copper, Total	100		-		75-125	-		
Iron, Total	91		-		38-162	-		
Lead, Total	92		-		71-128	-		
Magnesium, Total	81		-		63-137	-		
Manganese, Total	90		-		76-124	-		
Nickel, Total	94		-		70-131	-		
Potassium, Total	82		-		60-140	-		
Selenium, Total	97		-		63-137	-		
Silver, Total	97		-		69-131	-		
Sodium, Total	104		-		37-162	-		
Thallium, Total	94		-		68-132	-		
Vanadium, Total	97		-		65-135	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04-05,07-08,12-13 Batch: WG1272975-2 SRM Lot Number: D105-540					
Zinc, Total	94	-	70-130	-	
Total Metals - Mansfield Lab Associated sample(s): 02,04-05,07-08,12-13 Batch: WG1273559-2 SRM Lot Number: D105-540					
Mercury, Total	100	-	60-141	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

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): 02,04-05,07-08,12-13 QC Batch ID: WG1272975-3 WG1272975-4 QC Sample: L1936136-08 Client ID: MS Sample												
Aluminum, Total	9050	185	9910	**464**	Q	10400	**698**	Q	75-125	5		20
Antimony, Total	0.935J	46.3	39.5	85		30.9	**64**	Q	75-125	**24**	Q	20
Arsenic, Total	6.09	11.1	16.7	95		19.2	113		75-125	14		20
Barium, Total	57.9	185	224	90		246	97		75-125	9		20
Beryllium, Total	0.477	4.63	4.29	92		4.53	94		75-125	5		20
Cadmium, Total	ND	4.73	3.76	80		3.92	80		75-125	4		20
Calcium, Total	12400	927	10100	**0**	Q	12700	**31**	Q	75-125	**23**	Q	20
Chromium, Total	13.8	18.5	30.4	90		32.3	96		75-125	6		20
Cobalt, Total	8.22	46.3	45.6	81		49.0	84		75-125	7		20
Copper, Total	29.5	23.2	51.6	95		53.0	97		75-125	3		20
Iron, Total	19300	92.7	19100	**0**	Q	21700	**2480**	Q	75-125	13		20
Lead, Total	22.9	47.3	61.3	81		63.4	82		75-125	3		20
Magnesium, Total	5210	927	5330	**13**	Q	5520	**32**	Q	75-125	4		20
Manganese, Total	235	46.3	287	112		491	**530**	Q	75-125	**52**	Q	20
Nickel, Total	24.9	46.3	62.8	82		66.2	85		75-125	5		20
Potassium, Total	517	927	1420	97		1500	102		75-125	5		20
Selenium, Total	ND	11.1	10.1	91		10.7	92		75-125	6		20
Silver, Total	ND	27.8	25.6	92		27.0	93		75-125	5		20
Sodium, Total	71.0J	927	956	103		1020	106		75-125	6		20
Thallium, Total	ND	11.1	8.47	76		8.73	75		75-125	3		20
Vanadium, Total	18.3	46.3	60.5	91		63.9	94		75-125	5		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

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): 02,04-05,07-08,12-13 QC Batch ID: WG1272975-3 WG1272975-4 QC Sample: L1936136-08 Client ID: MS Sample										
Zinc, Total	95.4	46.3	137	90		147	107	75-125	7	20
Total Metals - Mansfield Lab Associated sample(s): 02,04-05,07-08,12-13 QC Batch ID: WG1273559-3 QC Sample: L1935237-05 Client ID: MS Sample										
Mercury, Total	0.053J	0.149	0.269	**180**	Q	-	-	80-120	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1936143

Report Date: 08/26/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04-05,07-08,12-13 QC Batch ID: WG1273559-4 QC Sample: L1935237-05 Client ID: DUP Sample						
Mercury, Total	0.053J	0.059J	mg/kg	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-02 Date Collected: 08/12/19 09:45
Client ID: HVRA-MW100-1.0 Date Received: 08/12/19
Sample Location: WAPPINGERS FALLS, NY 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	92.3		%	0.100	NA	1	-	08/13/19 10:56	121,2540G	RI
Cyanide, Total	ND		mg/kg	1.0	0.22	1	08/13/19 14:40	08/14/19 11:58	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-04 Date Collected: 08/12/19 10:20
Client ID: HVRA-MW101-1.5 Date Received: 08/12/19
Sample Location: WAPPINGERS FALLS, NY 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	96.7		%	0.100	NA	1	-	08/13/19 10:56	121,2540G	RI
Cyanide, Total	ND		mg/kg	1.0	0.22	1	08/13/19 14:40	08/14/19 11:59	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-05	Date Collected:	08/12/19 10:30
Client ID:	HVRA-MW101-2.0	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	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	87.2		%	0.100	NA	1	-	08/13/19 10:56	121,2540G	RI
Cyanide, Total	ND		mg/kg	1.1	0.23	1	08/13/19 14:40	08/14/19 12:00	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-07 Date Collected: 08/12/19 11:15
Client ID: HVRA-MW102-0.5 Date Received: 08/12/19
Sample Location: WAPPINGERS FALLS, NY 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	92.8		%	0.100	NA	1	-	08/13/19 10:56	121,2540G	RI
Cyanide, Total	ND		mg/kg	1.0	0.22	1	08/13/19 14:40	08/14/19 12:01	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-08
Client ID: HVRA-MW102-2.0
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/12/19 11:30
Date Received: 08/12/19
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	93.8		%	0.100	NA	1	-	08/13/19 10:56	121,2540G	RI
Cyanide, Total	ND		mg/kg	1.0	0.22	1	08/13/19 14:40	08/14/19 12:02	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-12 Date Collected: 08/12/19 11:50
Client ID: HVRA-MW103-0.5 Date Received: 08/12/19
Sample Location: WAPPINGERS FALLS, NY 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	65.2		%	0.100	NA	1	-	08/13/19 10:56	121,2540G	RI
Cyanide, Total	ND		mg/kg	1.5	0.32	1	08/13/19 14:40	08/14/19 12:03	1,9010C/9012B	LH

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-13
Client ID: HVRA-MW103-2.0
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/12/19 12:00
Date Received: 08/12/19
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	-	08/13/19 10:56	121,2540G	RI
Cyanide, Total	ND		mg/kg	1.1	0.22	1	08/13/19 14:40	08/14/19 12:04	1,9010C/9012B	LH

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-15	Date Collected:	08/12/19 12:15
Client ID:	HVRA-MW104-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	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	93.2		%	0.100	NA	1	-	08/13/19 10:56	121,2540G	RI

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-16
Client ID: HVRA-MW104-2.0
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 12:20
Date Received: 08/12/19
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	93.7		%	0.100	NA	1	-	08/13/19 10:56	121,2540G	RI

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

SAMPLE RESULTS

Lab ID:	L1936143-18	Date Collected:	08/12/19 12:40
Client ID:	HVRA-MW105-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	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	68.6		%	0.100	NA	1	-	08/13/19 10:56	121,2540G	RI

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-19 Date Collected: 08/12/19 12:46
Client ID: HVRA-MW105-2.0 Date Received: 08/12/19
Sample Location: WAPPINGERS FALLS, NY 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	94.3		%	0.100	NA	1	-	08/13/19 10:56	121,2540G	RI

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

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): 02,04-05,07-08,12-13 Batch: WG1271656-1										
Cyanide, Total	ND		mg/kg	0.94	0.20	1	08/13/19 14:40	08/14/19 11:31	1,9010C/9012B	LH

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02,04-05,07-08,12-13 Batch: WG1271656-2 WG1271656-3								
Cyanide, Total	**62**	Q	**71**	Q	80-120	8		35

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02,04-05,07-08,12-13 QC Batch ID: WG1271656-4 WG1271656-5 QC Sample: L1935771-05 Client ID: MS Sample												
Cyanide, Total	ND	11	7.6	**69**	Q	9.8	91		75-125	25		35

Project Name: HVRA
Project Number: 18.8090

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1936143
Report Date: 08/26/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02,04-05,07-08,12-13,15-16,18-19 QC Batch ID: WG1271689-1 QC Sample: L1936136-08 Client ID: DUP Sample						
Solids, Total	81.0	83.5	%	3		20

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

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(*)
L1936143-01A	Plastic 250ml unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1936143-02A	Vial MeOH preserved	B	NA		2.8	Y	Absent		NYTCL-8260HLW-R2(14)
L1936143-02B	Vial water preserved	B	NA		2.8	Y	Absent	13-AUG-19 07:05	NYTCL-8260HLW-R2(14)
L1936143-02C	Vial water preserved	B	NA		2.8	Y	Absent	13-AUG-19 07:05	NYTCL-8260HLW-R2(14)
L1936143-02D	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L1936143-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1936143-02F	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		A2-1,4-DIOXANE-SIM(14),A2-NY-537-ISOTOPE(28)
L1936143-02G	Glass 500ml/16oz unpreserved	B	NA		2.8	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1936143-03A	Plastic 250ml unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1936143-04A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L1936143-04B	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1936143-04C	Glass 120ml/4oz unpreserved	B	NA		2.8	Y	Absent		A2-1,4-DIOXANE-SIM(14),NYTCL-8081(14),NYTCL-8082(14)
L1936143-04D	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		TCN-9010(14),A2-NY-537-ISOTOPE(28)
L1936143-05A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1936143-05B	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1936143-05C	Glass 120ml/4oz unpreserved	B	NA		2.8	Y	Absent		TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1936143-05D	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		A2-1,4-DIOXANE-SIM(14),A2-NY-537-ISOTOPE(28)
L1936143-06A	Plastic 250ml unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1936143-07A	Vial MeOH preserved	B	NA		2.8	Y	Absent		NYTCL-8260HLW-R2(14)
L1936143-07B	Vial water preserved	B	NA		2.8	Y	Absent	13-AUG-19 07:05	NYTCL-8260HLW-R2(14)
L1936143-07C	Vial water preserved	B	NA		2.8	Y	Absent	13-AUG-19 07:05	NYTCL-8260HLW-R2(14)
L1936143-07D	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L1936143-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1936143-07F	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		A2-1,4-DIOXANE-SIM(14),A2-NY-537-ISOTOPE(28)
L1936143-07G	Glass 500ml/16oz unpreserved	B	NA		2.8	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1936143-08A	Vial MeOH preserved	B	NA		2.8	Y	Absent		NYTCL-8260HLW-R2(14)
L1936143-08B	Vial water preserved	B	NA		2.8	Y	Absent	13-AUG-19 07:05	NYTCL-8260HLW-R2(14)
L1936143-08C	Vial water preserved	B	NA		2.8	Y	Absent	13-AUG-19 07:05	NYTCL-8260HLW-R2(14)
L1936143-08D	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L1936143-08E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1936143-08F	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		A2-1,4-DIOXANE-SIM(14),A2-NY-537-ISOTOPE(28)
L1936143-08G	Glass 500ml/16oz unpreserved	B	NA		2.8	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1936143-09A	Plastic 250ml unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)

*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(*)
L1936143-10A	Plastic 250ml unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1936143-11A	Plastic 250ml unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1936143-12A	Vial MeOH preserved	B	NA		2.8	Y	Absent		NYTCL-8260HLW-R2(14)
L1936143-12B	Vial water preserved	B	NA		2.8	Y	Absent	13-AUG-19 07:05	NYTCL-8260HLW-R2(14)
L1936143-12C	Vial water preserved	B	NA		2.8	Y	Absent	13-AUG-19 07:05	NYTCL-8260HLW-R2(14)
L1936143-12D	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L1936143-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1936143-12F	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		A2-1,4-DIOXANE-SIM(14),A2-NY-537-ISOTOPE(28)
L1936143-12G	Glass 500ml/16oz unpreserved	B	NA		2.8	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1936143-13A	Vial MeOH preserved	B	NA		2.8	Y	Absent		NYTCL-8260HLW-R2(14)
L1936143-13B	Vial water preserved	B	NA		2.8	Y	Absent	13-AUG-19 07:05	NYTCL-8260HLW-R2(14)
L1936143-13C	Vial water preserved	B	NA		2.8	Y	Absent	13-AUG-19 07:05	NYTCL-8260HLW-R2(14)
L1936143-13D	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L1936143-13E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1936143-13F	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(28)
L1936143-13G	Glass 500ml/16oz unpreserved	B	NA		2.8	Y	Absent		NYTCL-8270(14),TCN-9010(14),NYTCL-8081(14),NYTCL-8082(14)
L1936143-14A	Plastic 250ml unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1936143-15A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L1936143-15B	Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)
L1936143-15C	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(28)
L1936143-16A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L1936143-16B	Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)

*Values in parentheses indicate holding time in days

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1936143-16C	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(28)
L1936143-17A	Plastic 250ml unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(14)
L1936143-18A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L1936143-18B	Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)
L1936143-18C	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(28)
L1936143-19A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		TS(7)
L1936143-19B	Glass 60mL/2oz unpreserved	B	NA		2.8	Y	Absent		A2-1,4-DIOXANE-SIM(14)
L1936143-19C	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		A2-NY-537-ISOTOPE(28)

*Values in parentheses indicate holding time in days

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

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.
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.

Footnotes

Report Format: DU Report with 'J' Qualifiers

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.

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. If a 'Total' result is requested, the results of its individual components will also be reported.

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 using acetone as a solvent.

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.

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.

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.

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

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
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; 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.**

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.

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 1 of 2

Date Rec'd in Lab: 8/13/19

ALPHA Job #: L1936143

Project Information
Project Name: HURA
Project Location: Wappingers Falls, NY
Project #: 18.8292
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information
Client: C.T. Male Associates
Address: 50 Century Hill Dr. Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

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:

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	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pest	TAL Mets	PFAS	1,4-Dioxane	CN	Sample Specific Comments	Total Bottles
36143-01	HURA-RB01-190812	8-12	0930	Water	JSM						X				1
-02	HURA-MW100-1.0		0945	Soil	JSM	X	X	X	X	X	X	X	X		7
-03	HURA-RB02-190812		1000	Water	JSM	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X	~~X~~	~~X~~	JSM 08-12	1
-04	HURA-MW101-0.5		1020	Soil	JSM			X	X	X	X	X	X		4
-05	HURA-MW101-2.0		1030	Soil	JSM			X	X	X	X	X	X		4
-06	HURA-RB03-190812		1100	Water	JSM						X				1
-07	HURA-MW102-0.5		1115	Soil	JSM	X	X	X	X	X	X	X	X		7
-08	HURA-MW102-2.0		1130	Soil	JSM	X	X	X	X	X	X	X	X		7
-09	HURA-FTB01-190812		1250	Water	JSM						X				
-10	HURA-LTB01-190812		—	Water	JSM						X				

	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pest	TAL Mets	PFAS	1,4-Dioxane	CN
Container Type	V	G	G	G	G	P	G	G
Preservative	F	A	A	A	A	A	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

Relinquished By:	Date/Time	Received By:	Date/Time
J.Taitt [signature]	08/12/19	NFAROURS (AAL)	8/12/19 15:28
NFAROURS (AAL)	8/12/19 17:15	[signature] AAL	8/12/19 1930
[signature] AAL	8/13/19 0030	[signature]	8/13/19 00:40

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)

ALPHA ANALYTICAL

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: 8/13/19

ALPHA Job #: L1936143

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

Project Information
Project Name: HVRA
Project Location: Wappingers Falls, NY
Project #: 18.8090
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
ALPHAQuote #:

Client Information
Client: C.T. Male Associates
Address: 50 Century Hill Dr. Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

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:

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	TCL VOCs	TCL SVOCs	TCL Pest	TAL Metals	TCL PCBs	PFAS	1,4-Dioxane	CN	Sample Specific Comments	Total Bottles
36143-11	HVRA-RB04-190812	8-12	1145	Water	DM						X				1
-12	HVRA-MW103-0.5		1150	Soil	DM	X	X	X	X	X	X	X	X		7
-13	HVRA-MW103-2.0		1200	Soil	DM	X	X	X	X	X	X	X	X		7
-14	HVRA-RB05-190812		1210	Water	DM						X				1
-15	HVRA-MW104-0.5		1215	Soil	DM						X	X			3
-16	HVRA-MW104-2.0		1220	Soil	DM						X	X			3
-17	HVRA-RB06-190812		1230	Water	DM						X				1
-18	HVRA-MW105-0.5		1240	Soil	DM						X	X			3
-19	HVRA-MW105-2.0	↓	1245	Soil	DM						X	X			3

	TCL VOCs	TCL SVOCs	TCL Pest	TAL Metals	TCL PCBs	PFAS	1,4-Dioxane	CN
Container Type	V	G	G	G	G	P	G	G
Preservative	F	A	A	A	A	A	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

Relinquished By:	Date/Time	Received By:	Date/Time
Daniel Mazz...	08/12/19	NFABOUROS (AAL)	8/12/19 15:28
NFABOUROS (AAL)	8/12/19 17:15	[signature] AAL	8/12/19 23:5
[signature] AAL	8/13/19 0030		

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:	L1940308
Client:	C.T. Male Associates 50 Century Hill Drive Latham, NY 12210
ATTN:	Kirk Moline
Phone:	(518) 786-7400
Project Name:	HVRA
Project Number:	18.8090
Report Date:	09/20/19

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).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940308
Report Date: 09/20/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1940308-01	HVRA-1581_RT_376-190904	WATER	WAPPINGERS FALLS, NY	09/04/19 13:33	09/04/19
L1940308-02	HVRA-7_HACKENSACK_HTS_RD-190904	WATER	WAPPINGERS FALLS, NY	09/04/19 14:00	09/04/19
L1940308-03	HVRA-FTB01-190904	WATER	WAPPINGERS FALLS, NY	09/04/19 14:04	09/04/19
L1940308-04	HVRA-1610_RT_376-190904	WATER	WAPPINGERS FALLS, NY	09/04/19 14:41	09/04/19

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:	HVRA	**Lab Number:**	L1940308
Project Number:	18.8090	**Report Date:**	09/20/19

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.

Perfluorinated Alkyl Acids by Isotope Dilution

WG1286210-1: The continuing calibration standard had the response for 8:2 FTS outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1286210-3: The continuing calibration standard had the response for Perfluoroctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

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: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 09/20/19

ORGANICS

SEMIVOLATILES

Project Name: HVRA **Lab Number:** L1940308
Project Number: 18.8090 **Report Date:** 09/20/19

SAMPLE RESULTS

Lab ID:	L1940308-01	Date Collected:	09/04/19 13:33
Client ID:	HVRA-1581_RT_376-190904	Date Received:	09/04/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	09/06/19 18:00
Analytical Date:	09/08/19 02:27		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	216.		ng/l	144	32.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	48		15-110

Project Name: HVRA **Lab Number:** L1940308

Project Number: 18.8090 **Report Date:** 09/20/19

SAMPLE RESULTS

Lab ID: L1940308-01
Client ID: HVRA-1581_RT_376-190904
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/04/19 13:33
Date Received: 09/04/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 09/20/19 01:17
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 09/18/19 08:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	12.8		ng/l	1.80	0.367	1
Perfluoropentanoic Acid (PFPeA)	35.5		ng/l	1.80	0.356	1
Perfluorobutanesulfonic Acid (PFBS)	7.48		ng/l	1.80	0.214	1
Perfluorohexanoic Acid (PFHxA)	36.0		ng/l	1.80	0.295	1
Perfluoroheptanoic Acid (PFHpA)	14.2		ng/l	1.80	0.202	1
Perfluorohexanesulfonic Acid (PFHxS)	8.31		ng/l	1.80	0.338	1
Perfluorooctanoic Acid (PFOA)	33.2		ng/l	1.80	0.212	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.619	1
Perfluorononanoic Acid (PFNA)	1.10	J	ng/l	1.80	0.280	1
Perfluorooctanesulfonic Acid (PFOS)	42.6		ng/l	1.80	0.453	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.273	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.583	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.234	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.881	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.522	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.723	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.334	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.294	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.223	1
PFOA/PFOS, Total	75.8		ng/l	1.80	0.212	1

Project Name: HVRA | **Lab Number:** L1940308

Project Number: 18.8090 | **Report Date:** 09/20/19

SAMPLE RESULTS

Lab ID:	L1940308-01	Date Collected:	09/04/19 13:33
Client ID:	HVRA-1581_RT_376-190904	Date Received:	09/04/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	75		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	62		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	140		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	46		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	46		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		33-143

Project Name: HVRA **Lab Number:** L1940308

Project Number: 18.8090 **Report Date:** 09/20/19

SAMPLE RESULTS

Lab ID:	L1940308-02	Date Collected:	09/04/19 14:00
Client ID:	HVRA-7_HACKENSACK_HTS_RD-190904	Date Received:	09/04/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	09/06/19 18:00
Analytical Date:	09/08/19 02:47		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	144	32.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	48		15-110

Project Name:	HVRA	**Lab Number:**	L1940308
Project Number:	18.8090	**Report Date:**	09/20/19

SAMPLE RESULTS

Lab ID:	L1940308-02	Date Collected:	09/04/19 14:00
Client ID:	HVRA-7_HACKENSACK_HTS_RD-190904	Date Received:	09/04/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	09/18/19 08:53
Analytical Date:	09/20/19 01:51		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	8.38		ng/l	1.84	0.376	1
Perfluoropentanoic Acid (PFPeA)	13.8		ng/l	1.84	0.365	1
Perfluorobutanesulfonic Acid (PFBS)	9.01		ng/l	1.84	0.220	1
Perfluorohexanoic Acid (PFHxA)	9.41		ng/l	1.84	0.302	1
Perfluoroheptanoic Acid (PFHpA)	3.93		ng/l	1.84	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	2.50		ng/l	1.84	0.347	1
Perfluorooctanoic Acid (PFOA)	10.4		ng/l	1.84	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.635	1
Perfluorononanoic Acid (PFNA)	1.19	J	ng/l	1.84	0.288	1
Perfluorooctanesulfonic Acid (PFOS)	22.1		ng/l	1.84	0.465	1
Perfluorodecanoic Acid (PFDA)	0.524	J	ng/l	1.84	0.280	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.598	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.240	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.904	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.535	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.742	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.343	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.302	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.229	1
PFOA/PFOS, Total	32.5		ng/l	1.84	0.218	1

Project Name:	HVRA	**Lab Number:**	L1940308
Project Number:	18.8090	**Report Date:**	09/20/19

SAMPLE RESULTS

Lab ID:	L1940308-02	Date Collected:	09/04/19 14:00
Client ID:	HVRA-7_HACKENSACK_HTS_RD-190904	Date Received:	09/04/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	119		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	55		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		33-143

Project Name: HVRA **Lab Number:** L1940308

Project Number: 18.8090 **Report Date:** 09/20/19

SAMPLE RESULTS

Lab ID:	L1940308-03	Date Collected:	09/04/19 14:04
Client ID:	HVRA-FTB01-190904	Date Received:	09/04/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	09/18/19 08:53
Analytical Date:	09/20/19 02:07		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.94	0.395	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.94	0.384	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.94	0.231	1
Perfluorohexanoic Acid (PFHxA)	0.368	J	ng/l	1.94	0.318	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.94	0.218	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.94	0.364	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.94	0.229	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.94	1.29	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.94	0.667	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.94	0.302	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.94	0.488	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	0.294	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.94	1.17	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.94	0.628	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.94	0.252	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.94	0.950	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.94	0.562	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.94	0.779	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.94	0.360	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.94	0.317	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.94	0.240	1
PFOA/PFOS, Total	ND		ng/l	1.94	0.229	1

Project Name: HVRA **Lab Number:** L1940308

Project Number: 18.8090 **Report Date:** 09/20/19

SAMPLE RESULTS

Lab ID: L1940308-03 Date Collected: 09/04/19 14:04

Client ID: HVRA-FTB01-190904 Date Received: 09/04/19

Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	71		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	104		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	108		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		33-143

Project Name: HVRA **Lab Number:** L1940308

Project Number: 18.8090 **Report Date:** 09/20/19

SAMPLE RESULTS

Lab ID:	L1940308-04	Date Collected:	09/04/19 14:41
Client ID:	HVRA-1610_RT_376-190904	Date Received:	09/04/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	09/06/19 18:00
Analytical Date:	09/08/19 03:06		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	139	31.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	45		15-110

Project Name: HVRA **Lab Number:** L1940308
Project Number: 18.8090 **Report Date:** 09/20/19

SAMPLE RESULTS

Lab ID:	L1940308-04	Date Collected:	09/04/19 14:41
Client ID:	HVRA-1610_RT_376-190904	Date Received:	09/04/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	09/18/19 08:53
Analytical Date:	09/20/19 02:24		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.33	J	ng/l	1.84	0.375	1
Perfluoropentanoic Acid (PFPeA)	1.12	J	ng/l	1.84	0.364	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	0.219	1
Perfluorohexanoic Acid (PFHxA)	1.18	J	ng/l	1.84	0.301	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	0.207	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	0.346	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.84	0.217	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.632	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	0.287	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	0.463	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.279	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.596	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.239	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.901	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.533	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.739	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.342	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.301	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.228	1
PFOA/PFOS, Total	ND		ng/l	1.84	0.217	1

Project Name:	HVRA	**Lab Number:**	L1940308
Project Number:	18.8090	**Report Date:**	09/20/19

SAMPLE RESULTS

Lab ID:	L1940308-04	Date Collected:	09/04/19 14:41
Client ID:	HVRA-1610_RT_376-190904	Date Received:	09/04/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	95		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	88		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		33-143

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940308
Report Date: 09/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 09/07/19 20:42
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 09/06/19 18:00

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s):			01-02,04	Batch:	WG1281240-1
1,4-Dioxane	ND		ng/l	150	33.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	40		15-110

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940308
Report Date: 09/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 09/19/19 19:46
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 09/18/19 08:53

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1285457-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.392	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: HVRA **Lab Number:** L1940308
Project Number: 18.8090 **Report Date:** 09/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 09/19/19 19:46
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 09/18/19 08:53

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1285457-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	107		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	117		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940308
Report Date: 09/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 01-02,04 Batch: WG1281240-2 WG1281240-3								
1,4-Dioxane	109		110		40-140	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	37		39		15-110

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940308
Report Date: 09/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1285457-2 WG1285457-3								
Perfluorobutanoic Acid (PFBA)	117		118		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	117		118		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	111		112		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	116		116		69-168	0		30
Perfluoroheptanoic Acid (PFHpA)	114		119		58-159	4		30
Perfluorohexanesulfonic Acid (PFHxS)	118		123		69-177	4		30
Perfluorooctanoic Acid (PFOA)	114		117		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	123		118		49-187	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	125		109		61-179	14		30
Perfluorononanoic Acid (PFNA)	121		119		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	130		110		52-151	17		30
Perfluorodecanoic Acid (PFDA)	114		121		63-171	6		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	118		120		56-173	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	116		122		60-166	5		30
Perfluoroundecanoic Acid (PFUnA)	112		116		60-153	4		30
Perfluorodecanesulfonic Acid (PFDS)	132		108		38-156	20		30
Perfluorooctanesulfonamide (FOSA)	113		116		46-170	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	124		126		45-170	2		30
Perfluorododecanoic Acid (PFDoA)	117		118		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	135		136		48-158	1		30
Perfluorotetradecanoic Acid (PFTA)	113		115		59-182	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1940308

Report Date: 09/20/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1285457-2 WG1285457-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		98		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107		111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		102		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		94		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		95		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		101		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		98		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		113		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		98		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		103		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		92		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		125		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		92		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		97		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		39		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		82		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		96		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		82		33-143

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(*)
L1940308-01A	Plastic 250ml Trizma preserved	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1940308-01B	Plastic 250ml Trizma preserved	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1940308-01C	Amber 250ml unpreserved	B	7	7	2.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1940308-01D	Amber 250ml unpreserved	B	7	7	2.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1940308-02A	Plastic 250ml Trizma preserved	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1940308-02B	Plastic 250ml Trizma preserved	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1940308-02C	Amber 250ml unpreserved	B	7	7	2.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1940308-02D	Amber 250ml unpreserved	B	7	7	2.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1940308-03A	Plastic 250ml Trizma preserved	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1940308-04A	Plastic 250ml Trizma preserved	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1940308-04B	Plastic 250ml Trizma preserved	A	NA		3.4	Y	Absent		A2-NY-537-ISOTOPE(14)
L1940308-04C	Amber 250ml unpreserved	B	7	7	2.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1940308-04D	Amber 250ml unpreserved	B	7	7	2.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)

*Values in parentheses indicate holding time in days

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.
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.

Footnotes

Report Format: DU Report with 'J' Qualifiers

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.

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. If a 'Total' result is requested, the results of its individual components will also be reported.

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.

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.

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

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

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
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; 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.**

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.

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

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 1 of 1

Date Rec'd in Lab 9/5/19

ALPHA Job # L1940308

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

Project Information
Project Name: HVRA
Project Location: Wappingers Falls, NY
Project # 18.8090
(Use Project name as Project #) ☐
Project Manager: Kirk Moline
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information
Client: C.T. Male Assoc
Address: 50 Century Hill Dr. Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

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:

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	PFAS	1,4 Dioxane	Sample Specific Comments	Total Bottles
40308.01	HVRA-1581-Rt-376-190904	9/4/19	1333		AH	X	X		4
.02	HVRA-7-Hackensack-Hts-Rd-190904	9/4/19	1400		AH	X	X		4
.03	HVRA-FTB01-190904	9/4/19	1404		AH	X			1
.04	HVRA-1610-Rt-376-190904	9/4/19	1441		AH	X	X		4

	PFAS	1,4 Dioxane
Container Type	P	A
Preservative	O	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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	09-04-19/1800	[signature]	9/4/19 2150
[signature]	9/4/19 2150	[signature]	9/5/19 01:00
T. [signature]	9/5/19 0400	[signature]	9/5/19 0400

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)

*PFAS samples and 1,4 Dioxane samples shipped at same time in different coolers

ANALYTICAL REPORT

Lab Number:	L1940894
Client:	C.T. Male Associates 12 Raymond Avenue Poughkeepsie, NY 12603
ATTN:	David Lent
Phone:	(845) 454-4400
Project Name:	HVRA
Project Number:	18.8090
Report Date:	09/25/19

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).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940894
Report Date: 09/25/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1940894-01	HVRA-1601RT376-190906	WATER	WAPPINGERS FALLS, NY	09/06/19 15:15	09/06/19
L1940894-02	HVRA-2HACKENSACK-190906	WATER	WAPPINGERS FALLS, NY	09/06/19 16:00	09/06/19
L1940894-03	LTB01-190906	WATER	WAPPINGERS FALLS, NY	09/06/19 00:00	09/06/19

Project Name:	HVRA	**Lab Number:**	L1940894
Project Number:	18.8090	**Report Date:**	09/25/19

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: HVRA **Lab Number:** L1940894
Project Number: 18.8090 **Report Date:** 09/25/19

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.

Perfluorinated Alkyl Acids by Isotope Dilution

The WG1286055-3 LCSD recovery, associated with L1940894-01 through -03, is above the acceptance criteria for perfluorotridecanoic acid (pftrda) (164%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

WG1287384-7: The continuing calibration standard had the response for Perfluorohexanesulfonic Acid-Branched (br-PFHxS), outside of acceptance criteria. The response for Perfluorohexanesulfonic Acid (PFHxS) was within acceptance criteria; therefore, no further action was taken.

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: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 09/25/19

ORGANICS

SEMIVOLATILES

Project Name: HVRA | **Lab Number:** L1940894
Project Number: 18.8090 | **Report Date:** 09/25/19

SAMPLE RESULTS

Lab ID:	L1940894-01	Date Collected:	09/06/19 15:15
Client ID:	HVRA-1601RT376-190906	Date Received:	09/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	09/11/19 12:00
Analytical Date:	09/12/19 12:47		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	160	36.1	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	26		15-110

Project Name: HVRA **Lab Number:** L1940894

Project Number: 18.8090 **Report Date:** 09/25/19

SAMPLE RESULTS

Lab ID:	L1940894-01	Date Collected:	09/06/19 15:15
Client ID:	HVRA-1601RT376-190906	Date Received:	09/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	09/19/19 15:11
Analytical Date:	09/24/19 21:39		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.78	J	ng/l	1.85	0.378	1
Perfluoropentanoic Acid (PFPeA)	1.11	J	ng/l	1.85	0.367	1
Perfluorobutanesulfonic Acid (PFBS)	0.407	J	ng/l	1.85	0.220	1
Perfluorohexanoic Acid (PFHxA)	1.27	J	ng/l	1.85	0.304	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.85	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	1.36	J	ng/l	1.85	0.348	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.85	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	0.637	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.85	0.289	1
Perfluorooctanesulfonic Acid (PFOS)	0.748	J	ng/l	1.85	0.467	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.281	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.600	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.241	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.907	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.537	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.744	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.344	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.303	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.85	0.230	1
PFOA/PFOS, Total	0.748	J	ng/l	1.85	0.218	1

Project Name:	HVRA	**Lab Number:**	L1940894
Project Number:	18.8090	**Report Date:**	09/25/19

SAMPLE RESULTS

Lab ID:	L1940894-01	Date Collected:	09/06/19 15:15
Client ID:	HVRA-1601RT376-190906	Date Received:	09/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	70		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	91		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	52		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	72		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		33-143

Project Name: HVRA **Lab Number:** L1940894
Project Number: 18.8090 **Report Date:** 09/25/19

SAMPLE RESULTS

Lab ID:	L1940894-02	Date Collected:	09/06/19 16:00
Client ID:	HVRA-2HACKENSACK-190906	Date Received:	09/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	09/11/19 12:00
Analytical Date:	09/12/19 13:08		
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	156	35.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	25		15-110

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1940894

Report Date: 09/25/19

SAMPLE RESULTS

Lab ID: L1940894-02
Client ID: HVRA-2HACKENSACK-190906
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/06/19 16:00
Date Received: 09/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 09/24/19 21:55
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 09/19/19 15:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	8.25		ng/l	1.91	0.389	1
Perfluoropentanoic Acid (PFPeA)	12.0		ng/l	1.91	0.378	1
Perfluorobutanesulfonic Acid (PFBS)	5.92		ng/l	1.91	0.227	1
Perfluorohexanoic Acid (PFHxA)	10.7		ng/l	1.91	0.313	1
Perfluoroheptanoic Acid (PFHpA)	7.27		ng/l	1.91	0.215	1
Perfluorohexanesulfonic Acid (PFHxS)	5.43		ng/l	1.91	0.359	1
Perfluorooctanoic Acid (PFOA)	20.7		ng/l	1.91	0.225	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.91	1.27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.91	0.656	1
Perfluorononanoic Acid (PFNA)	1.19	J	ng/l	1.91	0.298	1
Perfluorooctanesulfonic Acid (PFOS)	22.5		ng/l	1.91	0.481	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.91	0.290	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.91	1.16	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.91	0.618	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.91	0.248	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.91	0.935	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.91	0.553	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.91	0.767	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.91	0.355	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.91	0.312	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.91	0.237	1
PFOA/PFOS, Total	43.2		ng/l	1.91	0.225	1

Project Name: HVRA **Lab Number:** L1940894

Project Number: 18.8090 **Report Date:** 09/25/19

SAMPLE RESULTS

Lab ID:	L1940894-02	Date Collected:	09/06/19 16:00
Client ID:	HVRA-2HACKENSACK-190906	Date Received:	09/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	67		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	75		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	61		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	71		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	44		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	43		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57		33-143

Project Name: HVRA **Lab Number:** L1940894

Project Number: 18.8090 **Report Date:** 09/25/19

SAMPLE RESULTS

Lab ID:	L1940894-03	Date Collected:	09/06/19 00:00
Client ID:	LTB01-190906	Date Received:	09/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	09/19/19 15:11
Analytical Date:	09/24/19 22:12		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.79	0.366	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.79	0.355	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.79	0.213	1
Perfluorohexanoic Acid (PFHxA)	0.373	J	ng/l	1.79	0.294	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.79	0.202	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.79	0.337	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.79	0.211	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.79	1.19	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.79	0.616	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.79	0.280	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.79	0.452	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.79	0.272	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.79	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.79	0.581	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.79	0.233	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.79	0.878	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.79	0.520	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.79	0.720	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.79	0.333	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.79	0.293	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.79	0.222	1
PFOA/PFOS, Total	ND		ng/l	1.79	0.211	1

Project Name:	HVRA	**Lab Number:**	L1940894
Project Number:	18.8090	**Report Date:**	09/25/19

SAMPLE RESULTS

Lab ID:	L1940894-03	Date Collected:	09/06/19 00:00
Client ID:	LTB01-190906	Date Received:	09/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	56		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	57		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	58		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	69		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	71		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	51		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		33-143

Project Name: HVRA **Lab Number:** L1940894
Project Number: 18.8090 **Report Date:** 09/25/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 09/12/19 08:16
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 09/11/19 12:00

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 01-02 Batch: WG1282853-1					
1,4-Dioxane	ND		ng/l	150	33.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	26		15-110

Project Name: HVRA **Lab Number:** L1940894
Project Number: 18.8090 **Report Date:** 09/25/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 09/24/19 15:34
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 09/19/19 15:11

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1286055-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.424	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: HVRA **Lab Number:** L1940894
Project Number: 18.8090 **Report Date:** 09/25/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 09/24/19 15:34
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 09/19/19 15:11

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1286055-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		33-143

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940894
Report Date: 09/25/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 01-02 Batch: WG1282853-2 WG1282853-3								
1,4-Dioxane	109		110		40-140	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	31		29		15-110

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA | **Lab Number:** L1940894
Project Number: 18.8090 | **Report Date:** 09/25/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1286055-2 WG1286055-3								
Perfluorobutanoic Acid (PFBA)	134		133		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	121		120		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	106		111		65-157	5		30
Perfluorohexanoic Acid (PFHxA)	130		130		69-168	0		30
Perfluoroheptanoic Acid (PFHpA)	130		131		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	136		138		69-177	1		30
Perfluorooctanoic Acid (PFOA)	128		124		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	120		149		49-187	22		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		108		61-179	9		30
Perfluorononanoic Acid (PFNA)	130		131		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	123		128		52-151	4		30
Perfluorodecanoic Acid (PFDA)	131		127		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	119		134		56-173	12		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	127		144		60-166	13		30
Perfluoroundecanoic Acid (PFUnA)	126		133		60-153	5		30
Perfluorodecanesulfonic Acid (PFDS)	119		118		38-156	1		30
Perfluorooctanesulfonamide (FOSA)	114		110		46-170	4		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	109		136		45-170	22		30
Perfluorododecanoic Acid (PFDoA)	132		133		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	158		**164**	Q	48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	134		133		59-182	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940894
Report Date: 09/25/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1286055-2 WG1286055-3

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		87		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		101		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80		75		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		84		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		82		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		85		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		86		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		82		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		79		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		80		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		92		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		61		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		78		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		39		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		68		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		70		33-143

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940894
Report Date: 09/25/19

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(*)
L1940894-01A	Plastic 250ml Trizma preserved	A	NA		4.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1940894-01B	Plastic 250ml Trizma preserved	A	NA		4.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1940894-01C	Amber 500ml NaSulfite/NaHSO4 preserved	A	7	7	4.6	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1940894-01D	Amber 500ml NaSulfite/NaHSO4 preserved	A	7	7	4.6	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1940894-02A	Plastic 250ml Trizma preserved	A	NA		4.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1940894-02B	Plastic 250ml Trizma preserved	A	NA		4.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1940894-02C	Amber 500ml NaSulfite/NaHSO4 preserved	A	7	7	4.6	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1940894-02D	Amber 500ml NaSulfite/NaHSO4 preserved	A	7	7	4.6	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1940894-03A	Plastic 250ml Trizma preserved	A	NA		4.6	Y	Absent		A2-NY-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: HVRA **Lab Number:** L1940894

Project Number: 18.8090 **Report Date:** 09/25/19

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.
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.

Footnotes

Report Format: DU Report with 'J' Qualifiers

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.

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. If a 'Total' result is requested, the results of its individual components will also be reported.

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.

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.

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

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

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
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; 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.**

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.

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

NEW YORK CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
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
of

Date Rec'd in Lab: 9/7/19

ALPHA Job #: L1940894

Project Information
Project Name: HVLA
Project Location: Wappingers Falls, NY
Project #: 18.8090
(Use Project name as Project #) ☐
Project Manager: David Lent
ALPHAQuote #:

Turn-Around Time
Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information
Client: C.T. Male Associates
Address: 12 Raymond Ave
Poughkeepsie NY
Phone: (845) 454-4400
Fax:
Email: d.lent@ctmale.com

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:

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	ANALYSIS: PFAS	ANALYSIS: 1,4 Dioxane						Sample Specific Comments	Total Bottles
40894.01	HVRA-1601 LT376-190906	9/6/19	1515	W	DL	X	X							4
.02	HVRA-2 Hackensack-190906	9/6/19	1600	W	DL	X	X							4
.03	LTB01-190906	9/6/19	1610	W	DL	X								1

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

	PFAS	1,4 Dioxane
Container Type	P	A
Preservative	D	O,G

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	9/6/19/1700	D. Lchmeda AAL	9/6/19 1700
D. Lchmeda AAL	9/6/19 1850	[signature] AAL	9/6/19 [illegible]
[signature] AAL	9/7/19 0230	[signature]	9/7/19 02:30
[signature]	9/7/19 6:45	[signature]	9/7/19 06:45

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 G

DATA USABILITY SUMMARY REPORTS

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Latham, New York

Lab Number: L1931180

Alpha Analytical

Report Date: August 1, 2019

Prepared by

Barr Engineering Co.

November 8, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical #L1931180
Date: November 8, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of per- and polyfluorinated alkyl substances (PFAS) and total solids data contained within Alpha Analytical report # L1931180 for C.T. Male Associates, Latham, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Laboratory Duplicate
- Extracted internal standards

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blanks.

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/dlb

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on July 16, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA, which is accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing rinse and trip blank sample analysis. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Rinse Blank / Trip Blank

Nine samples labeled "RB" for rinse blank samples and one trip blank sample was collected. The rinse blanks were used to check that equipment being used would not introduce PFAS to the samples being collected. The trip blank was analyzed to determine the extent of potential PFAS contamination introduced during sample transport and handling. No target compounds were detected above the MDL in the rinse and trip blank samples with the exception of rinse blank samples RB01-190716 and RB08-190716; these samples were taken from shop water and macrocore locations respectively as noted on the COC. Since rinse blank samples are intended to verify equipment is PFAS free prior to sampling in the field, they were not used in data evaluation. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_1 and ATTACHMENT_PFAS_2.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. They were analyzed by the laboratory for each parameter, where applicable. No target compounds were detected above the MDL in the method blank with the exception of perfluorobutanoic acid (PFBA). Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_3. The blank concentration was compared against the project sample analyte concentrations. All sample concentration of PFBA were less than the MDL and were not qualified.

Accuracy and Precision Data

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), and extracted internal standards to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the relative percent difference (RPD) of the LCS/LCSD and laboratory duplicate sample pairs.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria with the following exceptions. The perfluorooctanesulfonamide (FOSA) LCS recovery and associated RPD exceeded laboratory acceptance criteria indicating a potential high bias; however, no FOSA data were qualified because the associated sample results were non-detects. Excerpt from the laboratory report is provided in ATTACHMENT_ PFAS_4.

Laboratory Duplicate

A laboratory duplicate is a second aliquot of a sample that is carried through the same sample preparation and analytical procedures as the native sample in order to determine the precision of the method. Laboratory duplicate sample results were evaluated for compounds where both the native and duplicate sample concentrations were greater than five times the reporting limit. The reported laboratory duplicate RPD was within the laboratory acceptance criteria.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. Some of the extracted internal standard recoveries were outside of laboratory acceptance criteria for the field samples. Where the extracted internal standard exceeded the laboratory acceptance criteria indicating a potential high bias, and the target result was not detected, no qualification was applied. If the target result was detected or when the extracted internal standard was below the laboratory acceptance criteria, the results were qualified in the Table 1 - Qualifier Summary attached. In addition, there was an extraction labeled standard below laboratory acceptance criteria for one of the method blanks and multiple extraction labeled standards below criteria in the LCS/LCSD for PFAS analysis; however, no data were qualified based on the low recoveries in the method blank and LCS/LCSD as the field sample's extraction internal standards were used for qualification. The extracted internal standard recoveries that were outside of laboratory acceptance criteria are provided in ATTACHMENT_PFAS_5, ATTACHMENT_PFAS_6, ATTACHMENT_PFAS_7, and ATTACHMENT_PFAS_8.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chains of custody.

Table 1 - Qualifier Summary

Alpha Report #: L1931180

QC Item	Sample ID	Compound	Qualification	Comment
Extracted Internal Standard	RB03-190716	PFBA	J	Add 'J' to non-detect result
		NMeFOSAA		Add 'J' to non-detect result
		NEtFOSAA		Add 'J' to non-detect result

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1931180
Report Date: 08/01/19

SAMPLE RESULTS

Lab ID: L1931180-01
Client ID: RB01-190716
Sample Location: Not Specified
Date Collected: 07/16/19 11:35
Date Received: 07/16/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 07/29/19 11:53
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 07/26/19 12:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.63		ng/l	1.97	0.402	1
Perfluoropentanoic Acid (PFPeA)	1.77	J	ng/l	1.97	0.390	1
Perfluorobutanesulfonic Acid (PFBS)	0.646	J	ng/l	1.97	0.234	1
Perfluorohexanoic Acid (PFHxA)	2.26		ng/l	1.97	0.323	1
Perfluoroheptanoic Acid (PFHpA)	1.09	J	ng/l	1.97	0.222	1
Perfluorohexanesulfonic Acid (PFHxS)	1.03	J	ng/l	1.97	0.370	1
Perfluorooctanoic Acid (PFOA)	2.40		ng/l	1.97	0.232	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.97	1.31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.97	0.677	1
Perfluorononanoic Acid (PFNA)	0.531	J	ng/l	1.97	0.307	1
Perfluorooctanesulfonic Acid (PFOS)	2.95		ng/l	1.97	0.496	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.97	0.299	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.97	1.19	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.97	0.638	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.97	0.256	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.97	0.964	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.97	0.571	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.97	0.791	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.97	0.366	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.97	0.322	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.97	0.244	1
PFOA/PFOS, Total	5.35		ng/l	1.97	0.232	1

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1931180
Report Date: 08/01/19

SAMPLE RESULTS

Lab ID: L1931180-08
Client ID: RB08-190716
Sample Location: Not Specified

Date Collected: 07/16/19 11:27
Date Received: 07/16/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 07/29/19 13:16
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 07/26/19 12:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.982	J	ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	0.379	J	ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.80	0.296	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.884	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1
PFOA/PFOS, Total	ND		ng/l	1.80	0.213	1

Project Name: HVRA **Lab Number:** L1931180
Project Number: 18.8090 **Report Date:** 08/01/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/01/19 12:01
Analyst: JW

Extraction Method: EPA 537(M)
Extraction Date: 07/29/19 16:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-03 Batch: WG1265835-1					
Perfluorobutanoic Acid (PFBA)	0.094	J	ug/kg	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042

ATTACHMENT_PFAS_4

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931180
Report Date: 08/01/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 Batch: WG1265835-2 WG1265835-3								
Perfluorobutanoic Acid (PFBA)	99		103		71-135	4		30
Perfluoropentanoic Acid (PFPeA)	103		105		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	94		96		72-128	2		30
Perfluorohexanoic Acid (PFHxA)	108		111		70-132	3		30
Perfluoroheptanoic Acid (PFHpA)	99		101		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	107		114		67-130	6		30
Perfluorooctanoic Acid (PFOA)	102		104		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	101		108		64-140	7		30
Perfluoroheptanesulfonic Acid (PFHpS)	100		102		70-132	2		30
Perfluorononanoic Acid (PFNA)	104		107		72-129	3		30
Perfluorooctanesulfonic Acid (PFOS)	86		95		68-136	10		30
Perfluorodecanoic Acid (PFDA)	108		110		69-133	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	89		100		65-137	12		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	94		107		63-144	13		30
Perfluoroundecanoic Acid (PFUnA)	93		97		64-136	4		30
Perfluorodecanesulfonic Acid (PFDS)	102		111		59-134	8		30
Perfluorooctanesulfonamide (FOSA)	146	Q	105		67-137	33	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	88		102		61-139	15		30
Perfluorododecanoic Acid (PFDoA)	98		102		69-135	4		30
Perfluorotridecanoic Acid (PFTrDA)	93		96		66-139	3		30
Perfluorotetradecanoic Acid (PFTA)	112		114		69-133	2		30

ATTACHMENT_PFAS_5

Project Name:	HVRA	**Lab Number:**	L1931180
Project Number:	18.8090	**Report Date:**	08/01/19

SAMPLE RESULTS

Lab ID:	L1931180-03	Date Collected:	07/16/19 10:58
Client ID:	RB03-190716	Date Received:	07/16/19
Sample Location:	Not Specified	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	55	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	66		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	75		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	74		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	69		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	62		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	74		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	42	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	40	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	47		26-160

Project Name:	HVRA	**Lab Number:**	L1931180
Project Number:	18.8090	**Report Date:**	08/01/19

SAMPLE RESULTS

Lab ID:	L1931180-07	Date Collected:	07/16/19 11:15
Client ID:	RB07-190716	Date Received:	07/16/19
Sample Location:	Not Specified	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	125		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	183	Q	16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	146		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	135		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	135		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	141		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	138		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	137		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	139		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	123		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	73		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	122		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	107		33-143

Project Name: HVRA **Lab Number:** L1931180
Project Number: 18.8090 **Report Date:** 08/01/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/01/19 12:01
Analyst: JW

Extraction Method: EPA 537(M)
Extraction Date: 07/29/19 16:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-03 Batch: WG1265835-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	62		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	81		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	59		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	0	Q	1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		26-160

Lab Control Sample Analysis

Batch Quality Control

Project Name: HVRA **Lab Number:** L1931180

Project Number: 18.8090 **Report Date:** 08/01/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03 Batch: WG1265835-2 WG1265835-3								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	51	Q	58	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	60	Q	67		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		85		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		63		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	68		69		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		81		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		73		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	79		72		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		80		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		85		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		80		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		76		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		63		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		84		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	0	Q	0	Q	1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		58		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		82		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		71		26-160

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Poughkeepsie, New York

Lab Number: L1931312

Alpha Analytical

Report Date: November 6, 2019

Prepared by

Barr Engineering Co.

November 8, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical #L1931312
Date: November 8, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of semi-volatile organic compounds (SVOCs), SVOC selective ion monitoring (SIM), 1,4-dioxane, per- and polyfluorinated alkyl substances (PFAS), polychlorinated biphenyls (PCBs), metals (TAL 23), and cyanide data contained within Alpha Analytical report #L1931312 for C.T. Male Associates, Poughkeepsie, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Matrix spikes/matrix spike duplicates (MS/MSD)
- Deuterated Monitoring Compounds (DMC)/Surrogates
- Extracted internal standards
- Additional items noted by the laboratory

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blank(s).

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/tao

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on July 16 and 17, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA and Alpha Analytical in Westborough, MA as indicated within the laboratory report. Each of these Alpha locations are accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing trip and field blank samples analyses. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Trip Blank / Field Blank

Two trip blank samples and two field blank samples were collected; however, the trip and field blank samples collected on July 16, 2019 were canceled by C.T. Male since no PFAS sample was collected on that day. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_1. The trip blank was analyzed to determine the extent of potential PFAS contamination introduced during sample transport and handling. The field blank sample was collected to monitor PFAS contamination from any or all the following sources: sampling activities, sample transport, and storage. No target compounds were detected above the MDL in the trip and field blank samples.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. They were analyzed by the laboratory for each parameter, where applicable. No target compounds were detected above the MDL in the method blank with the exception of bis(2-ethylhexyl)phthalate, antimony, iron, and thallium. Excerpts from the laboratory report are provided in ATTACHMENT_SVOC_1 and ATTACHMENT_METALS_1. The blank concentrations for these analytes were compared against the project sample analyte concentration. Sample concentrations less than or equal to five times the blank sample concentration were qualified "UB" in the Table 1 - Qualifier Summary attached. Sample concentrations greater than five times the blank detection or results less than the MDL were not qualified.

Accuracy and Precision Data

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), matrix spike (MS) samples, matrix spike duplicate (MSD) samples, surrogate standards, and extracted internal standards to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the relative percent difference (RPD) of the LCS/LCSD and MS/MSD sample pairs.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria with the exception of the PCB LCS recoveries for Aroclor 1016 and Aroclor 1260 and the resulting LCS/LCSD RPD that were outside laboratory acceptance criteria. Excerpt from the laboratory report is provided in ATTACHMENT_PCB_1. Since the low recoveries were consistent with low surrogate recoveries in the LCS and the LCSD recoveries were acceptable, no qualification was applied to the PCB sample results since the issue appears to be isolated to the LCS sample only.

Matrix Spike / Matrix Spike Duplicate (MS/MSD)

An MS is a sample spiked with known concentrations of target analytes that is carried through the sample preparation and analytical procedures in order to assess the accuracy of a method in a given sample matrix. MS/MSD source samples were not specific to this report; therefore, the MS/MSD data were not used in data evaluation.

Surrogate Standard

Surrogate standards are compounds added to every blank, project sample, and quality control sample for organic analyses to evaluate analytical efficiency by measuring recovery (accuracy). Surrogate standards are compounds not expected to be detected in environmental media. Surrogate standard recoveries were within laboratory acceptance criteria with the exception of the low surrogate recoveries in the PCB LCS as noted above. Excerpt from the laboratory report is provided in ATTACHMENT_PCB_1.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. The extracted internal standard recoveries were within laboratory acceptance criteria.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chains of custody. On November 30, 2007, the Integrated Risk Information System (IRIS) changed the chemical name for CAS #108-60-1 from bis(2-chloroisopropyl)ether to 2,2'-oxybis(1-chloropropane). This revised name was included in EPA method 8270D and in the SVOC target analyte lists (TCL) from recent Statement of Works; however, the laboratory used the name bis(2-chloroisopropyl)ether in this report. The laboratory is reviewing how to handle this naming convention for future work.

Additional Laboratory Items

Continuing Calibration Verification

It was noted by the laboratory that a perfluorohexanesulfonic acid (PFHxS) continuing calibration verification standard was below laboratory acceptance criteria; however, no data were qualified since the laboratory followed their protocol which allows 10% of the reported analytes to be greater than 30%, but less than 40%. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_1.

Table 1 - Qualifier Summary

Alpha Report #: L1931312

QC Item	Sample ID	Compound	Qualification	Comment
Method Blank	HVRA-AAG-PW01	Bis(2-ethylhexyl)phthalate	UB	Remove 'J' qualifier and change to non-detect
		Antimony		
		Iron		

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1931312

Report Date: 11/06/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/18/19 00:44
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 07/16/19 17:22

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1260590-1					
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
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
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
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
Isophorone	ND		ug/l	5.0	1.2
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	1.6	J	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
Dimethyl phthalate	ND		ug/l	5.0	1.8
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
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

Project Name: HVRA **Lab Number:** L1931312
Project Number: 18.8090 **Report Date:** 11/06/19

Case Narrative (continued)

Report Revision

November 06, 2019: The Semivolatile Organics compound list has been amended to include 2-Methylphenol.

Report Submission

July 31, 2019: This final report includes the results of all requested analyses.

July 31, 2019: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L1931312-01: One container for the PCBs analysis was received broken; however, there was adequate sample remaining to perform the requested analysis.

L1931312-01: The Perfluorinated Alkyl Acids analysis was requested on the Chain of Custody, but a container was not received. This was later received and is reported as L1931312-04.

L1931312-02: A sample identified as "TRIP BLANK" was received but not listed on the Chain of Custody. At the client's request, this sample was not analyzed.

L1931312-03: A sample identified as "FIELD BLANK" was received but not listed on the Chain of Custody. At the client's request, this sample was not analyzed.

L1931312-04: The sample identified as "HVRA-AAG-PW01" on the chain of custody was identified as "HVRA-ARFF-PW01" on the container label. At the client's request, the sample is reported as "HVRA-AAG-PW01".

Perfluorinated Alkyl Acids by Isotope Dilution

WG1266320-2: The continuing calibration standard had the response for PFHxS is outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1931312
Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG1261777-2 WG1261777-3									
Aroclor 1016	28	Q	85		40-140	100	Q	50	A
Aroclor 1260	26	Q	86		40-140	108	Q	50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	24	Q	78		30-150	A
Decachlorobiphenyl	31		100		30-150	A
2,4,5,6-Tetrachloro-m-xylene	24	Q	75		30-150	B
Decachlorobiphenyl	31		92		30-150	B

Project Name: HVRA **Lab Number:** L1931312

Project Number: 18.8090 **Report Date:** 11/06/19

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 Batch: WG1262436-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Antimony, Total	0.00090	J	mg/l	0.00400	0.00042	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Calcium, Total	ND		mg/l	0.100	0.0394	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Iron, Total	0.0215	J	mg/l	0.0700	0.0191	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Thallium, Total	0.00028	J	mg/l	0.00050	0.00014	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	07/20/19 11:10	07/22/19 17:35	1,6020B	AM

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 Batch: WG1262816-1										
Mercury, Total	ND		mg/l	0.00020	0.00009	1	07/22/19 11:22	07/23/19 01:25	1,7470A	GD

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Poughkeepsie, New York

Lab Number: L1932867

Alpha Analytical

Report Date: August 2, 2019

Prepared by

Barr Engineering Co.

November 8, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical #L1932867
Date: November 8, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of 1,4-dioxane, per- and polyfluorinated alkyl substances (PFAS), and total solids data contained within Alpha Analytical report #L1932867 for C.T. Male Associates, Poughkeepsie, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Matrix spikes
- Laboratory duplicate
- Deuterated Monitoring Compounds (DMC)/Surrogates
- Extracted internal standards

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blank(s).

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/dlb

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on July 24, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA, which is accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing trip and field blank samples analyses. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Trip Blank / Field Blank

One trip blank sample and one field blank sample were collected. The trip blank was analyzed to determine the extent of potential PFAS contamination introduced during sample transport and handling. The field blank sample was collected to monitor PFAS contamination from any or all the following sources: sampling activities, sample transport, and storage. No target compounds were detected above the MDL in the field blank sample with the exception of perfluorooctanoic acid (PFOA). Excerpts from the laboratory report are provided in ATTACHMENT_PFAS_1 (Field Blank) and ATTACHMENT_PFAS_2 (Trip Blank). PFOA was also detected in the method blank at a slightly lower concentration. The higher blank concentration for this analyte was compared against the project sample analyte concentration. The project sample results were compared to the blank detection by calculating the wet-weight corrected result for soil samples. No data was qualified as all sample concentrations were greater than five times this highest blank detection or non-detect for PFOA.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. They were analyzed by the laboratory for each parameter, where applicable. Target compounds detected above the MDL in the method blanks included for soil samples perfluorobutanoic acid (PFBA), perfluorodecanoic acid (PFDA), and perfluoroundecanoic acid (PFUnA) and for water PFOA only. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_3 and ATTACHMENT_PFAS_4. The higher blank concentration for each analyte, PFOA was also detected in the field and trip blanks at higher or similar concentrations, was compared against the project sample analyte concentration. Sample concentrations less than or equal to five times the higher blank sample concentration were qualified "UB" in the Table 1 - Qualifier Summary attached. Sample concentrations greater than five times the blank detection or results less than the MDL were not qualified.

Accuracy and Precision Data

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), matrix spike (MS) samples, surrogates and extracted internal standards to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the relative percent difference (RPD) of the LCS/LCSD and duplicate sample pairs.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria.

Matrix Spike

An MS is a sample spiked with known concentrations of target analytes that is carried through the sample preparation and analytical procedures in order to assess the accuracy of a method in a given sample matrix. Sample FIRE POND-01-W served as the 1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2FTS) and perfluorooctanesulfonic acid (PFOS) MS source sample for water analysis. The MS percent recovery was below the laboratory criteria; however, no data were qualified because the native sample concentration was greater than four times the spike concentration so spike criteria do not apply. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_5.

Laboratory Duplicate

A laboratory duplicate is a second aliquot of a sample that is carried through the same sample preparation and analytical procedures as the native sample in order to determine the precision of the method. Laboratory duplicate sample results were evaluated for compounds where both the native and duplicate sample concentrations were greater than five times the reporting limit. Samples OUTFALL-002-S and FIRE POND-02-W served as the PFAS laboratory duplicate source samples and the RPDs were within the laboratory acceptance criteria.

Surrogate Standard

Surrogate standards are compounds added to every blank, project sample, and quality control sample for organic analyses to evaluate analytical efficiency by measuring recovery (accuracy). Surrogate standards are compounds not expected to be detected in environmental media. Surrogate standard recoveries were within laboratory acceptance criteria.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. Some of the extracted internal standard recoveries were below laboratory acceptance criteria and the associated results were qualified in the Table 1 - Qualifier Summary attached. The extracted internal standard recoveries that were outside of laboratory acceptance criteria are provided in ATTACHMENT_PFAS_6 and ATTACHMENT_PFAS_7.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chains of custody.

Table 1 - Qualifier Summary

Alpha Report #: **L1932867**

QC Item	Sample ID	Compound	Qualification	Comment
Method Blank Detection	OUTFALL-003-S	PFBA	UB	Remove 'J' qualifier and change to non-detect
	OUTFALL-002-S			
	OUTFALL-004-S			
	OUTFALL-006-S			
	FIRE POND-01-S			
	FIRE POND-02-S			
	OUTFALL-002-S	PFDA	UB	Remove 'J' qualifier and change to non-detect
	OUTFALL-005-S			
	FIRE POND-01-S			
	FIRE POND-02-S			
	OUTFALL-002-S	PFUnA	UB	Remove 'J' qualifier and change to non-detect
	OUTFALL-006-S			
	FIRE POND-02-S			
Extracted Internal Standard	OUTFALL-007-S	FOSA	J	Add 'J' to non-detect result
		PFDS		Add 'J' to non-detect result
	FIRE POND-02-S	PFHxA	J	Result already 'J' qualified
		PFHpA		Result already 'J' qualified
		PFDA		Result already 'J' qualified
		NMeFOSAA		Add 'J' to non-detect result
		NEtFOSAA		Add 'J' to non-detect result
		PFTA		Add 'J' to non-detect result
		PFTrDA		Add 'J' to non-detect result

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932867
Project Number: 18.8090
Report Date: 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-11	Date Collected:	07/24/19 14:45
Client ID:	FIELD BLANK	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	07/30/19 19:30
Analytical Date:	08/01/19 04:13		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.08	0.425	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.08	0.412	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.08	0.248	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.08	0.342	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.08	0.234	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.08	0.392	1
Perfluorooctanoic Acid (PFOA)	1.24	J	ng/l	2.08	0.246	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.08	1.39	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.08	0.717	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.08	0.325	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.08	0.525	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.08	0.317	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.08	1.26	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.08	0.675	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.08	0.271	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.08	1.02	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.08	0.604	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.08	0.838	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.08	0.388	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.08	0.341	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.08	0.258	1
PFOA/PFOS, Total	1.24	J	ng/l	2.08	0.246	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-12	Date Collected:	07/24/19 14:50
Client ID:	TRIP BLANK	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	07/30/19 19:30
Analytical Date:	08/01/19 04:30		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.78	0.363	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	0.212	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.78	0.292	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.334	1
Perfluorooctanoic Acid (PFOA)	0.886	J	ng/l	1.78	0.210	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.78	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	0.278	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.78	0.448	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.576	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.872	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.516	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.715	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221	1
PFOA/PFOS, Total	0.886	J	ng/l	1.78	0.210	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 07/31/19 22:42
Analyst: JW

Extraction Method: EPA 537(M)
Extraction Date: 07/30/19 14:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-07,09 Batch: WG1266199-1					
Perfluorobutanoic Acid (PFBA)	0.098	J	ug/kg	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130
Perfluorodecanoic Acid (PFDA)	0.113	J	ug/kg	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	0.048	J	ug/kg	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/01/19 05:03
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 07/30/19 19:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08,10-12 Batch: WG1266495-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	0.876	J	ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	0.876	J	ng/l	2.00	0.236

Matrix Spike Analysis

Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT

Project Number: 18.8090

Lab Number: L1932867

Report Date: 08/02/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08,10-12 QC Batch ID: WG1266495-4 QC Sample: L1932867-08 Client ID: FIRE POND-01-W												
Perfluorobutanoic Acid (PFBA)	36.2	37.6	69.1	88		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	107	37.6	146	104		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	6.27	37.6	42.9	97		-	-		65-157	-		30
Perfluorohexanoic Acid (PFHxA)	70.4	37.6	110	105		-	-		69-168	-		30
Perfluoroheptanoic Acid (PFHpA)	24.4	37.6	60.4	96		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	83.4	37.6	126	113		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	26.1	37.6	62.2	96		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	292	37.6	301	**24**	Q	-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	2.70	37.6	39.4	98		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	4.46	37.6	42.2	100		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	214	37.6	225	**29**	Q	-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	0.945J	37.6	40.4	107		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	6.36	37.6	40.7	91		-	-		56-173	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.6	34.1	91		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.6	32.3	86		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	37.6	30.8	82		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.6	33.8	90		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.6	32.1	85		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.6	32.6	87		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	37.6	35.2	94		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.6	39.0	104		-	-		59-182	-		30

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867
Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-06 Date Collected: 07/24/19 13:30
Client ID: OUTFALL-007-S Date Received: 07/24/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	69		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	82		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	71		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	53		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	**0**	Q	1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		26-160

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932867

Project Number: 18.8090 **Report Date:** 08/02/19

SAMPLE RESULTS

Lab ID:	L1932867-09	Date Collected:	07/24/19 14:25
Client ID:	FIRE POND-02-S	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	61		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	67		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	59	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	60	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	73		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	62		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	50		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	66		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	33	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	66		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	30	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	59		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	19	Q	26-160

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Poughkeepsie, New York

Lab Number: L1932869

Alpha Analytical

Report Date: November 6, 2019

Prepared by

Barr Engineering Co.

November 8, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical # L1932869
Date: November 8, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), SVOC selective ion monitoring (SIM), 1,4-dioxane, per- and polyfluorinated alkyl substances (PFAS), polychlorinated biphenyls (PCBs), pesticides, metals (TAL 23), and cyanide data contained within Alpha Analytical report # L1932869 for C.T. Male Associates, Poughkeepsie, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Matrix spikes/matrix spike duplicates (MS/MSD)
- Laboratory duplicate
- Deuterated Monitoring Compounds (DMC)/Surrogates
- Extracted internal standards
- Additional items noted by the laboratory

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blank(s).

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified as noted below. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/dlb

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on July 23, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA and Alpha Analytical in Westborough, MA as indicated within the laboratory report. Each of these Alpha locations are accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing trip and field blank samples analyses. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Trip Blank / Field Blank

One trip blank sample and one field blank sample were collected. The trip blank was analyzed to determine the extent of potential VOC contamination introduced during sample transport and handling. The field blank sample was collected to monitor PFAS contamination from any or all the following sources: sampling activities, sample transport, and storage. No target compounds were detected above the MDL in the blank samples with the exception of chloromethane and acetone detected in the trip blank. Excerpt from the laboratory report is provided in ATTACHMENT_VOC_1. The blank concentration for each analyte was compared against the project sample analyte concentration. The sample concentration less than or equal to five times the blank sample concentration was qualified "UB" in the Table 1 - Qualifier Summary attached. The sample concentration greater than five times the higher blank detection was not qualified.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. They were analyzed by the laboratory for each parameter, where applicable. No target compounds were detected above the MDL in the method blank with the exception of bis(2-ethylhexyl)phthalate. Excerpt from the laboratory report are provided in ATTACHMENT_SVOC_1. The blank concentration for this analyte was compared against the project sample analyte concentration. The sample concentration less than or equal to five times the blank sample concentration was qualified "UB" in the Table 1 - Qualifier Summary attached.

Accuracy and Precision Data

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), matrix spike (MS) samples, matrix spike duplicate (MSD) samples, surrogates, and extracted external standards to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the relative percent difference (RPD) of the LCS/LCSD, MS/MSD, and laboratory duplicate sample pairs.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria with the exception of SVOC 4-nitrophenol which had an LCSD above criteria. Excerpt from the laboratory report is provided in ATTACHMENT_SVOC_2. Since the associated sample result was non-detect for 4-nitrophenol, no data was qualified. In addition, the calculated RPD was outside of acceptance criteria for PFAS compounds perfluoroheptanesulfonic acid (PFHpS), perfluorooctanesulfonic acid (PFOS), and perfluorodecanesulfonic acid (PFDS). Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_1. Since the LCS and LCSD percent recoveries were acceptable, no data was qualified based on the RPD exceedance.

Matrix Spike / Matrix Spike Duplicate (MS/MSD)

An MS is a sample spiked with known concentrations of target analytes that is carried through the sample preparation and analytical procedures in order to assess the accuracy of a method in a given sample matrix. The MS/MSD sample results reported by the laboratory included both project and non-project specific samples. Results of MS/MSD samples not specific to this project were not evaluated. Where MS/MSD recoveries and/or associated RPDs failed acceptance criteria and where the sample was associated with another laboratory client, evaluation of the sample results was based on the LCS/LCSD data. Samples OUTFALL-004-W and OUTFALL-001-W served as the MS samples for the PFAS and metals analyses respectively. Metals total potassium and total sodium had an MS percent recovery that was above the limits from sample OUTFALL-001-W; however, no total sodium data were qualified because the native sample concentration was greater than four times the spike concentration so spike criteria do not apply. The total potassium MS had a high percent recovery indicating a potential high bias and the associated positive result is considered estimated and qualified “J” in the Table 1 - Qualifier Summary attached. Excerpt from the laboratory report is provided in ATTACHMENT_METALS_1.

Laboratory Duplicate

A laboratory duplicate is a second aliquot of a sample that is carried through the same sample preparation and analytical procedures as the native sample in order to determine the precision of the method. Laboratory duplicate sample results were evaluated for compounds where both the native and duplicate sample concentrations were greater than five times the reporting limit. Sample OUTFALL-001-W served as the PFAS and metals laboratory duplicate source sample and the RPDs were within the laboratory acceptance criteria.

Surrogate Standard

Surrogate standards are compounds added to every blank, project sample, and quality control sample for organic analyses to evaluate analytical efficiency by measuring recovery (accuracy). Surrogate standards are compounds not expected to be detected in environmental media. Surrogate standard recoveries were within laboratory acceptance criteria.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTrDA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. The extracted internal standard recoveries were within laboratory acceptance criteria with the exception of 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) for sample OUTFALL-004-W. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_2. Since the corresponding target compound (8:2FTS) was non-detect, no data was qualified based on this.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chains of custody. On November 30, 2007, the Integrated Risk Information System (IRIS) changed the chemical name for CAS #108-60-1 from bis(2-chloroisopropyl)ether to 2,2’-oxybis(1-chloropropane). This revised name was included in EPA method 8270D and in the SVOC target analyte lists (TCL) from recent Statement of Works; however, the laboratory used the name bis(2-chloroisopropyl)ether in this report. The laboratory is reviewing how to handle this naming convention for future work.

Additional Laboratory Items

Continuing Calibration Verification

It was noted by the laboratory multiple instances where the continuing calibration verification (CCV) standard was outside of acceptance criteria. The perfluorooctanesulfonamide (FOSA) CCV standard was below laboratory acceptance criteria; however, no data were qualified since the laboratory followed their protocol which allows 10% of the reported analytes to be greater than 30%, but less than 40%. Also, the laboratory noted that two branched perfluorooctanesulfonic acid (PFOS) CCV) standard were outside laboratory acceptance criteria; however, no data were qualified because the PFOS CCV was within laboratory acceptance criteria. In addition, the CCV for 8:2FTS had a response above the acceptance criteria for the method. However, the associated samples were non-detect; therefore, no further action was taken. Excerpt from the laboratory report discussing CCVs is provided in ATTACHMENT_PFAS_3.

Table 1 - Qualifier Summary

Alpha Report #: L1932869

QC Item	Sample ID	Compound	Qualification	Comment
Trip Blank Detection	OUTFALL-001-W	Acetone	UB	Change to non-detect
Method Blank Detection	OUTFALL-001-W	Bis(2-ethylhexyl)phthalate	UB	Change to non-detect
Matrix Spike	OUTFALL-001-W	Total Potassium	J	Result already 'J' qualified

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 11/06/19

SAMPLE RESULTS

Lab ID: L1932869-09
Client ID: TRIP BLANK
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 07/23/19 16:00
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 07/29/19 22:22
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
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	0.92	J	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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1932869-09	Date Collected:	07/23/19 16:00
Client ID:	TRIP BLANK	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	5.7		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	113		70-130

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 11/06/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/01/19 00:24
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 07/30/19 18:35

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 08 Batch: WG1266486-1					
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
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
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
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
Isophorone	ND		ug/l	5.0	1.2
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	2.5	J	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
Dimethyl phthalate	ND		ug/l	5.0	1.8
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
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

Lab Control Sample Analysis

Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08 Batch: WG1266486-2 WG1266486-3								
4-Nitroaniline	70		83		51-143	17		30
Dibenzofuran	68		76		40-140	11		30
1,2,4,5-Tetrachlorobenzene	57		63		2-134	10		30
Acetophenone	70		78		39-129	11		30
2,4,6-Trichlorophenol	69		77		30-130	11		30
p-Chloro-m-cresol	77		92		23-97	18		30
2-Chlorophenol	73		83		27-123	13		30
2,4-Dichlorophenol	74		84		30-130	13		30
2,4-Dimethylphenol	71		79		30-130	11		30
2-Nitrophenol	74		84		30-130	13		30
4-Nitrophenol	76		**90**	Q	10-80	17		30
2,4-Dinitrophenol	74		81		20-130	9		30
4,6-Dinitro-o-cresol	85		98		20-164	14		30
Phenol	55		66		12-110	18		30
2-Methylphenol	74		82		30-130	10		30
3-Methylphenol/4-Methylphenol	77		91		30-130	17		30
2,4,5-Trichlorophenol	67		80		30-130	18		30
Carbazole	74		87		55-144	16		30
Atrazine	94		105		40-140	11		30
Benzaldehyde	70		77		40-140	10		30
Caprolactam	43		50		10-130	15		30
2,3,4,6-Tetrachlorophenol	64		71		40-140	10		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1932869
Project Number: 18.8090
Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 Batch: WG1268635-2 WG1268635-3								
Perfluorobutanoic Acid (PFBA)	106		108		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	112		112		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	107		108		65-157	1		30
Perfluorohexanoic Acid (PFHxA)	116		119		69-168	3		30
Perfluoroheptanoic Acid (PFHpA)	106		116		58-159	9		30
Perfluorohexanesulfonic Acid (PFHxS)	101		104		69-177	3		30
Perfluorooctanoic Acid (PFOA)	115		102		63-159	12		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	104		106		49-187	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	108		160		61-179	39	Q	30
Perfluorononanoic Acid (PFNA)	116		113		68-171	3		30
Perfluorooctanesulfonic Acid (PFOS)	86		126		52-151	38	Q	30
Perfluorodecanoic Acid (PFDA)	111		113		63-171	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	102		93		56-173	9		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	114		138		60-166	19		30
Perfluoroundecanoic Acid (PFUnA)	112		112		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	96		134		38-156	33	Q	30
Perfluorooctanesulfonamide (FOSA)	88		98		46-170	11		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	94		96		45-170	2		30
Perfluorododecanoic Acid (PFDoA)	89		86		67-153	3		30
Perfluorotridecanoic Acid (PFTrDA)	92		88		48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	119		98		59-182	19		30

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1932869-06	Date Collected:	07/23/19 15:10
Client ID:	OUTFALL-004-W	Date Received:	07/24/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	229		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**199**	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	79		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		33-143

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1932869
Project Number: 18.8090 **Report Date:** 11/06/19

Case Narrative (continued)

Report Revision

November 06, 2019: The Semivolatile Organics compound list has been amended to include 2-Methylphenol.

Report Submission

August 07, 2019: This final report includes the results of all requested analyses.

August 01, 2019: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L1932869-09: The Trip Blank has a result for acetone present above the reporting limit. The sample vial was verified as being labeled correctly by the laboratory and the previous analysis showed there was no potential for carry over.

Perfluorinated Alkyl Acids by Isotope Dilution

L1932869-06: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1268635-2/-3 LCS/LCSD RPDs, associated with L1932869-01 through -08, are above the acceptance criteria for perfluoroheptanesulfonic acid (pfhps) (39%), perfluorooctanesulfonic acid (pfos) (38%), and perfluorodecanesulfonic acid (pfds) (33%).

WG1268999-1: The continuing calibration standard had the response for Perfluorooctanesulfonamide (FOSA) outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1268999-5: The continuing calibration standard had the response for Perfluoroctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	11/06/19

Case Narrative (continued)

WG1268999-5: The continuing calibration standard had the response for 1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS) above the acceptance criteria for the method. The associated samples were non-detect; therefore, no further action was taken.

Total Metals

The WG1264989-3 MS recovery, performed on L1932869-08, is outside the acceptance criteria for potassium (130%). A post digestion spike was performed and yielded an unacceptable recovery of 127%. The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

The WG1264989-3 MS recovery for sodium (167%), performed on L1932869-08, does not apply because the sample concentration is greater than four times the spike amount added.

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: Kelly Stenstrom

Title: Technical Director/Representative Date: 11/06/19

Matrix Spike Analysis
Batch Quality Control

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090
Lab Number: L1932869
Report Date: 11/06/19

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): 08 QC Batch ID: WG1264989-3 QC Sample: L1932869-08 Client ID: OUTFALL-001-W												
Aluminum, Total	ND	2	2.08	104		-	-		75-125	-		20
Antimony, Total	0.016J	0.5	0.519	104		-	-		75-125	-		20
Arsenic, Total	0.003J	0.12	0.142	118		-	-		75-125	-		20
Barium, Total	0.029	2	2.00	98		-	-		75-125	-		20
Beryllium, Total	ND	0.05	0.050	100		-	-		75-125	-		20
Cadmium, Total	ND	0.051	0.055	107		-	-		75-125	-		20
Calcium, Total	44.1	10	55.5	114		-	-		75-125	-		20
Chromium, Total	ND	0.2	0.199	100		-	-		75-125	-		20
Cobalt, Total	ND	0.5	0.492	98		-	-		75-125	-		20
Copper, Total	ND	0.25	0.257	103		-	-		75-125	-		20
Iron, Total	0.588	1	1.66	107		-	-		75-125	-		20
Lead, Total	ND	0.51	0.524	103		-	-		75-125	-		20
Magnesium, Total	10.3	10	20.3	100		-	-		75-125	-		20
Manganese, Total	0.712	0.5	1.21	100		-	-		75-125	-		20
Nickel, Total	ND	0.5	0.490	98		-	-		75-125	-		20
Potassium, Total	2.40J	10	13.0	**130**	Q	-	-		75-125	-		20
Selenium, Total	ND	0.12	0.138	115		-	-		75-125	-		20
Silver, Total	ND	0.05	0.053	105		-	-		75-125	-		20
Sodium, Total	81.3	10	98.0	**167**	Q	-	-		75-125	-		20
Thallium, Total	ND	0.12	0.119	99		-	-		75-125	-		20
Vanadium, Total	ND	0.5	0.515	103		-	-		75-125	-		20

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Latham, New York

Lab Number: L1934423

Alpha Analytical

Report Date: August 16, 2019

Prepared by

Barr Engineering Co.

November 8, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical #L1934423
Date: November 8, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of 1,4-dioxane and per- and polyfluorinated alkyl substances (PFAS) data contained within Alpha Analytical report #L1934423 for C.T. Male Associates, Latham, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Deuterated Monitoring Compounds (DMC)/Surrogates
- Extracted internal standards
- Additional items noted by the laboratory

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blank(s).

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/tao

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on July 31 and August 1, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA, which is accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing trip and field blank samples analyses. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Trip Blank / Field Blank

One trip blank sample and one field blank sample were collected. The trip blank was analyzed to determine the extent of potential PFAS contamination introduced during sample transport and handling. The field blank sample was collected to monitor PFAS contamination from any or all the following sources: sampling activities, sample transport, and storage. No target compounds were detected above the MDL in the trip and field blank samples with the exception of perfluorohexanoic acid (PFHxA) in the trip blank sample. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_1. PFHxA was also detected in the method blank at a slightly higher concentration. Data evaluation based on blank detections is addressed under the method blank section.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. They were analyzed by the laboratory for each parameter, where applicable. No target compounds were detected above the MDL in the method blank with the exception of PFHxA. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_2. The higher blank concentration for this analyte was compared against the project sample analyte concentration. The sample concentration less than or equal to five times the higher blank sample concentration was qualified "UB" in the Table 1 - Qualifier Summary attached. Sample concentrations greater than five times the higher blank detection were not qualified.

Accuracy and Precision Data

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), surrogate standards, and extracted internal standard to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the relative percent difference (RPD) of the LCS/LCSD and MS/MSD sample pairs.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria.

Surrogate Standard

Surrogate standards are compounds added to every blank, project sample, and quality control sample for organic analyses to evaluate analytical efficiency by measuring recovery (accuracy). Surrogate standards are compounds not expected to be detected in environmental media. Surrogate standard recoveries were within laboratory acceptance criteria.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. The extracted internal standard recoveries were within laboratory acceptance criteria.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chain of custody.

Additional Laboratory Items

Continuing Calibration Verification

It was noted by the laboratory that two branched perfluorohexanesulfonic acid (br-PFHxS) continuing calibration verification (CCV) standards were outside laboratory acceptance criteria; however, no data were qualified because the PFHxS CCVs were within laboratory acceptance criteria. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_3.

Table 1 - Qualifier Summary

Alpha Report #: L1934423

QC Item	Sample ID	Compound	Qualification	Comment
Method Blank	HVRA-MW-3-190801	PFHxA	UB	Remove 'J' qualifier and change to non-detect

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Lab Number: L1934423
Project Number: 18.8090
Report Date: 08/16/19

SAMPLE RESULTS

Lab ID:	L1934423-03	Date Collected:	07/31/19 00:00
Client ID:	HVRA-LTB01-190731	Date Received:	08/01/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/12/19 09:51
Analytical Date:	08/15/19 03:53		
Analyst:	RS		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.84	0.375	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.84	0.364	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	0.219	1
Perfluorohexanoic Acid (PFHxA)	0.423	J	ng/l	1.84	0.301	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	0.207	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	0.346	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.84	0.217	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.632	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	0.287	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	0.463	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.279	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.596	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.239	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.901	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.533	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.739	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.342	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.301	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.228	1
PFOA/PFOS, Total	ND		ng/l	1.84	0.217	1

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090
Lab Number: L1934423
Report Date: 08/16/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/14/19 22:30
Analyst: AJ
Extraction Method: EPA 537
Extraction Date: 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-09 Batch: WG1271287-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.472	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: HUDSON VALLEY REGIONAL AIRPORT **Lab Number:** L1934423
Project Number: 18.8090 **Report Date:** 08/16/19

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.

Perfluorinated Alkyl Acids by Isotope Dilution

WG1271799-2: The continuing calibration standard had the response for Perfluoroctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

WG1271799-3: The continuing calibration standard had the response for Perfluoroctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

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: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 08/16/19

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Latham, New York

Lab Number: L1934623

Alpha Analytical

Report Date: November 13, 2019

Prepared by

Barr Engineering Co.

November 13, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical #L1934623
Date: November 13, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of semi-volatile organic compounds (SVOCs), SVOC selective ion monitoring (SIM), 1,4-dioxane, per- and polyfluorinated alkyl substances (PFAS), pesticides, and polychlorinated biphenyls (PCBs) data contained within Alpha Analytical report #L1934623 for C.T. Male Associates, Latham, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Matrix spikes/matrix spike duplicates (MS/MSD)
- Deuterated Monitoring Compounds (DMC)/Surrogates
- Extracted internal standards
- Additional items noted by the laboratory

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blank(s).

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/tao

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on August 1 and 2, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA and Alpha Analytical in Westborough, MA as indicated within the laboratory report. Each of these Alpha locations are accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing trip and field blank samples analyses. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Trip Blank / Field Blank

One trip blank sample and one field blank sample were collected. The trip blank was analyzed to determine the extent of potential PFAS contamination introduced during sample transport and handling. The field blank sample was collected to monitor PFAS contamination from any or all the following sources: sampling activities, sample transport, and storage. No target compounds were detected above the MDL in the trip and field blank samples with the exception of perfluorohexanoic acid (PFHxA). Excerpts from the laboratory report are provided in ATTACHMENT_PFAS_1 (FTB) and ATTACHMENT_PFAS_2 (LTB). PFHxA was also detected in the method blank. The highest blank concentration for this analyte was compared against the project sample analyte concentrations. No data were qualified since the sample concentrations were greater than five times the highest blank detection.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses with the exception of the SVOC SIM reanalysis for sample HVRA-BFL2S-190801 which Alpha re-extracted due to 2-methylnaphthalene being detected above the reporting limit in the method blank. Since the re-extraction exceeded the holding time, the original results were evaluated in this data review. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. They were analyzed by the laboratory for each parameter, where applicable. No target compounds were detected above the MDL in the method blanks with the exception of PFHxA in the PFAS analysis and fluorene, phenanthrene, and 2-methylnaphthalene in the SVOC SIM analysis. Excerpts from the laboratory report are provided in ATTACHMENT_PFAS_3 and ATTACHMENT_SVOC_SIM_1. PFHxA data evaluation based on blank detections is addressed under the trip blank / field blank section. The method blank concentrations for the SVOC SIM analytes were compared against the project sample analyte concentrations. Sample concentrations less than or equal to five times the blank sample concentration were qualified "UB" in the Table 1 - Qualifier Summary attached. Sample concentrations greater than five times the blank detection or results less than the MDL were not qualified.

Accuracy and Precision Data

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), matrix spike (MS) samples, matrix spike duplicate (MSD) samples, surrogate standards, and extracted internal standards to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the relative percent difference (RPD) of the LCS/LCSD and MS/MSD sample pairs.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria with the exception of the p-chloro-3-resol LCS recovery and the 4-nitrophenol LCS/LCSD recoveries in the SVOC analysis that exceeded laboratory acceptance criteria indicating a potential high bias; however, no data were qualified because the associated sample results were non-detects. Excerpt from the laboratory report is provided in ATTACHMENT_SVOC_1.

Matrix Spike / Matrix Spike Duplicate (MS/MSD)

An MS is a sample spiked with known concentrations of target analytes that is carried through the sample preparation and analytical procedures in order to assess the accuracy of a method in a given sample matrix. Sample HVRA-DLMW29-190802 served as the MS/MSD source sample. The MS/MSD percent recoveries and RPDs were within laboratory acceptance criteria.

Surrogate Standard

Surrogate standards are compounds added to every blank, project sample, and quality control sample for organic analyses to evaluate analytical efficiency by measuring recovery (accuracy). Surrogate standards are compounds not expected to be detected in environmental media. Surrogate standard recoveries were within laboratory acceptance criteria with the exception of one of the three acid fraction surrogates in the SVOC SIM analysis that exceeded the laboratory acceptance criteria indicating a potential high bias;

however, no data were qualified since the associated sample results were non-detects. Excerpt from the laboratory report is provided in ATTACHMENT_SVOC_SIM_2.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. The extracted internal standard recoveries were within laboratory acceptance criteria with the exception of the extracted standards associated with 1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS) and 1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS) that exceeded the laboratory acceptance criteria indicating a potential high bias; however, no data were qualified since the associate sample results were non-detects. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_4.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chain of custody. On November 30, 2007, the Integrated Risk Information System (IRIS) changed the chemical name for CAS #108-60-1 from bis(2-chloroisopropyl)ether to 2,2'-oxybis(1-chloropropane). This revised name was included in EPA method 8270D and in the SVOC target analyte lists (TCL) from recent Statement of Works; however, the laboratory used the name bis(2-chloroisopropyl)ether in this report. The laboratory is reviewing how to handle this naming convention for future work.

Additional Laboratory Items

Continuing Calibration Verification

It was noted by the laboratory that a branched perfluorohexanesulfonic acid (br-PFHxS) continuing calibration verification (CCV) standard and a branched perfluorooctanesulfonic acid (br-PFOS) CCV were outside laboratory acceptance criteria; however, no data were qualified because the PFHxS CCV and PFOS CCV were within laboratory acceptance criteria. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_5.

Table 1 - Qualifier Summary

Alpha Report #: L1934623

QC Item	Sample ID	Compound	Qualification	Comment
Method Blank	HVRA-BFL-3S-190801	2-Methylnaphthalene	U	Remove 'J' qualifier, retain 'B', and change to non-detect
	HVRA-BFL2S-190801	Phenanthrene	UB	Remove 'J' qualifier and change to non-detect
		2-Methylnaphthalene	U	Retain 'B' qualifier and change to non-detect
	HVRA-DLMW20-190802	2-Methylnaphthalene	U	Remove 'J' qualifier, retain 'B', and change to non-detect

Lab Control Sample Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1934623

Report Date: 11/13/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05 Batch: WG1269707-2 WG1269707-3								
4-Nitroaniline	87		90		51-143	3		30
Dibenzofuran	80		78		40-140	3		30
1,2,4,5-Tetrachlorobenzene	75		67		2-134	11		30
Acetophenone	72		65		39-129	10		30
2,4,6-Trichlorophenol	94		89		30-130	5		30
p-Chloro-m-cresol	98	Q	92		23-97	6		30
2-Chlorophenol	75		66		27-123	13		30
2,4-Dichlorophenol	83		77		30-130	8		30
2,4-Dimethylphenol	71		72		30-130	1		30
2-Nitrophenol	85		75		30-130	13		30
4-Nitrophenol	87	Q	82	Q	10-80	6		30
2,4-Dinitrophenol	93		90		20-130	3		30
4,6-Dinitro-o-cresol	102		100		20-164	2		30
Phenol	58		53		12-110	9		30
2-Methylphenol	77		70		30-130	10		30
3-Methylphenol/4-Methylphenol	82		75		30-130	9		30
2,4,5-Trichlorophenol	93		88		30-130	6		30
Carbazole	100		101		55-144	1		30
Atrazine	138		136		40-140	1		30
Benzaldehyde	72		60		40-140	18		30
Caprolactam	55		54		10-130	2		30
2,3,4,6-Tetrachlorophenol	87		86		40-140	1		30

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1934623

Report Date: 11/13/19

Method Blank Analysis

Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/08/19 13:44
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 08/07/19 15:30

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-05 Batch: WG1269717-1					
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	0.03	J	ug/l	0.10	0.01
Phenanthrene	0.06	J	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	0.32		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

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Lab Number: L1934623
Project Number: 18.8090
Report Date: 11/13/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-05 Batch: WG1269717-2 WG1269717-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	81		53		21-120
Phenol-d6	66		44		10-120
Nitrobenzene-d5	115		81		23-120
2-Fluorobiphenyl	105		80		15-120
2,4,6-Tribromophenol	**128**	Q	116		10-120
4-Terphenyl-d14	115		111		41-149

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
Report Date: 11/13/19

SAMPLE RESULTS

Lab ID: L1934623-06
Client ID: HVRA-FTB01-190802
Sample Location: WAPPINGERS FALLS

Date Collected: 08/02/19 14:30
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/16/19 11:13
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/15/19 07:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.84	0.376	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.84	0.365	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	0.220	1
Perfluorohexanoic Acid (PFHxA)	0.376	J	ng/l	1.84	0.302	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	0.347	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.84	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.635	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	0.288	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	0.465	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.280	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.598	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.240	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.904	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.535	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.742	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.343	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.302	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.229	1
PFOA/PFOS, Total	ND		ng/l	1.84	0.218	1

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 11/13/19

SAMPLE RESULTS

Lab ID: L1934623-07
Client ID: HVRA-LTB01-190802
Sample Location: WAPPINGERS FALLS

Date Collected: 08/02/19 00:00
Date Received: 08/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/16/19 01:34
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/14/19 08:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.89	0.385	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.89	0.374	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.224	1
Perfluorohexanoic Acid (PFHxA)	0.389	J	ng/l	1.89	0.309	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	0.212	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.355	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.89	0.223	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.649	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	0.294	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.475	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	0.287	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.14	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.611	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.245	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.924	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.547	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.758	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.351	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.309	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.234	1
PFOA/PFOS, Total	ND		ng/l	1.89	0.223	1

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1934623

Report Date: 11/13/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/15/19 13:25
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/14/19 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02,07 Batch: WG1272147-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.376	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: HVRA **Lab Number:** L1934623
Project Number: 18.8090 **Report Date:** 11/13/19

SAMPLE RESULTS

Lab ID:	L1934623-03	Date Collected:	08/02/19 11:35
Client ID:	HVRA-DLMW20-190802	Date Received:	08/02/19
Sample Location:	WAPPINGERS FALLS	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**275**	Q	1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	**209**	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		33-143

Case Narrative (continued)

analytes. Please refer to the surrogate section of the report for details.

WG1272733-1: The continuing calibration standard had the response for Perfluoroctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

WG1273283-1: The continuing calibration standard had the response for Perfluorohexanesulfonic Acid-Branched (br-PFHxS), outside of acceptance criteria. The response for Perfluorohexanesulfonic Acid (PFHxS) was within acceptance criteria; therefore, no further action was taken.

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: Lisa Westerlind

Title: Technical Director/Representative Date: 11/13/19

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Latham, New York

Lab Number: L1934860

Alpha Analytical

Report Date: August 21, 2019

Prepared by

Barr Engineering Co.

November 8, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical # L1934860
Date: November 8, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), 1,4-dioxane, per- and polyfluorinated alkyl substances (PFAS), polychlorinated biphenyls (PCBs), pesticides, metals (TAL 23), and cyanide data contained within Alpha Analytical report # L1934860 for C.T. Male Associates, Latham, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Matrix spikes/matrix spike duplicates (MS/MSD)
- Deuterated Monitoring Compounds (DMC)/Surrogates
- Extracted internal standards
- Additional items noted by the laboratory

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blank(s).

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified as noted below. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/dlb

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on August 5, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA and Alpha Analytical in Westborough, MA as indicated within the laboratory report. Each of these Alpha locations are accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing trip and rinse blank samples analyses. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Trip Blank/ Rinse Blank

Two trip blank sample and one rinse blank sample were collected. The trip blank samples were analyzed to determine the extent of potential PFAS contamination introduced during sample transport and handling. No target compounds were detected above the MDL in the trip blank sample with the exception of perfluorohexanoic acid (PFHxA) from blank HVRA-FTB01-191805 and PFHxA and perfluorohexanesulfonic acid (PFHxS) from blank HVRA-LTB01-190805. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_1 and ATTACHMENT_PFAS_2 respectively. The project sample results were compared to the trip blank detection by calculating the wet-weight corrected result for soil samples. No data was qualified as all sample concentrations were greater than five times the blank detection. The rinse blank was used to check that equipment being used would not introduce PFAS to the samples being collected. There were multiple compounds detected in the rinse blank sample as shown in the laboratory report excerpt included in ATTACHMENT_PFAS_3. The detects were compared to the sample data and no data was qualified based on these blank detections.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. The method blanks were analyzed by the laboratory for each parameter, where applicable. No target compounds were detected above the MDL in the method blank with the exception of PFAS compound Perfluorobutanoic Acid (PFBA) and metals arsenic and sodium in soils. Excerpt from the laboratory report are provided in ATTACHMENT_PFAS_4 and ATTACHMENT_METALS_1 respectively. The blank concentrations for these analytes were compared against the project sample analyte concentration as discussed above. Sample concentrations less than or equal to five times the blank sample concentration were qualified "UB" in the Table 1 - Qualifier Summary attached. Sample concentrations greater than five times the blank detection or results less than the MDL were not qualified.

Accuracy and Precision Data

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), matrix spike (MS) samples, matrix spike duplicate (MSD) samples, surrogates, and extracted internal standard to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the relative percent difference (RPD) of the LCS/LCSD, MS/MSD, and laboratory duplicate sample pairs.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria with the following exceptions. The soil SVOC LCS/LCSD RPDs exceeded laboratory acceptance criteria for multiple compounds; however, no data from the SVOC analysis were qualified if the LCS and LCSD percent recoveries were acceptable. The following compounds had an LCS or LCSD with a percent recovery below the acceptance criteria: 3,3'-Dichlorobenzidine and 1,4-Dioxane and the results for sample HVRA-MW100-6.0 were qualified as noted in the Table 1 - Qualifier Summary attached. In addition, the p-chloro-3-resol LCS recovery and the 4-nitrophenol LCS recovery in the SVOC analysis exceeded laboratory acceptance criteria indicating a potential high bias; however, no data were qualified because the associated sample results were non-detects. Excerpt from the laboratory report is provided in ATTACHMENT_SVOC_1. The LCS and LCSD percent recoveries were below laboratory acceptance criteria for total cyanide and samples HVRA-MW100-6.0 and HVRA-MW101-8.0 were qualified as noted in the Table 1 - Qualifier Summary attached and included in the excerpt from the laboratory report in ATTACHMENT_CYANIDE_1.

Matrix Spike / Matrix Spike Duplicate (MS/MSD)

An MS is a sample spiked with known concentrations of target analytes that is carried through the sample preparation and analytical procedures in order to assess the accuracy of a method in a given sample matrix. Sample HVRA-MW100-6.0 served as the MS sample for all analysis. There were multiple tested compounds that had percent recovery that were outside the laboratory limits indicating a potential bias. However, the sample results were not evaluated if the sample detection was greater than four times the spike concentration. A low percent may indicate a potential low bias while a high percent recovery may indicate a potential high bias. For a low percent recovery, positive results are considered estimated and qualified “J” while non-detects are estimated and qualified “UJ”. For a high percent recovery, positive results are considered estimated and qualified “J” and non-detects are not qualified. The HVRA-MW100-6.0 sample data that was qualified is noted in the Table 1 – Qualifier Summary attached. The associated laboratory report excerpts are provided as ATTACHMENT_VOC_1, ATTACHMENT_PFAS_5, ATTACHMENT_SVOC_2, and ATTACHMENT_METALS_2.

Surrogate Standard

Surrogate standards are compounds added to every blank, project sample, and quality control sample for organic analyses to evaluate analytical efficiency by measuring recovery (accuracy). Surrogate standards are compounds not expected to be detected in environmental media. Surrogate standard recoveries were within laboratory acceptance criteria.

Laboratory Duplicate

A laboratory duplicate is an additional sample typically taken from an existing sample bottle that is carried through the same sample preparation and analytical procedures as the project sample. The results from the duplicate analyses are used to evaluate analytical precision by the calculation of the RPD. The RPDs were within laboratory acceptance criteria.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTrDA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. The extracted internal standard recoveries were within laboratory acceptance criteria with the exception of N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA) for sample HVRA-MW100-6.0 and multiple for sample HVRA-MW101-8.0 that were below acceptance criteria. The associated sample data that was qualified is noted in the Table 1 – Qualifier Summary attached. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_6 and ATTACHMENT_PFAS_7 respectively.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chains of custody. On November 30, 2007, the Integrated Risk Information System (IRIS) changed the chemical name for CAS #108-60-1 from bis(2-chloroisopropyl)ether to 2,2’-oxybis(1-chloropropane). This revised name was included in EPA method

8270D and in the SVOC target analyte lists (TCL) from recent Statement of Works; however, the laboratory used the name bis(2-chloroisopropyl)ether in this report. The laboratory is reviewing how to handle this naming convention for future work.

Additional Laboratory Items

Continuing Calibration Verification

It was noted by the laboratory multiple instances where the continuing calibration verification (CCV) standard was outside of acceptance criteria. The 8:2FTS, PFDS, and NEtFOSAA CCV standards were outside of laboratory acceptance criteria as noted in the report; however, no data were qualified since the laboratory followed their protocol which allows 10% of the reported analytes to be greater than 30%, but less than 40%. Also, the laboratory noted that two branched PFHxS CCV standard were outside laboratory acceptance criteria; however, no data were qualified because the PFHxS CCV was within laboratory acceptance criteria. Excerpt from the laboratory report discussing CCVs is provided in ATTACHMENT_PFAS_8.

Table 1 - Qualifier Summary

Alpha Report #: L1934860

QC Item	Sample ID	Compound	Qualification	Comment
Method Blank Detection	HVRA-MW100-6.0	PFBA	UB	Remove 'J' qualifier and change to non-detect
LCS/LCSD	HVRA-MW100-6.0	3,3'-Dichlorobenzidine	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	1,4-Dioxane (SVOC)	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	Total Cyanide	J	Add 'J' to non-detect result
	HVRA-MW101-8.0	Total Cyanide	J	Add 'J' to non-detect result
MS/MSD	HVRA-MW100-6.0	Dibromochloromethane	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	1,1,2-Trichloroethane	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	Tetrachloroethene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	Chlorobenzene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	trans-1,3-Dichloropropene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	Bromoform	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	1,1,2,2-Tetrachloroethane	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	Toluene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	Ethylbenzene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	1,2-Dichlorobenzene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	1,3-Dichlorobenzene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	1,4-Dichlorobenzene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	p/m-Xylene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	o-Xylene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	Styrene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	4-Methyl-2-pentanone	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	2-Hexanone	J	Add 'J' to non-detect result

Table 1 - Qualifier Summary

Alpha Report #: L1934860

QC Item	Sample ID	Compound	Qualification	Comment
MS/MSD (cont.)	HVRA-MW100-6.0	1,2-Dibromoethane	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	1,2-Dibromo-3-chloropropane	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	Isopropylbenzene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	1,2,3-Trichlorobenzene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	1,2,4-Trichlorobenzene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	FOSA	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	3,3'-Dichlorobenzidine	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	Hexachlorocyclopentadiene	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	2,4-Dinitrophenol	J	Add 'J' to non-detect result
	HVRA-MW100-6.0	Total Cadmium	J	Add 'J' to detected result
	HVRA-MW100-6.0	Total Chromium	J	Add 'J' to detected result
	HVRA-MW100-6.0	Total Copper	J	Add 'J' to detected result
	HVRA-MW100-6.0	Total Lead	J	Add 'J' to detected result
	HVRA-MW100-6.0	Total Zinc	J	Add 'J' to detected result
	HVRA-MW100-6.0	Total Mercury	J	Add 'J' to detected result
Extracted Internal Standard	HVRA-MW100-6.0	NMeFOSAA	J	Add 'J' to non-detect result
	HVRA-MW101-8.0	PFUnA	J	Add 'J' to non-detect result
	HVRA-MW101-8.0	NEtFOSAA	J	Add 'J' to non-detect result
	HVRA-MW101-8.0	PFDoA	J	Add 'J' to non-detect result
	HVRA-MW101-8.0	PFTA	J	Add 'J' to non-detect result
	HVRA-MW101-8.0	PFTrA	J	Add 'J' to non-detect result

Matrix Spike Analysis
Batch Quality Control

Project Name:	HVRA	***Lab Number:***	L1934860
Project Number:	18.8090	***Report Date:***	08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1271219-6 WG1271219-7 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Methylene chloride	ND	87.9	79	90		100	106		70-130	23		30
1,1-Dichloroethane	ND	87.9	86	98		110	115		70-130	23		30
Chloroform	ND	87.9	82	93		100	110		70-130	24		30
Carbon tetrachloride	ND	87.9	80	91		100	107		70-130	23		30
1,2-Dichloropropane	ND	87.9	79	89		100	107		70-130	25		30
Dibromochloromethane	ND	87.9	51	**58**	Q	69	74		70-130	**31**	Q	30
1,1,2-Trichloroethane	ND	87.9	56	**63**	Q	75	80		70-130	30		30
Tetrachloroethene	ND	87.9	42	**47**	Q	58	**62**	Q	70-130	**33**	Q	30
Chlorobenzene	ND	87.9	38	**44**	Q	54	**57**	Q	70-130	**34**	Q	30
Trichlorofluoromethane	ND	87.9	90	102		110	117		70-139	20		30
1,2-Dichloroethane	ND	87.9	71	81		91	97		70-130	25		30
1,1,1-Trichloroethane	ND	87.9	86	98		110	115		70-130	22		30
Bromodichloromethane	ND	87.9	75	85		97	103		70-130	26		30
trans-1,3-Dichloropropene	ND	87.9	45	**51**	Q	61	**65**	Q	70-130	**31**	Q	30
cis-1,3-Dichloropropene	ND	87.9	66	75		86	91		70-130	27		30
Bromoform	ND	87.9	40	**46**	Q	60	**63**	Q	70-130	**40**	Q	30
1,1,2,2-Tetrachloroethane	ND	87.9	44	**50**	Q	65	**69**	Q	70-130	**38**	Q	30
Benzene	ND	87.9	79	90		100	106		70-130	23		30
Toluene	ND	87.9	49	**56**	Q	66	70		70-130	30		30
Ethylbenzene	ND	87.9	40	**45**	Q	57	**60**	Q	70-130	**35**	Q	30
Chloromethane	ND	87.9	70	80		91	96		52-130	25		30
Bromomethane	ND	87.9	94	107		120	128		57-147	25		30
Vinyl chloride	ND	87.9	85	96		100	108		67-130	19		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1271219-6 WG1271219-7 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Chloroethane	ND	87.9	89	101		110	117		50-151	21		30
1,1-Dichloroethene	ND	87.9	89	102		110	118		65-135	22		30
trans-1,2-Dichloroethene	ND	87.9	79	90		99	105		70-130	22		30
Trichloroethene	ND	87.9	70	79		89	95		70-130	24		30
1,2-Dichlorobenzene	ND	87.9	20	23	Q	35	37	Q	70-130	55	Q	30
1,3-Dichlorobenzene	ND	87.9	19	22	Q	33	35	Q	70-130	55	Q	30
1,4-Dichlorobenzene	ND	87.9	18	20	Q	31	33	Q	70-130	55	Q	30
Methyl tert butyl ether	ND	87.9	81	92		110	112		66-130	26		30
p/m-Xylene	ND	176	71	41	Q	100	55	Q	70-130	37	Q	30
o-Xylene	ND	176	76	43	Q	110	58	Q	70-130	36	Q	30
cis-1,2-Dichloroethene	ND	87.9	77	88		97	103		70-130	23		30
Styrene	ND	176	67	38	Q	97	51	Q	70-130	37	Q	30
Dichlorodifluoromethane	ND	87.9	63	72		79	84		30-146	22		30
Acetone	8.2J	87.9	67	76		99	105		54-140	38	Q	30
Carbon disulfide	ND	87.9	77	88		97	103		59-130	22		30
2-Butanone	ND	87.9	65	74		81	86		70-130	22		30
4-Methyl-2-pentanone	ND	87.9	55	62	Q	74	79		70-130	30		30
2-Hexanone	ND	87.9	51	58	Q	68	72		70-130	29		30
Bromochloromethane	ND	87.9	72	82		92	98		70-130	24		30
1,2-Dibromoethane	ND	87.9	48	54	Q	64	68	Q	70-130	30		30
1,2-Dibromo-3-chloropropane	ND	87.9	34	39	Q	51	54	Q	68-130	39	Q	30
Isopropylbenzene	ND	87.9	32	36	Q	52	55	Q	70-130	48	Q	30
1,2,3-Trichlorobenzene	ND	87.9	11	12	Q	22	23	Q	70-130	69	Q	30

Matrix Spike Analysis

Batch Quality Control

Project Name:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1271219-6 WG1271219-7 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
1,2,4-Trichlorobenzene	ND	87.9	11	12	Q	22	23	Q	70-130	67	Q	30
Methyl Acetate	ND	87.9	100	118		140	150	Q	51-146	30		30
Cyclohexane	ND	87.9	82	93		100	110		59-142	24		30
1,4-Dioxane	ND	4400	4100	94		4900	103		65-136	16		30
Freon-113	ND	87.9	90	102		110	117		50-139	20		30
Methyl cyclohexane	ND	87.9	75	85		100	107		70-130	30		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		93		70-130
4-Bromofluorobenzene	103		109		70-130
Dibromofluoromethane	104		103		70-130
Toluene-d8	90		93		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 Batch: WG1271080-2 WG1271080-3								
Acenaphthene	90		53		31-137	52	Q	50
Hexachlorobenzene	94		55		40-140	52	Q	50
Bis(2-chloroethyl)ether	78		49		40-140	46		50
2-Chloronaphthalene	97		58		40-140	50		50
3,3'-Dichlorobenzidine	59		39	Q	40-140	41		50
2,4-Dinitrotoluene	115		68		40-132	51	Q	50
2,6-Dinitrotoluene	117		69		40-140	52	Q	50
Fluoranthene	98		57		40-140	53	Q	50
4-Chlorophenyl phenyl ether	96		56		40-140	53	Q	50
4-Bromophenyl phenyl ether	94		55		40-140	52	Q	50
Bis(2-chloroisopropyl)ether	68		44		40-140	43		50
Bis(2-chloroethoxy)methane	82		52		40-117	45		50
Hexachlorobutadiene	90		58		40-140	43		50
Hexachlorocyclopentadiene	74		42		40-140	55	Q	50
Hexachloroethane	81		56		40-140	36		50
Isophorone	86		53		40-140	47		50
Naphthalene	87		53		40-140	49		50
Nitrobenzene	92		56		40-140	49		50
NDPA/DPA	97		58		36-157	50		50
n-Nitrosodi-n-propylamine	89		52		32-121	52	Q	50
Bis(2-ethylhexyl)phthalate	107		66		40-140	47		50
Butyl benzyl phthalate	109		66		40-140	49		50
Di-n-butylphthalate	102		61		40-140	50		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 Batch: WG1271080-2 WG1271080-3								
Di-n-octylphthalate	108		65		40-140	50		50
Diethyl phthalate	102		60		40-140	52	Q	50
Dimethyl phthalate	103		61		40-140	51	Q	50
Benzo(a)anthracene	99		58		40-140	52	Q	50
Benzo(a)pyrene	94		56		40-140	51	Q	50
Benzo(b)fluoranthene	100		58		40-140	53	Q	50
Benzo(k)fluoranthene	96		60		40-140	46		50
Chrysene	93		56		40-140	50		50
Acenaphthylene	101		60		40-140	51	Q	50
Anthracene	96		55		40-140	54	Q	50
Benzo(ghi)perylene	100		60		40-140	50		50
Fluorene	94		56		40-140	51	Q	50
Phenanthrene	90		53		40-140	52	Q	50
Dibenzo(a,h)anthracene	94		57		40-140	49		50
Indeno(1,2,3-cd)pyrene	96		58		40-140	49		50
Pyrene	98		57		35-142	53	Q	50
Biphenyl	99		58		37-127	52	Q	50
4-Chloroaniline	63		43		40-140	38		50
2-Nitroaniline	124		73		47-134	52	Q	50
3-Nitroaniline	82		56		26-129	38		50
4-Nitroaniline	101		60		41-125	51	Q	50
Dibenzofuran	96		58		40-140	49		50
2-Methylnaphthalene	90		54		40-140	50		50

Serial_No:08211922:32

Lab Control Sample Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1934860

Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 Batch: WG1271080-2 WG1271080-3								
1,2,4,5-Tetrachlorobenzene	94		55		40-117	52	Q	50
Acetophenone	87		55		14-144	45		50
2,4,6-Trichlorophenol	102		61		30-130	50		50
p-Chloro-m-cresol	108	Q	63		26-103	53	Q	50
2-Chlorophenol	87		56		25-102	43		50
2,4-Dichlorophenol	97		60		30-130	47		50
2,4-Dimethylphenol	102		62		30-130	49		50
2-Nitrophenol	114		74		30-130	43		50
4-Nitrophenol	120	Q	70		11-114	53	Q	50
2,4-Dinitrophenol	105		56		4-130	61	Q	50
4,6-Dinitro-o-cresol	125		73		10-130	53	Q	50
Pentachlorophenol	91		50		17-109	58	Q	50
Phenol	86		53		26-90	47		50
2-Methylphenol	88		56		30-130.	44		50
3-Methylphenol/4-Methylphenol	97		59		30-130	49		50
2,4,5-Trichlorophenol	111		63		30-130	55	Q	50
Carbazole	96		56		54-128	53	Q	50
Atrazine	102		62		40-140	49		50
Benzaldehyde	86		56		40-140	42		50
Caprolactam	97		58		15-130	50		50
2,3,4,6-Tetrachlorophenol	101		57		40-140	56	Q	50
1,4-Dioxane	56		39	Q	40-140	36		50

Matrix Spike Analysis
Batch Quality Control

Project Name:	HVRA	***Lab Number:***	L1934860
Project Number:	18.8090	***Report Date:***	08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 QC Batch ID: WG1271080-4 WG1271080-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Acenaphthene	ND	1420	1200	85		1100	78		31-137	9		50
Hexachlorobenzene	ND	1420	1200	85		1000	71		40-140	18		50
Bis(2-chloroethyl)ether	ND	1420	1200	85		1000	71		40-140	18		50
2-Chloronaphthalene	ND	1420	1300	92		1200	85		40-140	8		50
3,3'-Dichlorobenzidine	ND	1420	550	**39**	Q	530	**37**	Q	40-140	4		50
2,4-Dinitrotoluene	ND	1420	1500	110		1300	92		40-132	14		50
2,6-Dinitrotoluene	ND	1420	1500	110		1300	92		40-140	14		50
Fluoranthene	130	1420	1200	76		1200	75		40-140	0		50
4-Chlorophenyl phenyl ether	ND	1420	1200	85		1100	78		40-140	9		50
4-Bromophenyl phenyl ether	ND	1420	1200	85		1100	78		40-140	9		50
Bis(2-chloroisopropyl)ether	ND	1420	1000	71		990	70		40-140	1		50
Bis(2-chloroethoxy)methane	ND	1420	1200	85		1100	78		40-117	9		50
Hexachlorobutadiene	ND	1420	1200	85		1100	78		40-140	9		50
Hexachlorocyclopentadiene	ND	1420	610	43		330J	**23**	Q	40-140	**60**	Q	50
Hexachloroethane	ND	1420	1200	85		1000	71		40-140	18		50
Isophorone	ND	1420	1200	85		1200	85		40-140	0		50
Naphthalene	ND	1420	1200	85		1100	78		40-140	9		50
Nitrobenzene	ND	1420	1300	92		1300	92		40-140	0		50
NDPA/DPA	ND	1420	1300	92		1200	85		36-157	8		50
n-Nitrosodi-n-propylamine	ND	1420	1200	85		1200	85		32-121	0		50
Bis(2-ethylhexyl)phthalate	ND	1420	1400	99		1300	92		40-140	7		50
Butyl benzyl phthalate	ND	1420	1300	92		1200	85		40-140	8		50
Di-n-butylphthalate	ND	1420	1200	85		1200	85		40-140	0		50

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05 QC Batch ID: WG1271080-4 WG1271080-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
1,2,4,5-Tetrachlorobenzene	ND	1420	1300	92		1200	85		40-117	8		50
Acetophenone	ND	1420	1200	85		1200	85		14-144	0		50
2,4,6-Trichlorophenol	ND	1420	1500	110		1400	99		30-130	7		50
p-Chloro-m-cresol	ND	1420	1500	110	Q	1300	92		26-103	14		50
2-Chlorophenol	ND	1420	1300	92		1200	85		25-102	8		50
2,4-Dichlorophenol	ND	1420	1400	99		1300	92		30-130	7		50
2,4-Dimethylphenol	ND	1420	1300	92		1300	92		30-130	0		50
2-Nitrophenol	ND	1420	1600	110		1400	99		30-130	13		50
4-Nitrophenol	ND	1420	1500	110		1400	99		11-114	7		50
2,4-Dinitrophenol	ND	1420	330J	23		ND	0	Q	4-130	NC		50
4,6-Dinitro-o-cresol	ND	1420	470	33		160J	11		10-130	98	Q	50
Pentachlorophenol	ND	1420	1400	99		1200	85		17-109	15		50
Phenol	ND	1420	1100	78		1100	78		26-90	0		50
2-Methylphenol	ND	1420	1200	85		1200	85		30-130.	0		50
3-Methylphenol/4-Methylphenol	ND	1420	1300	92		1200	85		30-130	8		50
2,4,5-Trichlorophenol	ND	1420	1600	110		1400	99		30-130	13		50
Carbazole	ND	1420	1200	85		1100	78		54-128	9		50
Atrazine	ND	1420	1400	99		1200	85		40-140	15		50
Benzaldehyde	ND	1420	1300	92		1200	85		40-140	8		50
Caprolactam	ND	1420	1200	85		1200	85		15-130	0		50
2,3,4,6-Tetrachlorophenol	ND	1420	1400	99		1300	92		40-140	7		50
1,4-Dioxane	ND	1420	700	49		660	47		40-140	6		50

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID: L1934860-02
Client ID: HVRA-FTB01-191805
Sample Location: WAPPINGER'S FALLS, NY

Date Collected: 08/05/19 13:40
Date Received: 08/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/16/19 16:24
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/15/19 07:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.99	0.406	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.99	0.394	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.99	0.237	1
Perfluorohexanoic Acid (PFHxA)	0.370	J	ng/l	1.99	0.327	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.99	0.224	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.99	0.374	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.99	0.235	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.99	1.33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.99	0.685	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.99	0.311	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.99	0.502	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.99	0.303	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.99	1.21	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.99	0.645	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.99	0.259	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.99	0.976	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.99	0.578	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.99	0.801	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.99	0.370	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.99	0.326	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.99	0.247	1
PFOA/PFOS, Total	ND		ng/l	1.99	0.235	1

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1934860

Report Date: 08/21/19

SAMPLE RESULTS

Lab ID: L1934860-03
Client ID: HVRA-LTB01-190805
Sample Location: WAPPINGER'S FALLS, NY

Date Collected: 08/05/19 00:00
Date Received: 08/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/16/19 16:41
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/15/19 07:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.84	0.376	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.84	0.365	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	0.220	1
Perfluorohexanoic Acid (PFHxA)	0.321	J	ng/l	1.84	0.302	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	0.439	J	ng/l	1.84	0.347	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.84	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.635	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	0.288	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	0.465	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.280	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.12	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.598	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.240	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.904	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.535	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.742	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.343	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.302	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.229	1
PFOA/PFOS, Total	ND		ng/l	1.84	0.218	1

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-04	Date Collected:	08/05/19 14:25
Client ID:	HVRA-RB01-190805	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 07:11
Analytical Date:	08/16/19 16:57		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.959	J	ng/l	2.26	0.462	1
Perfluoropentanoic Acid (PFPeA)	0.665	J	ng/l	2.26	0.448	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.26	0.269	1
Perfluorohexanoic Acid (PFHxA)	1.66	J	ng/l	2.26	0.371	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.26	0.255	1
Perfluorohexanesulfonic Acid (PFHxS)	1.22	J	ng/l	2.26	0.425	1
Perfluorooctanoic Acid (PFOA)	0.792	J	ng/l	2.26	0.267	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.26	1.51	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.26	0.778	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.26	0.353	1
Perfluorooctanesulfonic Acid (PFOS)	3.72		ng/l	2.26	0.570	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.26	0.344	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.39	J	ng/l	2.26	1.37	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.26	0.733	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.26	0.294	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.26	1.11	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.26	0.656	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.26	0.910	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.26	0.421	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.26	0.370	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.26	0.280	1
PFOA/PFOS, Total	4.51	J	ng/l	2.26	0.267	1

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/13/19 16:05
Analyst: JW

Extraction Method: EPA 537(M)
Extraction Date: 08/09/19 00:15

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,05 Batch: WG1270274-1					
Perfluorobutanoic Acid (PFBA)	0.097	J	ug/kg	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042

Matrix Spike Analysis

Batch Quality Control

Project Name:	HVRA	***Lab Number:***	L1934860
Project Number:	18.8090	***Report Date:***	08/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,05 QC Batch ID: WG1270274-4 WG1270274-5 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Perfluorobutanoic Acid (PFBA)	0.138J	5.1	5.22	102		5.38	105		71-135	3		30
Perfluoropentanoic Acid (PFPeA)	0.416J	5.1	5.23	103		5.32	104		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	ND	4.52	4.27	95		4.32	95		72-128	1		30
Perfluorohexanoic Acid (PFHxA)	0.442J	5.1	5.62	110		5.59	109		70-132	1		30
Perfluoroheptanoic Acid (PFHpA)	0.275J	5.1	5.43	106		5.54	108		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	1.64	4.65	6.84	112		6.93	113		67-130	1		30
Perfluorooctanoic Acid (PFOA)	0.287J	5.1	5.40	106		5.65	110		69-133	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	4.85	5.15	106		5.67	116		64-140	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	0.143J	4.85	5.83	120		5.50	113		70-132	6		30
Perfluorononanoic Acid (PFNA)	0.182J	5.1	5.09	100		5.34	104		72-129	5		30
Perfluorooctanesulfonic Acid (PFOS)	36.8	4.72	41.6	102		42.5	120		68-136	2		30
Perfluorodecanoic Acid (PFDA)	0.164J	5.1	5.44	107		5.49	107		69-133	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	4.9	4.80	98		5.16	105		65-137	7		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	5.1	5.78	113		5.93	116		63-144	3		30
Perfluoroundecanoic Acid (PFUnA)	0.088J	5.1	5.18	102		5.34	104		64-136	3		30
Perfluorodecanesulfonic Acid (PFDS)	0.190J	4.93	5.74	116		5.45	110		59-134	5		30
Perfluorooctanesulfonamide (FOSA)	ND	5.1	2.58	51	Q	2.61	51	Q	67-137	1		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	5.1	4.96	97		5.23	102		61-139	5		30
Perfluorododecanoic Acid (PFDoA)	0.124J	5.1	5.50	108		5.62	110		69-135	2		30
Perfluorotridecanoic Acid (PFTrDA)	ND	5.1	5.27	103		5.67	111		66-139	7		30
Perfluorotetradecanoic Acid (PFTA)	0.074J	5.1	5.30	104		5.56	108		69-133	5		30

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-01	Date Collected:	08/05/19 13:00
Client ID:	HVRA-MW100-6.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	108		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**43**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	45		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	54		26-160

Serial_No:08211922:32

Project Name: HVRA **Lab Number:** L1934860

Project Number: 18.8090 **Report Date:** 08/21/19

SAMPLE RESULTS

Lab ID:	L1934860-05	Date Collected:	08/05/19 15:00
Client ID:	HVRA-MW101-8.0	Date Received:	08/05/19
Sample Location:	WAPPINGER'S FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	61		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	66		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	78		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	69		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	55		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	69		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	69		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	63		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**27**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**62**	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**25**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**50**	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**16**	Q	26-160

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

Case Narrative (continued)

Report Submission

August 21, 2019: This final report includes the results of all requested analyses.

August 14, 2019: This is a preliminary report.

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.

L1934860-05: The sample identified as "HVRA-MW101-8.5" on the chain of custody was identified as "HVRA-MW101-8.0" on the container label. At the client's request, the sample is reported as "HVRA-MW101-8.0".

Perfluorinated Alkyl Acids by Isotope Dilution

L1934860-01 and -05: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1271296-1: The continuing calibration standard had the response for 8:2FTS and PFDoS outside the acceptance criteria for the method. These values represent less than 10% of all compounds; therefore, the calibration was accepted.

WG1271296-3: The continuing calibration standard had the response for NEtFOSAA outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1273283-1: The continuing calibration standard had the response for Perfluorohexanesulfonic Acid-Branched (br-PFHxS), outside of acceptance criteria. The response for Perfluorohexanesulfonic Acid (PFHxS) was within acceptance criteria; therefore, no further action was taken.

WG1273283-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Project Name: HVRA **Lab Number:** L1934860
Project Number: 18.8090 **Report Date:** 08/21/19

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): 01,05 Batch: WG1270290-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Antimony, Total	ND		mg/kg	2.00	0.152	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Arsenic, Total	0.148	J	mg/kg	0.400	0.083	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Barium, Total	ND		mg/kg	0.400	0.070	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Beryllium, Total	ND		mg/kg	0.200	0.013	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Cadmium, Total	ND		mg/kg	0.400	0.039	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Calcium, Total	ND		mg/kg	4.00	1.40	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Chromium, Total	ND		mg/kg	0.400	0.038	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Cobalt, Total	ND		mg/kg	0.800	0.066	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Copper, Total	ND		mg/kg	0.400	0.103	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Iron, Total	ND		mg/kg	2.00	0.361	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Lead, Total	ND		mg/kg	2.00	0.107	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Magnesium, Total	ND		mg/kg	4.00	0.616	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Manganese, Total	ND		mg/kg	0.400	0.064	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Nickel, Total	ND		mg/kg	1.00	0.097	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Potassium, Total	ND		mg/kg	100	5.76	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Selenium, Total	ND		mg/kg	0.800	0.103	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Silver, Total	ND		mg/kg	0.400	0.113	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Sodium, Total	1.42	J	mg/kg	80.0	1.26	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Thallium, Total	ND		mg/kg	0.800	0.126	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Vanadium, Total	ND		mg/kg	0.400	0.081	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC
Zinc, Total	ND		mg/kg	2.00	0.117	1	08/08/19 20:25	08/09/19 14:38	1,6010D	LC

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): 01,05 Batch: WG1270413-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	08/09/19 05:00	08/12/19 12:49	1,7471B	GD

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

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): 01,05 QC Batch ID: WG1270290-3 WG1270290-4 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Aluminum, Total	9240	168	9310	42	Q	11100	1110	Q	75-125	18		20
Antimony, Total	1.18J	41.9	39.2	93		38.2	91		75-125	3		20
Arsenic, Total	3.38	10.1	12.7	92		12.3	89		75-125	3		20
Barium, Total	39.3	168	195	93		213	104		75-125	9		20
Beryllium, Total	0.346J	4.19	4.15	99		4.14	99		75-125	0		20
Cadmium, Total	1.73	4.28	4.85	73	Q	5.24	82		75-125	8		20
Calcium, Total	3720	839	12400	1030	Q	6660	351	Q	75-125	60	Q	20
Chromium, Total	17.8	16.8	27.0	55	Q	28.7	65	Q	75-125	6		20
Cobalt, Total	8.24	41.9	42.9	83		44.7	87		75-125	4		20
Copper, Total	66.8	21	42.1	0	Q	49.5	0	Q	75-125	16		20
Iron, Total	51300	83.9	24300	0	Q	36500	0	Q	75-125	40	Q	20
Lead, Total	70.0	42.8	97.2	64	Q	151	190	Q	75-125	43	Q	20
Magnesium, Total	5480	839	10700	622	Q	7850	283	Q	75-125	31	Q	20
Manganese, Total	721	41.9	607	0	Q	1360	1520	Q	75-125	77	Q	20
Nickel, Total	19.2	41.9	53.0	80		57.3	91		75-125	8		20
Potassium, Total	225	839	1010	94		1010	94		75-125	0		20
Selenium, Total	0.806J	10.1	10.0	99		10.1	100		75-125	1		20
Silver, Total	ND	25.2	24.7	98		24.2	96		75-125	2		20
Sodium, Total	76.7J	839	871	104		848	101		75-125	3		20
Thallium, Total	0.572J	10.1	8.30	82		8.55	85		75-125	3		20
Vanadium, Total	12.8	41.9	52.4	94		54.4	99		75-125	4		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934860
Report Date: 08/21/19

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): 01,05 QC Batch ID: WG1270290-3 WG1270290-4 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Zinc, Total	138	41.9	156	**43**	Q	202	**153**	Q	75-125	**26**	Q	20
Total Metals - Mansfield Lab Associated sample(s): 01,05 QC Batch ID: WG1270413-3 WG1270413-4 QC Sample: L1934860-01 Client ID: HVRA-MW100-6.0												
Mercury, Total	0.178	0.134	0.277	**74**	Q	0.337	119		80-120	20		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,05 Batch: WG1269984-2 WG1269984-3								
Cyanide, Total	58	Q	62	Q	80-120	15		35

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Latham, New York

Lab Number: L1935085

Alpha Analytical

Report Date: November 6, 2019

Prepared by

Barr Engineering Co.

November 8, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical #L1935085
Date: November 8, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of volatile, organic compounds (VOCs), semi-volatile organic compounds (SVOCs), SVOC selective ion monitoring (SIM), 1,4-dioxane, per- and polyfluorinated alkyl substances (PFAS), polychlorinated biphenyls (PCBs), pesticides, metals (TAL 23), cyanide, and total solids/moisture data contained within Alpha Analytical report #L1935085 for C.T. Male Associates, Latham, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Field duplicate
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Matrix spikes/matrix spike duplicates (MS/MSD)
- Laboratory duplicate
- Deuterated Monitoring Compounds (DMC)/Surrogates
- Extracted internal standards
- Additional items noted by the laboratory

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blank(s).

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/tao

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on August 6, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA and Alpha Analytical in Westborough, MA as indicated within the laboratory report. Each of these Alpha locations are accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing trip and field blank samples analyses. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Rinse Blank / Trip Blank / Field Blank / Equipment Blank

Four rinse blank samples, one trip blank sample, one field blank sample, and one equipment blank were collected. The rinse blanks were used to check that equipment being used would not introduce PFAS to the samples being collected. The trip blank was analyzed to determine the extent of potential VOC and PFAS contamination introduced during sample transport and handling. The field blank sample was collected to monitor PFAS contamination from any or all the following sources: sampling activities, sample transport, and storage. The equipment blank was collected from a Ziploc® bag to measure the potential sample contamination. No target compounds were detected above the MDL in the rinse, trip, field, and equipment blank samples with the following exceptions. Perfluorohexanoic acid (PFHxA) was detected in the four rinse blanks, trip blank, field blank, and equipment blank. Perfluorooctanesulfonic acid (PFOS) was detected in all four rinse blanks. Excerpts from the laboratory report are provided in ATTACHMENT_PFAS_1 (RB01), ATTACHMENT_PFAS_2 (RB02), ATTACHMENT_PFAS_3 (RB03), ATTACHMENT_PFAS_4 (RB04), ATTACHMENT_PFAS_5 (LTB), ATTACHMENT_PFAS_6 (FTB), and ATTACHMENT_PFAS_7 (EB). Since rinse blank samples are intended to verify equipment is PFAS free prior to sampling in the field, they were not used in data evaluation. Naphthalene, phenanthrene and 2-methylnaphthalene were detected in the SVOC SIM analysis; however, no data were qualified since the project soil samples were not analyzed by SVOC SIM. Acetone was detected in the VOC trip blank and equipment blank. Excerpts from the laboratory report are provided in ATTACHMENT_VOC_1 (LTB) and ATTACHMENT_VOC_2 (EB). Manganese was detected in the equipment blank. Excerpt from the laboratory report is provided in ATTACHMENT_METALS_1. Sample concentrations less than or equal to five times the highest blank sample concentration were qualified "UB" in the Table 1 - Qualifier Summary attached. Sample concentrations greater than five times the blank detection or results less than the MDL were not qualified.

Field Duplicate

A field duplicate is a second sample generated in the field that is used to demonstrate acceptable precision and reproducibility of the field and laboratory procedures. The sample identification is typically kept blind from the laboratory. Field duplicate sample results measure the reproducibility of measurements under a given set of conditions and were evaluated by calculating the Relative Percent

Difference (RPD) values for compounds where both the native and field duplicate sample concentrations were greater than five times the reporting limit. The RPD formula is as follows:

$$RPD = \frac{|S - D|}{(S + D)/2}\, x\, 100$$

Where:	RPD	=	relative percent difference
	S	=	native sample result
	D	=	duplicate sample result

Sample HVRA-MW102-4.5 served as the field duplicate sample. The field duplicate data met the RPD criteria (30%) for precision with the exception of calcium which was qualified "J" in the Table 1 - Qualifier Summary attached.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. They were analyzed by the laboratory for each parameter, where applicable. No target compounds were detected above the MDL in the method blanks with the exceptions of PFHxA and perfluorooctanoic acid (PFOA) in the PFAS water analysis, perfluorobutanoic acid (PFBA) in the PFAS soil analysis, fluorene, phenanthrene, and 2-methylnaphthalene in the SVOC SIM analysis, and chromium, iron, and sodium in the soil metals analysis. No data were qualified for the PFAS water analysis or the SVOC SIM analysis since the project soil samples were not analyzed by these analyses. Excerpts from the laboratory report are provided in ATTACHMENT_PFAS_8 and ATTACHMENT_SVOC_SIM_2. The PFAS and metals soil blank concentrations were compared against the project sample analyte concentrations. Sample concentrations less than or equal to five times the blank sample concentration were qualified "UB" in the Table 1 - Qualifier Summary attached. Sample concentrations greater than five times the blank detection or results less than the MDL were not qualified. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_9.

Accuracy and Precision Data

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), matrix spike (MS) samples, matrix spike duplicate (MSD) samples, surrogate standards, and extracted internal standards to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the RPD of the LCS/LCSD and MS/MSD sample pairs.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria with the following exceptions. The LCS/LCSD RPDs for 1,4-dioxane in the water VOC analysis, perfluorooctanesulfonamide (FOSA) in the soil PFAS analysis, 4-chloroaniline in the SVOC water analysis, pentachlorophenol in the SVOC SIM water analysis, and 11 of 20 parameters in the water pesticides analysis exceeded laboratory acceptance criteria; however, no data were qualified because the LCS and LCSD percent recoveries were acceptable. Excerpts from the laboratory report are provided in ATTACHMENT_VOC_3, ATTACHMENT_PFAS_10, ATTACHMENT_SVOC_1, ATTACHMENT_SVOC_SIM_3, and ATTACHMENT_PESTICIDES_1. The soil acetone LCSD recovery, the soil cyanide LCS and LCSD recoveries, and the 1,4-dioxane LCS and LCSD percent recoveries in the soil SVOC analysis were below laboratory acceptance criteria indicating a potential low bias. The results were qualified as noted in the Table 1 - Qualifier Summary attached. Excerpts from the laboratory report are provided in ATTACHMENT_VOC_4, ATTACHMENT_CYANIDE_1, and ATTACHMENT_SVOC_2.

Matrix Spike / Matrix Spike Duplicate (MS/MSD)

An MS is a sample spiked with known concentrations of target analytes that is carried through the sample preparation and analytical procedures in order to assess the accuracy of a method in a given sample matrix. MS/MSD source samples were not specific to this report; therefore, the MS/MSD data were not used in data evaluation.

Laboratory Duplicate

A laboratory duplicate is a second aliquot of a sample that is carried through the same sample preparation and analytical procedures as the native sample in order to determine the precision of the method. Laboratory duplicate sample results were evaluated for compounds where both the native and duplicate sample concentrations were greater than five times the reporting limit. Sample HVRA-MW102-

4.5 served as the total solids/moisture laboratory duplicate source sample and the RPDs were within the laboratory acceptance criteria.

Surrogate Standard

Surrogate standards are compounds added to every blank, project sample, and quality control sample for organic analyses to evaluate analytical efficiency by measuring recovery (accuracy). Surrogate standards are compounds not expected to be detected in environmental media. Surrogate standard recoveries were within laboratory acceptance criteria.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. The extracted internal standard recoveries were within laboratory acceptance criteria with the exception of the extracted standards associated with PFHxA, perfluoroheptanoic acid (PFHpA), perfluorodecanoic acid (PFDA), N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA), perfluoroundecanoic acid (PFUnA), N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA), and perfluorododecanoic acid (PFDoA) for some samples that were below the laboratory acceptance criteria indicating a potential low bias. The results were qualified in the Table 1 - Qualifier Summary attached. Excerpts from the laboratory report are provided in ATTACHMENT_PFAS_11, ATTACHMENT_PFAS_12 ATTACHMENT_PFAS_13 ATTACHMENT_PFAS_14.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chains of custody. On November 30, 2007, the Integrated Risk Information System (IRIS) changed the chemical name for CAS #108-60-1 from bis(2-chloroisopropyl)ether to 2,2'-oxybis(1-chloropropane). This revised name was included in EPA method 8270D and in the SVOC target analyte lists (TCL) from recent Statement of Works; however, the laboratory used the name bis(2-chloroisopropyl)ether in this report. The laboratory is reviewing how to handle this naming convention for future work.

Additional Laboratory Items

Continuing Calibration Verification

It was noted by the laboratory that a 1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2FTS) continuing calibration verification standard was outside laboratory acceptance criteria; however, no data were qualified since the laboratory followed their protocol which allows 10% of the reported analytes to be greater than 30%, but less than 40%. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_15.

Table 1 - Qualifier Summary

Alpha Report #: L1935085

QC Item	Sample ID	Compound	Qualification	Comment
Trip Blank	HVRA-MW102-4.5	Acetone	UB	Change to non-detect
Method Blank	HVRA-MW105-4.0	PFBA	UB	Remove 'J' qualifier and change to non-detect
LCS/LCSD	HVRA-MW102-4.5	Acetone, cyanide	J	Add 'J' to detect and non-detect results
	HVRA-FD01-190806			
	HVRA-MW103-10.0			
	HVRA-MW103-10.0	1,4-Dioxane		
Extracted Internal Standard	HVRA-MW102-4.5	NMeFOSAA	J	Add 'J' to non-detect result
		PFUnA		Add 'J' to non-detect result
		NEtFOSAA		Add 'J' to non-detect result
		PFDoA		Add 'J' to non-detect result
	HVRA-FD01-190806	NMeFOSAA		Add 'J' to non-detect result
	HVRA-MW104-9.5	PFHxA		Result already 'J' qualified
		PFDA		Add 'J' to non-detect result
		NMeFOSAA		Add 'J' to non-detect result
		PFUnA		Add 'J' to non-detect result
		NEtFOSAA		Add 'J' to non-detect result
		PFDoA		Add 'J' to non-detect result

Table 1 - Qualifier Summary

Alpha Report #: L1935085

QC Item	Sample ID	Compound	Qualification	Comment
Extracted Internal Standard (cont.)	HVRA-MW105-4.0	PFHxA	J	Result already 'J' qualified
		PFHpA		Add 'J' to non-detect result
		PFDA		Add 'J' to non-detect result
		NMeFOSAA		Add 'J' to non-detect result
		PFUnA		Add 'J' to non-detect result
		NEtFOSAA		Add 'J' to non-detect result
		PFDoA		Add 'J' to non-detect result
Field Duplicate	HVRA-MW102-4.5	Calcium	J	RPD > 30%

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID: L1935085-02
Client ID: HVRA-LTB01-190806
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/06/19 00:00
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	7.0		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	111		70-130

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	4.6	J	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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	111		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,10 Batch: WG1272181-3 WG1272181-4								
1,2,4-Trichlorobenzene	83		82		70-130	1		20
Methyl Acetate	120		110		70-130	9		20
Cyclohexane	100		120		70-130	18		20
1,4-Dioxane	100		80		56-162	22	Q	20
Freon-113	100		120		70-130	18		20
Methyl cyclohexane	92		100		70-130	8		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		90		70-130
Toluene-d8	107		106		70-130
4-Bromofluorobenzene	88		91		70-130
Dibromofluoromethane	106		108		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-06 Batch: WG1273158-3 WG1273158-4								
Chloroethane	92		93		50-151	1		30
1,1-Dichloroethene	88		91		65-135	3		30
trans-1,2-Dichloroethene	91		93		70-130	2		30
Trichloroethene	90		92		70-130	2		30
1,2-Dichlorobenzene	88		89		70-130	1		30
1,3-Dichlorobenzene	89		91		70-130	2		30
1,4-Dichlorobenzene	89		90		70-130	1		30
Methyl tert butyl ether	87		88		66-130	1		30
p/m-Xylene	92		94		70-130	2		30
o-Xylene	92		95		70-130	3		30
cis-1,2-Dichloroethene	90		92		70-130	2		30
Styrene	93		95		70-130	2		30
Dichlorodifluoromethane	60		61		30-146	2		30
Acetone	66		**51**	Q	54-140	26		30
Carbon disulfide	77		80		59-130	4		30
2-Butanone	86		80		70-130	7		30
4-Methyl-2-pentanone	89		83		70-130	7		30
2-Hexanone	89		83		70-130	7		30
Bromochloromethane	86		86		70-130	0		30
1,2-Dibromoethane	84		85		70-130	1		30
1,2-Dibromo-3-chloropropane	73		72		68-130	1		30
Isopropylbenzene	96		97		70-130	1		30
1,2,3-Trichlorobenzene	83		85		70-130	2		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 10 Batch: WG1271094-2 WG1271094-3								
Bis(2-chloroethyl)ether	70		74		40-140	6		30
3,3'-Dichlorobenzidine	54		51		40-140	6		30
2,4-Dinitrotoluene	63		70		48-143	11		30
2,6-Dinitrotoluene	72		82		40-140	13		30
4-Chlorophenyl phenyl ether	63		70		40-140	11		30
4-Bromophenyl phenyl ether	67		71		40-140	6		30
Bis(2-chloroisopropyl)ether	82		92		40-140	11		30
Bis(2-chloroethoxy)methane	74		81		40-140	9		30
Hexachlorocyclopentadiene	64		72		40-140	12		30
Isophorone	79		87		40-140	10		30
Nitrobenzene	69		77		40-140	11		30
NDPA/DPA	66		67		40-140	2		30
n-Nitrosodi-n-propylamine	81		90		29-132	11		30
Bis(2-ethylhexyl)phthalate	84		99		40-140	16		30
Butyl benzyl phthalate	91		99		40-140	8		30
Di-n-butylphthalate	80		93		40-140	15		30
Di-n-octylphthalate	96		110		40-140	14		30
Diethyl phthalate	72		78		40-140	8		30
Dimethyl phthalate	77		88		40-140	13		30
Biphenyl	65		72		40-140	10		30
4-Chloroaniline	56		80		40-140	**35**	Q	30
2-Nitroaniline	74		86		52-143	15		30
3-Nitroaniline	52		58		25-145	11		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935085

Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 06 Batch: WG1273919-2 WG1273919-3								
1,2,4,5-Tetrachlorobenzene	69		62		40-117	11		50
Acetophenone	82		76		14-144	8		50
2,4,6-Trichlorophenol	84		71		30-130	17		50
p-Chloro-m-cresol	93		76		26-103	20		50
2-Chlorophenol	74		68		25-102	8		50
2,4-Dichlorophenol	88		79		30-130	11		50
2,4-Dimethylphenol	91		82		30-130	10		50
2-Nitrophenol	83		75		30-130	10		50
4-Nitrophenol	81		59		11-114	31		50
2,4-Dinitrophenol	74		58		4-130	24		50
4,6-Dinitro-o-cresol	86		67		10-130	25		50
Pentachlorophenol	83		65		17-109	24		50
Phenol	78		70		26-90	11		50
2-Methylphenol	80		71		30-130.	12		50
3-Methylphenol/4-Methylphenol	91		82		30-130	10		50
2,4,5-Trichlorophenol	87		68		30-130	25		50
Carbazole	78		62		54-128	23		50
Atrazine	90		70		40-140	25		50
Benzaldehyde	70		62		40-140	12		50
Caprolactam	92		70		15-130	27		50
2,3,4,6-Tetrachlorophenol	80		63		40-140	24		50
1,4-Dioxane	29	Q	34	Q	40-140	16		50

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935085-10	Date Collected:	08/06/19 13:20
Client ID:	HVRA-EB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	08/11/19 15:37
Analytical Date:	08/12/19 13:29		
Analyst:	CB		

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	0.06	J	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	0.03	J	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	0.03	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: HVRA

Project Number: 18.8090

Lab Number: L1935085

Report Date: 11/06/19

Method Blank Analysis

Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/12/19 12:07
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 15:37

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 10 Batch: WG1271095-1					
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	0.02	J	ug/l	0.10	0.01
Phenanthrene	0.05	J	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	0.03	J	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

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 10 Batch: WG1271095-2 WG1271095-3								
Acenaphthene	90		66		40-140	31		40
2-Chloronaphthalene	92		70		40-140	27		40
Fluoranthene	90		65		40-140	32		40
Hexachlorobutadiene	82		63		40-140	26		40
Naphthalene	85		65		40-140	27		40
Benzo(a)anthracene	94		69		40-140	31		40
Benzo(a)pyrene	98		72		40-140	31		40
Benzo(b)fluoranthene	93		69		40-140	30		40
Benzo(k)fluoranthene	97		72		40-140	30		40
Chrysene	88		65		40-140	30		40
Acenaphthylene	97		72		40-140	30		40
Anthracene	95		70		40-140	30		40
Benzo(ghi)perylene	85		62		40-140	31		40
Fluorene	92		67		40-140	31		40
Phenanthrene	90		66		40-140	31		40
Dibenzo(a,h)anthracene	96		69		40-140	33		40
Indeno(1,2,3-cd)pyrene	93		67		40-140	33		40
Pyrene	89		65		40-140	31		40
2-Methylnaphthalene	94		71		40-140	28		40
Pentachlorophenol	69		41		40-140	51	Q	40
Hexachlorobenzene	97		73		40-140	28		40
Hexachloroethane	74		56		40-140	28		40

Project Name: HVRA
Lab Number: L1935085
Project Number: 18.8090
Report Date: 11/06/19

SAMPLE RESULTS

Lab ID: L1935085-03
Client ID: HVRA-RB01-190806
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/06/19 08:35
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/19/19 13:25
Analyst: AJ
Extraction Method: EPA 537
Extraction Date: 08/15/19 11:17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.97	0.402	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.97	0.390	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.97	0.234	1
Perfluorohexanoic Acid (PFHxA)	0.583	J	ng/l	1.97	0.323	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.97	0.222	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.97	0.370	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.97	0.232	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.97	1.31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.97	0.677	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.97	0.307	1
Perfluorooctanesulfonic Acid (PFOS)	0.524	J	ng/l	1.97	0.496	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.97	0.299	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.97	1.19	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.97	0.638	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.97	0.256	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.97	0.964	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.97	0.571	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.97	0.791	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.97	0.366	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.97	0.322	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.97	0.244	1
PFOA/PFOS, Total	0.524	J	ng/l	1.97	0.232	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID: L1935085-07
Client ID: HVRA-RB02-190806
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 11:30
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/19/19 13:42
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/15/19 11:17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
Perfluorohexanoic Acid (PFHxA)	0.404	J	ng/l	1.80	0.296	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	0.960	J	ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.884	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1
PFOA/PFOS, Total	0.960	J	ng/l	1.80	0.213	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID: L1935085-08
Client ID: HVRA-RB03-190806
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 12:50
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/19/19 13:59
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/15/19 11:17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.86	0.379	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.86	0.368	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.86	0.221	1
Perfluorohexanoic Acid (PFHxA)	0.416	J	ng/l	1.86	0.305	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.86	0.209	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.86	0.349	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.86	0.219	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.86	0.639	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.86	0.290	1
Perfluorooctanesulfonic Acid (PFOS)	2.23		ng/l	1.86	0.468	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	0.282	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	1.13	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.602	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.242	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	0.911	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	0.539	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	0.747	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.346	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.304	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	0.230	1
PFOA/PFOS, Total	2.23		ng/l	1.86	0.219	1

Project Name: HVRA **Lab Number:** L1935085

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID: L1935085-11
Client ID: HVRA-RB04-190806
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 14:45
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/19/19 14:16
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/15/19 11:17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.93	0.394	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.93	0.382	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.93	0.230	1
Perfluorohexanoic Acid (PFHxA)	0.448	J	ng/l	1.93	0.317	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.93	0.217	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.93	0.363	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.93	0.228	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.93	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.93	0.664	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.93	0.301	1
Perfluorooctanesulfonic Acid (PFOS)	3.22		ng/l	1.93	0.486	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.93	0.293	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.93	1.17	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.93	0.625	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.93	0.251	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.93	0.946	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.93	0.560	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.93	0.776	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.93	0.359	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.93	0.316	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.93	0.239	1
PFOA/PFOS, Total	3.22		ng/l	1.93	0.228	1

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	11/06/19

SAMPLE RESULTS

Lab ID:	L1935085-02	Date Collected:	08/06/19 00:00
Client ID:	HVRA-LTB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 11:17
Analytical Date:	08/19/19 12:51		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.96	0.400	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.96	0.388	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.96	0.233	1
Perfluorohexanoic Acid (PFHxA)	0.396	J	ng/l	1.96	0.322	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.96	0.221	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.96	0.369	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.96	0.231	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.96	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.96	0.674	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.96	0.306	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.96	0.494	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.96	0.298	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.96	1.19	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.96	0.635	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.96	0.255	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.96	0.961	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.96	0.569	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.96	0.788	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.96	0.365	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.96	0.321	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.96	0.243	1
PFOA/PFOS, Total	ND		ng/l	1.96	0.231	1

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935085-01	Date Collected:	08/06/19 10:00
Client ID:	HVRA-FTB01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/15/19 11:17
Analytical Date:	08/19/19 12:34		
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.02	0.413	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.02	0.401	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.02	0.241	1
Perfluorohexanoic Acid (PFHxA)	0.364	J	ng/l	2.02	0.332	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.02	0.228	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.02	0.380	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.02	0.239	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.02	1.35	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.02	0.696	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.02	0.316	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.02	0.510	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.02	0.308	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.02	1.23	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.02	0.656	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.02	0.263	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.02	0.992	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.02	0.587	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.02	0.814	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.02	0.376	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.02	0.331	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.02	0.251	1
PFOA/PFOS, Total	ND		ng/l	2.02	0.239	1

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935085

Report Date: 11/06/19

SAMPLE RESULTS

Lab ID: L1935085-10
Client ID: HVRA-EB01-190806
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 13:20
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/19/19 13:08
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/15/19 11:17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.89	0.386	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.89	0.375	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.225	1
Perfluorohexanoic Acid (PFHxA)	0.409	J	ng/l	1.89	0.311	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	0.213	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.356	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.89	0.223	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.652	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	0.295	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.477	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	0.288	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.15	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.614	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.246	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.928	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.549	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.761	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.352	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.310	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.235	1
PFOA/PFOS, Total	ND		ng/l	1.89	0.223	1

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 11/06/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/19/19 11:09
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/15/19 11:17

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03,07-08,10-11 Batch: WG1272715-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.380	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	0.276	J	ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	0.276	J	ng/l	2.00	0.236

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935085

Report Date: 11/06/19

Method Blank Analysis

Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/11/19 15:02
Analyst: PB

Extraction Method: EPA 537(M)
Extraction Date: 08/08/19 13:52

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 04-06,09,12 Batch: WG1270181-1					
Perfluorobutanoic Acid (PFBA)	0.077	J	ug/kg	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04-06,09,12 Batch: WG1270181-2 WG1270181-3								
Perfluorobutanoic Acid (PFBA)	91		88		71-135	3		30
Perfluoropentanoic Acid (PFPeA)	90		88		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	82		83		72-128	1		30
Perfluorohexanoic Acid (PFHxA)	89		88		70-132	1		30
Perfluoroheptanoic Acid (PFHpA)	94		89		71-131	5		30
Perfluorohexanesulfonic Acid (PFHxS)	81		77		67-130	5		30
Perfluorooctanoic Acid (PFOA)	91		89		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	102		92		64-140	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	86		87		70-132	1		30
Perfluorononanoic Acid (PFNA)	87		91		72-129	4		30
Perfluorooctanesulfonic Acid (PFOS)	84		83		68-136	1		30
Perfluorodecanoic Acid (PFDA)	91		90		69-133	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	85		84		65-137	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	98		89		63-144	10		30
Perfluoroundecanoic Acid (PFUnA)	91		85		64-136	7		30
Perfluorodecanesulfonic Acid (PFDS)	86		91		59-134	6		30
Perfluorooctanesulfonamide (FOSA)	88		124		67-137	34	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	88		81		61-139	8		30
Perfluorododecanoic Acid (PFDoA)	94		91		69-135	3		30
Perfluorotridecanoic Acid (PFTrDA)	94		92		66-139	2		30
Perfluorotetradecanoic Acid (PFTA)	96		94		69-133	2		30

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	11/06/19

SAMPLE RESULTS

Lab ID:	L1935085-04	Date Collected:	08/06/19 09:45
Client ID:	HVRA-MW102-4.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	69		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	51		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	69		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	69		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	57		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**36**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	**61**	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	61		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**33**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	**54**	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34		26-160

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935085-05	Date Collected:	08/06/19 00:00
Client ID:	HVRA-FD01-190806	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	82		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	61		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	69		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	**42**	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	67		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	48		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		26-160

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	11/06/19

SAMPLE RESULTS

Lab ID:	L1935085-09	Date Collected:	08/06/19 13:25
Client ID:	HVRA-MW104-9.5	Date Received:	08/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	64		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	60	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	62		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	74		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	64		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	54		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	65		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	61		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	27	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	61	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	29	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	52	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	32		26-160

Project Name: HVRA **Lab Number:** L1935085
Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID: L1935085-12 Date Collected: 08/06/19 15:50
Client ID: HVRA-MW105-4.0 Date Received: 08/06/19
Sample Location: WAPPINGERS FALLS, NY Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	72		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	78		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	60	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	80		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	63		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	63		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	66		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	62	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	28	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	61	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	26	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	28		26-160

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 11/06/19

Case Narrative (continued)

Report Revision

November 06, 2019: The Semivolatile Organics compound list has been amended to include 2-Methylphenol on L1935085-10.

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L1935085-13: A sample identified as "TRIP BLANK" was received, but not listed on the Chain of Custody and was not analyzed.

Volatile Organics

L1935085-02: The Trip Blank has a result for acetone present above the reporting limit. The sample was verified as being labeled correctly by the laboratory and the previous analysis showed there was no potential for carry over.

Perfluorinated Alkyl Acids by Isotope Dilution

L1935085-04, -05, -09, and -12: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1270181-2/-3 LCS/LCSD RPD, associated with L1935085-04, -05, -06, -09, and -12, is above the acceptance criteria for perfluorooctanesulfonamide (fosa) (34%).

WG1271296-1: The continuing calibration standard had the response for 1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS) outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

Lab Control Sample Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935085

Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 10 Batch: WG1271187-2 WG1271187-3									
Delta-BHC	75		94		30-150	23	Q	20	A
Lindane	83		95		30-150	14		20	A
Alpha-BHC	85		96		30-150	12		20	A
Beta-BHC	79		93		30-150	16		20	A
Heptachlor	80		95		30-150	18		20	A
Aldrin	76		89		30-150	15		20	A
Heptachlor epoxide	88		106		30-150	19		20	A
Endrin	87		108		30-150	22	Q	20	A
Endrin aldehyde	69		89		30-150	25	Q	20	A
Endrin ketone	87		111		30-150	25	Q	20	A
Dieldrin	88		108		30-150	20		20	A
4,4'-DDE	83		103		30-150	22	Q	20	A
4,4'-DDD	84		110		30-150	27	Q	20	A
4,4'-DDT	86		113		30-150	27	Q	20	A
Endosulfan I	78		92		30-150	17		20	A
Endosulfan II	78		102		30-150	26	Q	20	A
Endosulfan sulfate	87		116		30-150	28	Q	20	A
Methoxychlor	80		106		30-150	28	Q	20	A
cis-Chlordane	74		84		30-150	13		20	A
trans-Chlordane	79		97		30-150	21	Q	20	A

Project Name: HVRA
Lab Number: L1935085
Project Number: 18.8090
Report Date: 11/06/19

SAMPLE RESULTS

Lab ID: L1935085-10
Client ID: HVRA-EB01-190806
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/06/19 13:20
Date Received: 08/06/19
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	ND		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Calcium, Total	ND		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Manganese, Total	0.00113		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/14/19 12:05	08/14/19 16:32	EPA 7470A	1,7470A	GD
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 14:43	EPA 3005A	1,6020B	AM

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 04-06 Batch: WG1269546-2 WG1269546-3								
Cyanide, Total	73	Q	72	Q	80-120	0		35
General Chemistry - Westborough Lab Associated sample(s): 10 Batch: WG1269575-2 WG1269575-3								
Cyanide, Total	93		96		85-115	3		20

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Latham, New York

Lab Number: L1935927

Alpha Analytical

Report Date: November 6, 2019

Prepared by

Barr Engineering Co.

November 11, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical # L1935927
Date: November 11, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), 1,4-dioxane, per- and polyfluorinated alkyl substances (PFAS), polychlorinated biphenyls (PCBs), pesticides, metals (TAL 23), and cyanide data contained within Alpha Analytical report # L1935927 for C.T. Male Associates, Latham, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Field duplicate
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Matrix spikes/matrix spike duplicates (MS/MSD)
- Laboratory duplicate
- Deuterated Monitoring Compounds (DMC)/Surrogates
- Extracted internal standards
- Additional items noted by the laboratory

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blank(s).

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/dlb

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on August 7-9, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA and Alpha Analytical in Westborough, MA as indicated within the laboratory report. Each of these Alpha locations are accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing trip and equipment blank samples and field duplicate samples analyses. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Trip Blank / Equipment Blank

Two trip blank samples and one equipment blank sample was collected. One trip blank (LTB) was analyzed to determine the extent of potential VOC and PFAS contamination introduced during sample transport and handling and another tested for PFAS only (FTB). The equipment blank (EB01) was collected from the peristaltic pump to measure the potential for sample contamination and was tested for all target compounds. No target compounds were detected above the MDL in the trip and equipment blank samples with the following exceptions. Acetone and chloromethane was detected in the VOC trip blank and equipment blank. Excerpts from the laboratory report are provided in ATTACHMENT_VOC_1 (LTB) and ATTACHMENT_VOC_2 (EB). SVOC bis(2-ethylhexyl)phthalate and SVOC SIM naphthalene and 2-methylnaphthalene were detected in the equipment blank. Excerpt from the laboratory report is provided in ATTACHMENT_SVOC_1 and ATTACHMENT_SVOC SIM_1 respectively. Metals calcium and iron were also detected in the equipment blank. Excerpt from the laboratory report is provided in ATTACHMENT_METALS_1. Sample concentrations less than or equal to five times the highest blank sample concentration were qualified “UB” in the Table 1 - Qualifier Summary attached.

Field Duplicate

A field duplicate is a second sample generated in the field that is used to demonstrate acceptable precision and reproducibility of the field and laboratory procedures. The sample identification is typically kept blind from the laboratory. Field duplicate sample results measure the reproducibility of measurements under a given set of conditions and were evaluated by calculating the Relative Percent Difference (RPD) values for compounds where both the native and field duplicate sample concentrations were greater than five times the reporting limit. The RPD formula is as follows:

$$RPD = \frac{|S-D|}{(S+D)/2} \, x \, 100$$

Where: RPD = relative percent difference
S = native sample result
D = duplicate sample result

Samples HVRA-MAINTBLDG-190807 (HVRA-FD01-190807), HVRA-MW100-190808 (HVRA-FD01-190808), and HVRA-OF1-190808 (HVRA-FD02-190808) served as the field duplicate samples. The field duplicate data met the RPD criteria (30%) for precision with the exception of HVRA-OF1-190808 (HVRA-FD02-190808 tested for total calcium, total copper, and total manganese. The native and field duplicate sample results were qualified "J" in the Table 1 - Qualifier Summary attached.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses with the following exceptions. The results from sample HVRA-MW100-190808 for 8:2FTS and HVRA-MW104-190809 for PFHxS and PFOS are reported as a reanalysis outside of hold as the initial run was outside of the calibration range; the sample results were qualified "J" in the Table 1 - Qualifier Summary attached. The sample was re-extracted on dilution outside the recommended holding time and the result within the calibration curve is reported for this compound. Excerpt is included in ATTACHMENT_PFAS_1 and ATTACHMENT_PFAS_2. Also, the laboratory report narrative states that for sample L1935927-10/ HVRA-NW102-190809, the PCBs extraction holding time was exceeded. However, the report noted it was extracted in eight days and the method does not set a requirement for extraction. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. They were analyzed by the laboratory for each parameter, where applicable. No target compounds were detected above the MDL in the method blank with the exception of VOC bromomethane, perfluorobutanoic acid (PFBA), and arsenic in soil and SVOC bis(2-ethylhexyl)phthalate, perfluorohexanoic acid (PFHxA), Aroclor 1260, and multiple SVOC SIM compounds tested in water.

Excerpt from the laboratory report are provided in ATTACHMENT_VOC_3, ATTACHMENT_PFAS_3, ATTACHMENT_METAL_2, ATTACHMENT_SVOC_2, ATTACHMENT_PFAS_4, ATTACHMENT_PCB_1, and ATTACHMENT_SVOC SIM_2 respectively. The blank concentrations for these analytes were compared against the project sample analyte concentration as discussed above. Sample concentrations less than or equal to five times the blank sample concentration were qualified "UB" in the Table 1 - Qualifier Summary attached. Sample concentrations greater than five times the blank detection were not qualified.

<u>Accuracy and Precision Data</u>

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), matrix spike (MS) samples, matrix spike duplicate (MSD) samples, surrogates, and extracted internal standards to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the RPD of the LCS/LCSD, MS/MSD, and laboratory duplicate sample pairs.

<u>Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)</u>

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria with the following exceptions. The soil SVOC LCS had multiple compounds that exceeded the acceptance criteria, as shown as excerpt ATTACHMENT_SVOC_3, however all samples were non-detect for those compounds and therefore unaffected by the potential high bias. The soil PFAS had 1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2FTS) and FOSA that had an RPD that exceed acceptance criteria, however 6:2FTS had acceptable percent recoveries in the LCS and LCSD and therefore was accepted. The soil FOSA and total cyanide LCS and LCSD had percent recoveries outside of laboratory acceptance criteria and the results for samples HVRA-OF1-190808 and its field duplicate HVRA-FD02-190808 were qualified as noted in the Table 1 - Qualifier Summary attached. The excerpt from the laboratory report is provided in ATTACHMENT_PFAS_5 and ATTACHMENT_CYANIDE_1 respectively. In addition, the water pesticide LCS/LCSD analysis had multiple compounds with RPDs that exceeded acceptance criteria, as shown in the laboratory report excerpt ATTACHMENT_PESTICIDE_1, however since all of the percent recoveries were acceptable, the data is accepted without qualification.

An MS is a sample spiked with known concentrations of target analytes that is carried through the sample preparation and analytical procedures in order to assess the accuracy of a method in a given sample matrix. Samples HVRA-MW100-190808 and HVRA-MAINTBLDG-190807 served as the MS samples for the water analysis and sample HVRA-OF1-190808 served as the soil MS. There were multiple tested compounds that had percent recoveries that were outside the laboratory limits indicating a potential bias. However, the sample results were not evaluated if the sample detection was greater than four times the spike concentration. A low percent recovery may indicate a potential low bias while a high percent recovery may indicate a potential high bias. For a low percent recovery, positive results are considered estimated and qualified “J” while non-detects are estimated and qualified “UJ”. For a high percent recovery, positive results are considered estimated and qualified “J” and non-detects are not qualified. Also, data was not qualified if only the RPD was outside of laboratory acceptance but both MS and MSD percent recoveries were acceptable. The sample data that is qualified is noted in the Table 1 – Qualifier Summary attached. The associated laboratory report excerpts are provided as ATTACHMENT_VOC_4, ATTACHMENT_VOC_5, ATTACHMENT_SVOC_4, ATTACHMENT_SVOC_5, ATTACHMENT_SVOC_6, ATTACHMENT_PFAS_6 ATTACHMENT_PFAS_7, ATTACHMENT_PFAS_8, ATTACHMENT_PESTICIDE_2, ATTACHMENT_METALS_3, ATTACHMENT_METALS_4, and ATTACHMENT_METALS_5.

Surrogate Standard

Surrogate standards are compounds added to every blank, project sample, and quality control sample for organic analyses to evaluate analytical efficiency by measuring recovery (accuracy). Surrogate standards are compounds not expected to be detected in environmental media. Surrogate standard recoveries were within laboratory acceptance criteria with one exception. There was one surrogate above acceptance criteria for the SVOC SIM analysis from sample HVRA-MAINTBLDG-190807, however no data was qualified as all SVOC SIM results are non-detect. Excerpt from the laboratory report is provided in ATTACHMENT_SVOC SIM_3.

Laboratory Duplicate

A laboratory duplicate is an additional sample typically taken from an existing sample bottle that is carried through the same sample preparation and analytical procedures as the project sample. The results from the duplicate analyses are used to evaluate analytical precision by the calculation of the RPD. The RPDs were within laboratory acceptance criteria.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. Some of the extracted internal standard recoveries were outside of laboratory acceptance criteria for the field samples. Where the extracted internal standard exceeded the laboratory acceptance criteria indicating a potential high bias, and the target result was not detected, no qualification was applied. If the target result was detected or when the extracted internal standard was below the laboratory acceptance criteria, the results were qualified in the Table 1 - Qualifier Summary attached. In addition, there was an extraction labeled standard above laboratory acceptance criteria for an LCS/LCSD for the extraction labeled standards for NEtFOSAA analysis; however, no data were qualified based on the high recoveries in the LCS/LCSD as the percent recoveries were acceptable. The extracted internal standard recoveries that were outside of laboratory acceptance criteria are provided in ATTACHMENT_PFAS_9, ATTACHMENT_PFAS_10, and ATTACHMENT_PFAS_11.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chains of custody. Samples HVRA-MAINTBLDG-190807 and HVRA-FD01-190807 were labeled on the COC as Drinking Water samples. The samples were tested the same as all other samples and did not following Drinking Water methods, specifically for PFAS. On November 30, 2007, the Integrated Risk Information System (IRIS) changed the chemical name for CAS #108-60-1 from bis(2-chloroisopropyl)ether to 2,2'-oxybis(1-chloropropane). This revised name was included in EPA method 8270D and in the SVOC target analyte lists (TCL) from recent Statement of Works; however, the laboratory used the name bis(2-chloroisopropyl)ether in this report. The laboratory is reviewing how to handle this naming convention for future work.

Additional Laboratory Items

Diluted Sample

Endrin aldehyde for sample HVRA-OF1-190808 was analyzed at a 2x dilution. The laboratory also reported the 1x dilution PFOS result for this sample with an 'E' qualifier indicating that the concentration exceeded the laboratory's calibration range. The 2x dilution result should be used and the 'E' qualified, 1x dilution result should be considered unusable. The endrin aldehyde 1x dilution result was qualified 'R' in the Table 1 – Qualifier Summary attached. Excerpt from the laboratory report is provided in ATTACHMENT_PESTICIDE_3.

Continuing Calibration Verification

It was noted by the laboratory multiple instances where the continuing calibration verification (CCV) standard was outside of acceptance criteria. The 8:2FTS CCV standard was outside laboratory acceptance criteria; however, no data were qualified since the laboratory followed their protocol which allows 10% of the reported analytes to be greater than 30%, but less than 40%. Excerpt from the laboratory report discussing this is provided in ATTACHMENT_PFAS_12.

Table 1 - Qualifier Summary

Alpha Report #: L1935927

QC Item	Sample ID	Compound	Qualification	Comment
Trip Blank	HVRA-MW100-190808	Chloromethane	UB	Remove 'J' qualifier and change to non-detect
	HVRA-FD01-190808	Chloromethane		Remove 'J' qualifier and change to non-detect
	HVRA-MW100-190808	Acetone		Change to non-detect
	HVRA-FD01-190808	Acetone		Change to non-detect
	HVRA-OF1-190808	Acetone		Change to non-detect
	HVRA-NW102-190809	Acetone		Change to non-detect
	HVRA-MW103-190809	Acetone		Change to non-detect
Equipment Blank/Method Blank	HVRA-MAINTBLDG-190807	Bis(2-ethylhexyl)phthalate	UB	Remove 'J' qualifier and change to non-detect
Equipment Blank	HVRA-MAINTBLDG-190807	Naphthalene (SIM)	UB	Remove 'J' qualifier and change to non-detect
	HVRA-MW100-190808	Total Iron		
	HVRA-FD01-190808	Total Iron		
Field Duplicate	HVRA-OF1-190808	Total Calcium	J	RPD > 30%
	HVRA-FD02-190808	Total Calcium		
	HVRA-OF1-190808	Total Copper		
	HVRA-FD02-190808	Total Copper		
	HVRA-OF1-190808	Total Manganese		
	HVRA-FD02-190808	Total Manganese		
Holding Time	HVRA-MW100-190808	8:2FTS	J	Add 'J' qualifier
	HVRA-MW104-190809	PFHxS		
	HVRA-MW104-190809	PFOS		

Table 1 - Qualifier Summary

Alpha Report #: **L1935927**

QC Item	Sample ID	Compound	Qualification	Comment
Method Blank	HVRA-MW100-190808	Phenanthrene	UB	Remove 'J' qualifier and change to non-detect
	HVRA-MAINTBLDG-190807	Perfluorohexanoic Acid (PFHxA)		
	HVRA-FD01-190807	Perfluorohexanoic Acid (PFHxA)		
	HVRA-NW102-190809	Perfluorohexanoic Acid (PFHxA)		
	HVRA-MW103-190809	Perfluorohexanoic Acid (PFHxA)		
LCS/LCSD	HVRA-OF1-190808	Perfluorooctanesulfonamide (FOSA)	J	Add 'J' to non-detect results
	HVRA-FD02-190808	Perfluorooctanesulfonamide (FOSA)	J	
	HVRA-OF1-190808	Total Cyanide	J	
	HVRA-FD02-190808	Total Cyanide	J	
MS/MSD	HVRA-MW100-190808	Chloromethane	J	Result already 'J' qualified
		3,3'-Dichlorobenzidine		Add 'J' to non-detect results
		4-Chloroaniline		Add 'J' to non-detect results
		2,4-Dimethylphenol		Add 'J' to non-detect results
		8:2FTS		Add 'J'
		Total Calcium		Add 'J'

Table 1 - Qualifier Summary

Alpha Report #: L1935927

QC Item	Sample ID	Compound	Qualification	Comment
MS/MSD (cont.)	HVRA-OF1-190808	1,1,2,2-Tetrachloroethane	J	Add 'J' to non-detect results
		1,2-Dichlorobenzene		Add 'J' to non-detect results
		1,3-Dichlorobenzene		Add 'J' to non-detect results
		1,4-Dichlorobenzene		Add 'J' to non-detect results
		1,2-Dibromo-3-chloropropane		Add 'J' to non-detect results
		1,2,3-Trichlorobenzene		Add 'J' to non-detect results
		1,2,4-Trichlorobenzene		Add 'J' to non-detect results
		Hexachlorocyclopentadiene		Add 'J' to non-detect results
		Total Lead		Add 'J' qualifier
Sample Dilution	HVRA-OF1-190808	Endrin aldehyde - 1x dilution	R	Remove 'E' qualifier, use 2x dilution result
Extracted Internal Standard	HVRA-MW104-190809	PFBS	J	Add 'J' qualifier
		PFTrDA		Add 'J' to non-detect results
		PFTA		Add 'J' to non-detect results

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935927-01	Date Collected:	08/07/19 00:00
Client ID:	HVRA-LTB01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 08/14/19 15:13

Analyst: PK

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
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	1.1	J	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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935927-01	Date Collected:	08/07/19 00:00
Client ID:	HVRA-LTB01-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	7.2		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	97		70-130

Project Name: HVRA

Lab Number: L1935927

Project Number: 18.8090

Report Date: 11/06/19

SAMPLE RESULTS

Lab ID: L1935927-07

Date Collected: 08/08/19 14:20

Client ID: HVRA-EB01-190808

Date Received: 08/09/19

Sample Location: WAPPINGERS FALLS, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 08/14/19 16:39

Analyst: PK

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
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	0.96	J	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
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	9.1		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
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
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Isopropylbenzene	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
Methyl Acetate	ND		ug/l	2.0	0.23	1
Cyclohexane	ND		ug/l	10	0.27	1
1,4-Dioxane	ND		ug/l	250	61.	1
Freon-113	ND		ug/l	2.5	0.70	1
Methyl cyclohexane	ND		ug/l	10	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	98		70-130

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 11/06/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/15/19 19:24
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 08-09 Batch: WG1273127-5					
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
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	2.0		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
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05-07,10,12 QC Batch ID: WG1272314-6 WG1272314-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
Methylene chloride	ND	10	12	120		12	120		70-130	0		20
1,1-Dichloroethane	ND	10	12	120		12	120		70-130	0		20
Chloroform	ND	10	12	120		12	120		70-130	0		20
Carbon tetrachloride	ND	10	11	110		12	120		63-132	9		20
1,2-Dichloropropane	ND	10	12	120		12	120		70-130	0		20
Dibromochloromethane	ND	10	11	110		12	120		63-130	9		20
1,1,2-Trichloroethane	ND	10	12	120		12	120		70-130	0		20
Tetrachloroethene	ND	10	10	100		10	100		70-130	0		20
Chlorobenzene	ND	10	11	110		11	110		75-130	0		20
Trichlorofluoromethane	ND	10	11	110		12	120		62-150	9		20
1,2-Dichloroethane	ND	10	12	120		12	120		70-130	0		20
1,1,1-Trichloroethane	ND	10	11	110		12	120		67-130	9		20
Bromodichloromethane	ND	10	12	120		12	120		67-130	0		20
trans-1,3-Dichloropropene	ND	10	11	110		11	110		70-130	0		20
cis-1,3-Dichloropropene	ND	10	11	110		12	120		70-130	9		20
Bromoform	ND	10	9.9	99		10	100		54-136	1		20
1,1,2,2-Tetrachloroethane	ND	10	12	120		12	120		67-130	0		20
Benzene	ND	10	12	120		12	120		70-130	0		20
Toluene	ND	10	11	110		11	110		70-130	0		20
Ethylbenzene	ND	10	10	100		11	110		70-130	10		20
Chloromethane	1.4J	10	15	**150**	Q	16	**160**	Q	64-130	6		20
Bromomethane	ND	10	6.8	68		7.9	79		39-139	15		20
Vinyl chloride	ND	10	12	120		12	120		55-140	0		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935927

Report Date: 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05-07,10,12 QC Batch ID: WG1272314-6 WG1272314-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
Chloroethane	ND	10	12	120		12	120		55-138	0		20
1,1-Dichloroethene	ND	10	12	120		12	120		61-145	0		20
trans-1,2-Dichloroethene	ND	10	11	110		12	120		70-130	9		20
Trichloroethene	ND	10	11	110		12	120		70-130	9		20
1,2-Dichlorobenzene	ND	10	11	110		11	110		70-130	0		20
1,3-Dichlorobenzene	ND	10	10	100		11	110		70-130	10		20
1,4-Dichlorobenzene	ND	10	10	100		11	110		70-130	10		20
Methyl tert butyl ether	ND	10	11	110		12	120		63-130	9		20
p/m-Xylene	ND	20	21	105		22	110		70-130	5		20
o-Xylene	ND	20	22	110		22	110		70-130	0		20
cis-1,2-Dichloroethene	ND	10	12	120		12	120		70-130	0		20
Styrene	ND	20	20	100		22	110		70-130	10		20
Dichlorodifluoromethane	ND	10	11	110		11	110		36-147	0		20
Acetone	13	10	25	120		23	100		58-148	8		20
Carbon disulfide	ND	10	11	110		12	120		51-130	9		20
2-Butanone	ND	10	13	130		14	**140**	Q	63-138	7		20
4-Methyl-2-pentanone	ND	10	12	120		12	120		59-130	0		20
2-Hexanone	ND	10	13	130		14	**140**	Q	57-130	7		20
Bromochloromethane	ND	10	12	120		12	120		70-130	0		20
1,2-Dibromoethane	ND	10	11	110		12	120		70-130	9		20
1,2-Dibromo-3-chloropropane	ND	10	11	110		12	120		41-144	9		20
Isopropylbenzene	ND	10	10	100		11	110		70-130	10		20
1,2,3-Trichlorobenzene	ND	10	12	120		13	130		70-130	8		20

ATTACHMENT_VOC_4 (cont.)

Matrix Spike Analysis

Batch Quality Control

Project Name:	HVRA	***Lab Number:***	L1935927
Project Number:	18.8090	***Report Date:***	11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,05-07,10,12 QC Batch ID: WG1272314-6 WG1272314-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
1,2,4-Trichlorobenzene	ND	10	11	110		12	120		70-130	9		20
Methyl Acetate	ND	10	12	120		13	130		70-130	8		20
Cyclohexane	ND	10	11	110		11	110		70-130	0		20
1,4-Dioxane	ND	500	830	**166**	Q	980	**196**	Q	56-162	17		20
Freon-113	ND	10	10	100		11	110		70-130	10		20
Methyl cyclohexane	ND	10	9.9J	99		10	100		70-130	1		20

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		103		70-130
4-Bromofluorobenzene	99		101		70-130
Dibromofluoromethane	99		100		70-130
Toluene-d8	98		98		70-130

ATTACHMENT_VOC_5

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273127-6 WG1273127-7 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Methylene chloride	ND	109	110	101		110	98		70-130	5		30
1,1-Dichloroethane	ND	109	120	108		110	104		70-130	6		30
Chloroform	ND	109	110	101		100	97		70-130	7		30
Carbon tetrachloride	ND	109	130	115		120	112		70-130	5		30
1,2-Dichloropropane	ND	109	110	104		100	98		70-130	8		30
Dibromochloromethane	ND	109	96	88		88	82		70-130	9		30
1,1,2-Trichloroethane	ND	109	93	85		86	81		70-130	7		30
Tetrachloroethene	0.66	109	99	90		93	87		70-130	5		30
Chlorobenzene	ND	109	89	81		80	75		70-130	11		30
Trichlorofluoromethane	ND	109	140	128		130	124		70-139	6		30
1,2-Dichloroethane	ND	109	110	98		100	94		70-130	7		30
1,1,1-Trichloroethane	ND	109	120	113		120	108		70-130	7		30
Bromodichloromethane	ND	109	110	99		99	93		70-130	9		30
trans-1,3-Dichloropropene	ND	109	96	88		90	84		70-130	7		30
cis-1,3-Dichloropropene	ND	109	110	103		100	97		70-130	8		30
Bromoform	ND	109	87	79		76	71		70-130	13		30
1,1,2,2-Tetrachloroethane	ND	109	77	70		68	**64**	Q	70-130	12		30
Benzene	ND	109	110	103		110	98		70-130	6		30
Toluene	ND	109	100	91		92	86		70-130	8		30
Ethylbenzene	ND	109	99	91		91	85		70-130	9		30
Chloromethane	ND	109	120	111		120	110		52-130	3		30
Bromomethane	ND	109	120	106		130	118		57-147	8		30
Vinyl chloride	ND	109	130	117		130	119		67-130	1		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273127-6 WG1273127-7 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Chloroethane	ND	109	150	138		140	130		50-151	8		30
1,1-Dichloroethene	ND	109	120	112		120	112		65-135	2		30
trans-1,2-Dichloroethene	ND	109	110	104		110	102		70-130	4		30
Trichloroethene	ND	109	110	100		100	95		70-130	8		30
1,2-Dichlorobenzene	ND	109	71	66	Q	59	55	Q	70-130	20		30
1,3-Dichlorobenzene	ND	109	73	67	Q	62	58	Q	70-130	17		30
1,4-Dichlorobenzene	ND	109	69	64	Q	58	54	Q	70-130	18		30
Methyl tert butyl ether	ND	109	110	99		100	97		66-130	5		30
p/m-Xylene	ND	218	200	90		180	83		70-130	10		30
o-Xylene	ND	218	190	89		170	82		70-130	11		30
cis-1,2-Dichloroethene	ND	109	110	103		110	99		70-130	6		30
Styrene	ND	218	190	87		170	78		70-130	13		30
Dichlorodifluoromethane	ND	109	130	121		130	121		30-146	2		30
Acetone	31	109	150	111		130	91		54-140	17		30
Carbon disulfide	ND	109	120	108		110	105		59-130	5		30
2-Butanone	ND	109	99	91		93	88		70-130	6		30
4-Methyl-2-pentanone	ND	109	97	89		90	85		70-130	7		30
2-Hexanone	ND	109	85	78		80	75		70-130	7		30
Bromochloromethane	ND	109	110	101		100	97		70-130	7		30
1,2-Dibromoethane	ND	109	95	87		87	82		70-130	8		30
1,2-Dibromo-3-chloropropane	ND	109	79	73		68	64	Q	68-130	16		30
Isopropylbenzene	ND	109	95	87		87	82		70-130	8		30
1,2,3-Trichlorobenzene	ND	109	50	45	Q	36	34	Q	70-130	31	Q	30

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935927

Report Date: 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273127-6 WG1273127-7 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
1,2,4-Trichlorobenzene	ND	109	51	47	Q	40	37	Q	70-130	25		30
Methyl Acetate	ND	109	210	188	Q	200	188	Q	51-146	2		30
Cyclohexane	ND	109	140	124		130	121		59-142	5		30
1,4-Dioxane	ND	5450	6100	112		6200	117		65-136	2		30
Freon-113	ND	109	130	118		130	117		50-139	3		30
Methyl cyclohexane	ND	109	120	110		120	111		70-130	2		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		97		70-130
4-Bromofluorobenzene	97		97		70-130
Dibromofluoromethane	103		102		70-130
Toluene-d8	94		94		70-130

Project Name: HVRA

Lab Number: L1935927

Project Number: 18.8090

Report Date: 11/06/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D	Extraction Date:	08/14/19 16:04
Analytical Date:	08/16/19 22:39		
Analyst:	SZ		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	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	1.7	J	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
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

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 11/06/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/14/19 01:58
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/12/19 08:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 03-06 Batch: WG1271251-1					
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
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
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
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
Isophorone	ND		ug/l	5.0	1.2
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	3.5		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
Dimethyl phthalate	ND		ug/l	5.0	1.8
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
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

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1273531-2 WG1273531-3								
1,2,4,5-Tetrachlorobenzene	96		90		40-117	6		50
Acetophenone	107		97		14-144	10		50
2,4,6-Trichlorophenol	101		95		30-130	6		50
p-Chloro-m-cresol	108	Q	97		26-103	11		50
2-Chlorophenol	108	Q	98		25-102	10		50
2,4-Dichlorophenol	103		93		30-130	10		50
2,4-Dimethylphenol	104		96		30-130	8		50
2-Nitrophenol	111		103		30-130	7		50
4-Nitrophenol	109		100		11-114	9		50
2,4-Dinitrophenol	92		86		4-130	7		50
4,6-Dinitro-o-cresol	117		107		10-130	9		50
Pentachlorophenol	92		86		17-109	7		50
Phenol	97	Q	88		26-90	10		50
2-Methylphenol	110		100		30-130.	10		50
3-Methylphenol/4-Methylphenol	104		95		30-130	9		50
2,4,5-Trichlorophenol	103		94		30-130	9		50
Carbazole	98		90		54-128	9		50
Atrazine	103		97		40-140	6		50
Benzaldehyde	107		86		40-140	22		50
Caprolactam	98		91		15-130	7		50
2,3,4,6-Tetrachlorophenol	97		89		40-140	9		50
1,4-Dioxane	75		71		40-140	5		50

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-06 QC Batch ID: WG1271251-6 WG1271251-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
Bis(2-chloroethyl)ether	ND	18.2	13	72		12	66		40-140	8		30
3,3'-Dichlorobenzidine	ND	18.2	2.9J	16	Q	3.2J	18	Q	40-140	10		30
2,4-Dinitrotoluene	ND	18.2	15	83		14	77		48-143	7		30
2,6-Dinitrotoluene	ND	18.2	17	94		16	88		40-140	6		30
4-Chlorophenyl phenyl ether	ND	18.2	15	83		14	77		40-140	7		30
4-Bromophenyl phenyl ether	ND	18.2	15	83		14	77		40-140	7		30
Bis(2-chloroisopropyl)ether	ND	18.2	16	88		15	83		40-140	6		30
Bis(2-chloroethoxy)methane	ND	18.2	15	83		14	77		40-140	7		30
Hexachlorocyclopentadiene	ND	18.2	14.J	77		14.J	77		40-140	0		30
Isophorone	ND	18.2	16	88		15	83		40-140	6		30
Nitrobenzene	ND	18.2	15	83		14	77		40-140	7		30
NDPA/DPA	ND	18.2	14	77		13	72		40-140	7		30
n-Nitrosodi-n-propylamine	ND	18.2	16	88		16	88		29-132	0		30
Bis(2-ethylhexyl)phthalate	ND	18.2	18	99		17	94		40-140	6		30
Butyl benzyl phthalate	ND	18.2	20	110		18	99		40-140	11		30
Di-n-butylphthalate	ND	18.2	18	99		17	94		40-140	6		30
Di-n-octylphthalate	ND	18.2	21	120		20	110		40-140	5		30
Diethyl phthalate	ND	18.2	16	88		15	83		40-140	6		30
Dimethyl phthalate	ND	18.2	18	99		17	94		40-140	6		30
Biphenyl	ND	18.2	14	77		14	77		40-140	0		30
4-Chloroaniline	ND	18.2	7.0	39	Q	8.0	44		40-140	13		30
2-Nitroaniline	ND	18.2	17	94		16	88		52-143	6		30
3-Nitroaniline	ND	18.2	9.1	50		8.6	47		25-145	6		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-06 QC Batch ID: WG1271251-6 WG1271251-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
4-Nitroaniline	ND	18.2	11	61		11	61		51-143	0		30
Dibenzofuran	ND	18.2	14	77		13	72		40-140	7		30
1,2,4,5-Tetrachlorobenzene	ND	18.2	14	77		13	72		2-134	7		30
Acetophenone	ND	18.2	12	66		12	66		39-129	0		30
2,4,6-Trichlorophenol	ND	18.2	15	83		14	77		30-130	7		30
p-Chloro-m-cresol	ND	18.2	18	99	Q	16	88		23-97	12		30
2-Chlorophenol	ND	18.2	14	77		13	72		27-123	7		30
2,4-Dichlorophenol	ND	18.2	14	77		14	77		30-130	0		30
2,4-Dimethylphenol	ND	18.2	3.7J	20	Q	3.8J	21	Q	30-130	3		30
2-Nitrophenol	ND	18.2	15	83		14	77		30-130	7		30
4-Nitrophenol	ND	18.2	14	77		17	94	Q	10-80	19		30
2,4-Dinitrophenol	ND	18.2	16.J	88		16.J	88		20-130	0		30
4,6-Dinitro-o-cresol	ND	18.2	17	94		16	88		20-164	6		30
Phenol	ND	18.2	11	61		11	61		12-110	0		30
2-Methylphenol	ND	18.2	12	66		11	61		30-130	9		30
3-Methylphenol/4-Methylphenol	ND	18.2	13	72		12	66		30-130	8		30
2,4,5-Trichlorophenol	ND	18.2	18	99		16	88		30-130	12		30
Carbazole	ND	18.2	17	94		16	88		55-144	6		30
Atrazine	ND	18.2	23	130		22	120		40-140	4		30
Benzaldehyde	ND	18.2	13	72		12	66		40-140	8		30
Caprolactam	ND	18.2	11	61		12	66		10-130	9		30
2,3,4,6-Tetrachlorophenol	ND	18.2	15	83		14	77		40-140	7		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935927

Report Date: 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-06 QC Batch ID: WG1271251-4 WG1271251-5 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807												
4-Nitroaniline	ND	18.2	17	94		16	88		51-143	6		30
Dibenzofuran	ND	18.2	16	88		15	83		40-140	6		30
1,2,4,5-Tetrachlorobenzene	ND	18.2	16	88		16	88		2-134	0		30
Acetophenone	ND	18.2	14	77		15	83		39-129	7		30
2,4,6-Trichlorophenol	ND	18.2	18	99		18	99		30-130	0		30
p-Chloro-m-cresol	ND	18.2	20	**110**	Q	20	**110**	Q	23-97	0		30
2-Chlorophenol	ND	18.2	16	88		16	88		27-123	0		30
2,4-Dichlorophenol	ND	18.2	17	94		17	94		30-130	0		30
2,4-Dimethylphenol	ND	18.2	8.4	46		8.2	45		30-130	2		30
2-Nitrophenol	ND	18.2	18	99		18	99		30-130	0		30
4-Nitrophenol	ND	18.2	16	**88**	Q	16	**88**	Q	10-80	0		30
2,4-Dinitrophenol	ND	18.2	17.J	94		16.J	88		20-130	6		30
4,6-Dinitro-o-cresol	ND	18.2	20	110		19	100		20-164	5		30
Phenol	ND	18.2	14	77		13	72		12-110	7		30
2-Methylphenol	ND	18.2	15	83		15	83		30-130	0		30
3-Methylphenol/4-Methylphenol	ND	18.2	17	94		16	88		30-130	6		30
2,4,5-Trichlorophenol	ND	18.2	21	120		20	110		30-130	5		30
Carbazole	ND	18.2	20	110		19	100		55-144	5		30
Atrazine	ND	18.2	27	**150**	Q	25	140		40-140	8		30
Benzaldehyde	ND	18.2	15	83		15	83		40-140	0		30
Caprolactam	ND	18.2	14	77		14	77		10-130	0		30
2,3,4,6-Tetrachlorophenol	ND	18.2	18	99		17	94		40-140	6		30

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273531-4 WG1273531-5 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Acenaphthene	ND	1560	1300	83		1300	83		31-137	0		50
Hexachlorobenzene	ND	1560	1300	83		1300	83		40-140	0		50
Bis(2-chloroethyl)ether	ND	1560	1500	96		1400	89		40-140	7		50
2-Chloronaphthalene	ND	1560	1300	83		1200	77		40-140	8		50
3,3'-Dichlorobenzidine	ND	1560	980	63		1200	77		40-140	20		50
2,4-Dinitrotoluene	ND	1560	1500	96		1500	96		40-132	0		50
2,6-Dinitrotoluene	ND	1560	1500	96		1400	89		40-140	7		50
Fluoranthene	550	1560	2000	93		2200	110		40-140	10		50
4-Chlorophenyl phenyl ether	ND	1560	1200	77		1200	77		40-140	0		50
4-Bromophenyl phenyl ether	ND	1560	1300	83		1300	83		40-140	0		50
Bis(2-chloroisopropyl)ether	ND	1560	1200	77		1100	70		40-140	9		50
Bis(2-chloroethoxy)methane	ND	1560	1500	96		1400	89		40-117	7		50
Hexachlorobutadiene	ND	1560	1300	83		1300	83		40-140	0		50
Hexachlorocyclopentadiene	ND	1560	650	42		280J	18	Q	40-140	80	Q	50
Hexachloroethane	ND	1560	1400	89		1200	77		40-140	15		50
Isophorone	ND	1560	1600	100		1600	100		40-140	0		50
Naphthalene	ND	1560	1400	89		1400	89		40-140	0		50
Nitrobenzene	ND	1560	1600	100		1500	96		40-140	6		50
NDPA/DPA	ND	1560	1300	83		1300	83		36-157	0		50
n-Nitrosodi-n-propylamine	ND	1560	1600	100		1500	96		32-121	6		50
Bis(2-ethylhexyl)phthalate	ND	1560	1400	89		1500	96		40-140	7		50
Butyl benzyl phthalate	ND	1560	1500	96		1500	96		40-140	0		50
Di-n-butylphthalate	ND	1560	1500	96		1500	96		40-140	0		50

Matrix Spike Analysis
Batch Quality Control

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273531-4 WG1273531-5 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
1,2,4,5-Tetrachlorobenzene	ND	1560	1400	89		1300	83		40-117	7		50
Acetophenone	ND	1560	1600	100		1500	96		14-144	6		50
2,4,6-Trichlorophenol	ND	1560	1500	96		1400	89		30-130	7		50
p-Chloro-m-cresol	ND	1560	1500	96		1600	100		26-103	6		50
2-Chlorophenol	ND	1560	1600	100		1600	100		25-102	0		50
2,4-Dichlorophenol	ND	1560	1600	100		1500	96		30-130	6		50
2,4-Dimethylphenol	ND	1560	1600	100		1500	96		30-130	6		50
2-Nitrophenol	ND	1560	1700	110		1600	100		30-130	6		50
4-Nitrophenol	ND	1560	1400	89		1600	100		11-114	13		50
2,4-Dinitrophenol	ND	1560	370J	24		360J	23		4-130	3		50
4,6-Dinitro-o-cresol	ND	1560	1100	70		780	50		10-130	34		50
Pentachlorophenol	ND	1560	1400	89		1400	89		17-109	0		50
Phenol	ND	1560	1600	**100**	Q	1400	89		26-90	13		50
2-Methylphenol	ND	1560	1700	110		1600	100		30-130.	6		50
3-Methylphenol/4-Methylphenol	ND	1560	1600	100		1500	96		30-130	6		50
2,4,5-Trichlorophenol	ND	1560	1500	96		1500	96		30-130	0		50
Carbazole	49J	1560	1400	89		1500	96		54-128	7		50
Atrazine	ND	1560	1500	96		1500	96		40-140	0		50
Benzaldehyde	ND	1560	1700	110		1600	100		40-140	6		50
Caprolactam	ND	1560	1300	83		1300	83		15-130	0		50
2,3,4,6-Tetrachlorophenol	ND	1560	1400	89		1400	89		40-140	0		50
1,4-Dioxane	ND	1560	1000	64		1000	64		40-140	0		50

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID: L1935927-07
Client ID: HVRA-EB01-190808
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/08/19 14:20
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 08/15/19 14:45
Analyst: CB
Extraction Method: EPA 3510C
Extraction Date: 08/14/19 16:04

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	0.08	J	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	0.03	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: HVRA

Project Number: 18.8090

Lab Number: L1935927

Report Date: 11/06/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/13/19 12:52
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 08/12/19 08:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 03-06 Batch: WG1271253-1					
Acenaphthene	0.03	J	ug/l	0.10	0.01
2-Chloronaphthalene	ND		ug/l	0.20	0.02
Fluoranthene	0.03	J	ug/l	0.10	0.02
Hexachlorobutadiene	ND		ug/l	0.50	0.05
Naphthalene	0.06	J	ug/l	0.10	0.05
Benzo(a)anthracene	ND		ug/l	0.10	0.02
Benzo(a)pyrene	0.03	J	ug/l	0.10	0.02
Benzo(b)fluoranthene	0.04	J	ug/l	0.10	0.01
Benzo(k)fluoranthene	0.03	J	ug/l	0.10	0.01
Chrysene	ND		ug/l	0.10	0.01
Acenaphthylene	0.03	J	ug/l	0.10	0.01
Anthracene	0.04	J	ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01
Fluorene	0.05	J	ug/l	0.10	0.01
Phenanthrene	0.06	J	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	0.03	J	ug/l	0.10	0.02
2-Methylnaphthalene	0.06	J	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: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935927-03	Date Collected:	08/07/19 15:00
Client ID:	HVRA-MAINTBLDG-190807	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	79		21-120
Phenol-d6	63		10-120
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	100		15-120
2,4,6-Tribromophenol	**122**	Q	10-120
4-Terphenyl-d14	110		41-149

Serial_No:11061919:27

Project Name: HVRA | **Lab Number:** L1935927

Project Number: 18.8090 | **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935927-05 RE	Date Collected:	08/08/19 13:20
Client ID:	HVRA-MW100-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/27/19 17:30
Analytical Date:	08/28/19 20:46		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	331		ng/l	10.0	6.06	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	44		7-170

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935927-11 RE	Date Collected:	08/09/19 09:25
Client ID:	HVRA-MW104-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/27/19 17:30
Analytical Date:	08/28/19 21:02		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorohexanesulfonic Acid (PFHxS)	5420		ng/l	20.0	3.76	1
Perfluorooctanesulfonic Acid (PFOS)	2280		ng/l	20.0	5.04	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	79		47-153
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		42-146

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 11/06/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/20/19 23:52
Analyst: AJ

Extraction Method: EPA 537(M)
Extraction Date: 08/16/19 10:37

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08-09 Batch: WG1273269-1					
Perfluorobutanoic Acid (PFBA)	0.091	J	ug/kg	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 11/06/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/19/19 19:58
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 08/16/19 09:48

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,04 Batch: WG1273199-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.336	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08-09 Batch: WG1273269-2 WG1273269-3								
Perfluorobutanoic Acid (PFBA)	106		106		71-135	0		30
Perfluoropentanoic Acid (PFPeA)	105		105		69-132	0		30
Perfluorobutanesulfonic Acid (PFBS)	105		106		72-128	1		30
Perfluorohexanoic Acid (PFHxA)	104		108		70-132	4		30
Perfluoroheptanoic Acid (PFHpA)	109		110		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	108		110		67-130	2		30
Perfluorooctanoic Acid (PFOA)	112		110		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	88		127		64-140	36	Q	30
Perfluoroheptanesulfonic Acid (PFHpS)	125		118		70-132	6		30
Perfluorononanoic Acid (PFNA)	95		107		72-129	12		30
Perfluorooctanesulfonic Acid (PFOS)	125		113		68-136	10		30
Perfluorodecanoic Acid (PFDA)	101		105		69-133	4		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	108		102		65-137	6		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	116		111		63-144	4		30
Perfluoroundecanoic Acid (PFUnA)	112		107		64-136	5		30
Perfluorodecanesulfonic Acid (PFDS)	122		116		59-134	5		30
Perfluorooctanesulfonamide (FOSA)	51	Q	150	Q	67-137	99	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	103		110		61-139	7		30
Perfluorododecanoic Acid (PFDoA)	93		90		69-135	3		30
Perfluorotridecanoic Acid (PFTrDA)	98		94		66-139	4		30
Perfluorotetradecanoic Acid (PFTA)	94		93		69-133	1		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03,05-07,10-13 QC Batch ID: WG1274408-6 WG1274408-7 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
Perfluorobutanoic Acid (PFBA)	75.9	36.1	114	106		122	126		67-148	7		30
Perfluoropentanoic Acid (PFPeA)	258	36.1	293	97		310	142		63-161	6		30
Perfluorobutanesulfonic Acid (PFBS)	15.2	32	50.1	109		52.4	115		65-157	4		30
Perfluorohexanoic Acid (PFHxA)	222	36.1	262	111		277	150		69-168	6		30
Perfluoroheptanoic Acid (PFHpA)	102	36.1	145	119		148	126		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	368	32.9	393	76		411	129		69-177	4		30
Perfluorooctanoic Acid (PFOA)	47.1	36.1	87.9	113		91.2	120		63-159	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	39.0	34.3	80.9	122		93.6	157		49-187	15		30
Perfluoroheptanesulfonic Acid (PFHpS)	7.56	34.3	61.1	156		58.2	146		61-179	5		30
Perfluorononanoic Acid (PFNA)	8.67	36.1	47.9	109		50.3	114		68-171	5		30
Perfluorooctanesulfonic Acid (PFOS)	595	33.4	745	449	Q	712	345	Q	52-151	5		30
Perfluorodecanoic Acid (PFDA)	28.9	36.1	64.4	98		82.7	147		63-171	25		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.628J	36.1	36.2	100		40.0	109		60-166	10		30
Perfluoroundecanoic Acid (PFUnA)	2.09	36.1	40.8	107		41.6	108		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	2.64	34.9	50.7	138		46.8	125		38-156	8		30
Perfluorooctanesulfonamide (FOSA)	23.8	36.1	55.5	88		63.4	108		46-170	13		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.1	39.4	109		37.4	102		45-170	5		30
Perfluorododecanoic Acid (PFDoA)	0.487J	36.1	33.1	92		38.9	106		67-153	16		30
Perfluorotridecanoic Acid (PFTrDA)	ND	36.1	35.8	99		39.7	108		48-158	10		30
Perfluorotetradecanoic Acid (PFTA)	ND	36.1	35.8	99		36.5	100		59-182	2		30

Matrix Spike Analysis

Batch Quality Control

Project Name:	HVRA	***Lab Number:***	L1935927
Project Number:	18.8090	***Report Date:***	11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 05,11 QC Batch ID: WG1277357-4 WG1277357-5 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	331	192	434	54	Q	490	83		56-173	12		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	63		59		7-170

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03,05-07,10-13 QC Batch ID: WG1274408-4 WG1274408-5 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807												
Perfluorobutanoic Acid (PFBA)	2.34	37.2	44.3	113		43.5	109		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	1.03J	37.2	42.9	115		42.5	113		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	32.9	36.7	111		36.7	110		65-157	0		30
Perfluorohexanoic Acid (PFHxA)	0.830J	37.2	43.8	118		42.7	114		69-168	3		30
Perfluoroheptanoic Acid (PFHpA)	ND	37.2	45.7	123		41.1	109		58-159	11		30
Perfluorohexanesulfonic Acid (PFHxS)	1.18J	33.9	37.8	111		36.6	107		69-177	3		30
Perfluorooctanoic Acid (PFOA)	ND	37.2	42.3	114		43.6	116		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35.3	41.2	117		51.4	144		49-187	22		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.3	44.7	127		42.9	120		61-179	4		30
Perfluorononanoic Acid (PFNA)	ND	37.2	43.1	116		43.2	115		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	ND	34.4	38.4	112		37.1	107		52-151	3		30
Perfluorodecanoic Acid (PFDA)	ND	37.2	39.9	107		37.0	98		63-171	8		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.7	37.8	106		41.7	116		56-173	10		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.2	38.4	103		38.1	101		60-166	1		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.2	42.3	114		39.6	105		60-153	7		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.9	36.7	102		32.0	88		38-156	14		30
Perfluorooctanesulfonamide (FOSA)	ND	37.2	66.8	**180**	Q	34.7	92		46-170	**63**	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.2	46.8	126		36.2	96		45-170	26		30
Perfluorododecanoic Acid (PFDoA)	ND	37.2	37.1	100		35.4	94		67-153	5		30
Perfluorotridecanoic Acid (PFTrDA)	ND	37.2	47.3	127		41.5	110		48-158	13		30
Perfluorotetradecanoic Acid (PFTA)	ND	37.2	37.7	101		37.4	100		59-182	1		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935927

Report Date: 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08-09 QC Batch ID: WG1273269-4 WG1273269-5 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Perfluorobutanoic Acid (PFBA)	ND	5.6	5.97	107		6.03	106		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	ND	5.6	6.01	107		6.08	107		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	ND	4.96	5.31	107		5.41	107		72-128	2		30
Perfluorohexanoic Acid (PFHxA)	0.069J	5.6	6.02	108		6.14	108		70-132	2		30
Perfluoroheptanoic Acid (PFHpA)	ND	5.6	6.44	115		6.48	114		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	5.1	5.60	110		6.10	118		67-130	9		30
Perfluorooctanoic Acid (PFOA)	ND	5.6	5.94	106		5.92	104		69-133	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	5.32	6.60	124		6.06	112		64-140	9		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	5.32	6.08	114		6.80	126		70-132	11		30
Perfluorononanoic Acid (PFNA)	ND	5.6	6.11	109		6.15	108		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	0.356J	5.18	6.20	120		6.67	127		68-136	7		30
Perfluorodecanoic Acid (PFDA)	ND	5.6	5.98	107		5.49	97		69-133	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	5.37	6.11	114		6.50	119		65-137	6		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	5.6	5.21	93		5.08	89		63-144	3		30
Perfluoroundecanoic Acid (PFUnA)	ND	5.6	6.58	118		6.06	107		64-136	8		30
Perfluorodecanesulfonic Acid (PFDS)	ND	5.4	6.19	115		6.77	123		59-134	9		30
Perfluorooctanesulfonamide (FOSA)	ND	5.6	7.05	126		4.26	75		67-137	49	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	5.6	6.28	112		6.11	107		61-139	3		30
Perfluorododecanoic Acid (PFDoA)	ND	5.6	5.38	96		5.60	98		69-135	4		30
Perfluorotridecanoic Acid (PFTrDA)	ND	5.6	5.91	106		6.50	114		66-139	10		30
Perfluorotetradecanoic Acid (PFTA)	ND	5.6	5.99	107		6.12	108		69-133	2		30

Project Name: HVRA | **Lab Number:** L1935927
Project Number: 18.8090 | **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935927-11	Date Collected:	08/09/19 09:25
Client ID:	HVRA-MW104-190809	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	**190**	Q	31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	118		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	67		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	40		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	60		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	46		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	37		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	**21**	Q	33-143

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 11/06/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 08/20/19 23:52
Analyst: AJ

Extraction Method: EPA 537(M)
Extraction Date: 08/16/19 10:37

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08-09 Batch: WG1273269-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-151
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	127		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	118		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**138**	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	118		26-160

Lab Control Sample Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935927

Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-03,05-07,10-13 Batch: WG1274408-2 WG1274408-3

Surrogate (Extracted Internal Standard)	*LCS %Recovery*	*Qual*	*LCSD %Recovery*	*Qual*	*Acceptance Criteria*
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		89		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		105		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		108		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		88		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	122		109		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		86		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74		60		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		96		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64		49		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	139		143		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	141		131		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		44		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	**161**	Q	**184**	Q	23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		84		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	112		109		33-143

Case Narrative (continued)

the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1277821-1: The continuing calibration standard had the response for M2-8:2FTS outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1277821-2: The continuing calibration standard had the response for M2-8:2FTS outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1277821-2: The continuing calibration standard had the response for 8:2FTS outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

PCBs

L1935927-10 was extracted with the method required holding time exceeded.

Pesticides

The WG1273532-6/-7 MS/MSD recoveries, performed on L1935927-08, are outside the acceptance criteria for endrin aldehyde (0%/0%). The unacceptable percent recoveries are attributed to the elevated concentrations of target compounds present in the native sample.

Total Metals

L1935927-08 and -09: 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 WG1271502-3/-4 MS/MSD recoveries for calcium (0%/0%), magnesium (MS at 72%) and sodium (28%/46%), performed on L1935927-03, do not apply because the sample concentration is greater than four times the spike amounts added.

The WG1271502-7 MS recovery, performed on L1935927-05, is outside the acceptance criteria for calcium

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 11/06/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/14/19 12:19
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 08/13/19 18:28
Cleanup Method: EPA 3665A
Cleanup Date: 08/14/19
Cleanup Method: EPA 3660B
Cleanup Date: 08/14/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 05-07 Batch: WG1271946-1						
Aroclor 1016	ND		ug/l	0.083	0.034	A
Aroclor 1221	ND		ug/l	0.083	0.067	A
Aroclor 1232	ND		ug/l	0.083	0.046	A
Aroclor 1242	ND		ug/l	0.083	0.039	A
Aroclor 1248	ND		ug/l	0.083	0.049	A
Aroclor 1254	ND		ug/l	0.083	0.039	A
Aroclor 1262	ND		ug/l	0.083	0.035	A
Aroclor 1268	ND		ug/l	0.083	0.034	A
Aroclor 1260	0.035	J	ug/l	0.083	0.032	B
PCBs, Total	0.035	J	ug/l	0.083	0.032	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	93		30-150	A
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	90		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1935927
Project Number: 18.8090 **Report Date:** 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 05-07,10,12-13 Batch: WG1272050-2 WG1272050-3									
Delta-BHC	73		88		30-150	18		20	A
Lindane	74		88		30-150	18		20	A
Alpha-BHC	73		85		30-150	15		20	A
Beta-BHC	75		90		30-150	19		20	A
Heptachlor	69		84		30-150	19		20	A
Aldrin	64		75		30-150	15		20	A
Heptachlor epoxide	75		89		30-150	18		20	A
Endrin	76		93		30-150	21	Q	20	A
Endrin aldehyde	56		73		30-150	26	Q	20	A
Endrin ketone	73		95		30-150	26	Q	20	A
Dieldrin	74		91		30-150	20		20	A
4,4'-DDE	75		90		30-150	18		20	A
4,4'-DDD	78		96		30-150	21	Q	20	A
4,4'-DDT	78		95		30-150	20		20	A
Endosulfan I	66		80		30-150	19		20	A
Endosulfan II	71		88		30-150	22	Q	20	A
Endosulfan sulfate	66		83		30-150	23	Q	20	A
Methoxychlor	71		88		30-150	22	Q	20	A
cis-Chlordane	71		82		30-150	14		20	A
trans-Chlordane	70		84		30-150	18		20	A

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935927

Report Date: 11/06/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 08-09 QC Batch ID: WG1273532-6 WG1273532-7 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808													
Delta-BHC	ND	37.5	35.3	94		20.3	54		30-150	54	Q	50	A
Lindane	ND	37.5	37.0	99		21.2	56		30-150	54	Q	50	A
Alpha-BHC	ND	37.5	37.4	100		21.9	58		30-150	52	Q	50	A
Beta-BHC	ND	37.5	37.4	100		25.5	67		30-150	38		50	A
Heptachlor	ND	37.5	28.8	77		17.6	47		30-150	48		50	A
Aldrin	ND	37.5	29.5	79		17.4	46		30-150	52	Q	50	A
Heptachlor epoxide	ND	37.5	32.6	87		19.4	51		30-150	51	Q	50	A
Endrin	ND	37.5	35.6	95		21.4	57		30-150	50		50	A
Endrin aldehyde	207E	37.5	29.0	0	Q	16.0	0	Q	30-150	58	Q	50	B
Endrin ketone	ND	37.5	31.4	84		16.8	44		30-150	61	Q	50	A
Dieldrin	ND	37.5	34.1	91		19.9	53		30-150	53	Q	50	A
4,4'-DDE	1.65J	37.5	41.2	110		23.2	61		30-150	56	Q	50	B
4,4'-DDD	ND	37.5	37.2	99		21.4	57		30-150	54	Q	50	B
4,4'-DDT	ND	37.5	36.8	98		22.3	59		30-150	49		50	A
Endosulfan I	ND	37.5	28.7	77		17.6	47		30-150	48		50	A
Endosulfan II	ND	37.5	32.2	86		18.2	48		30-150	56	Q	50	A
Endosulfan sulfate	ND	37.5	25.3	68		12.5	33		30-150	68	Q	50	A
Methoxychlor	ND	37.5	29.0	77		17.2	45		30-150	51	Q	50	A
cis-Chlordane	ND	37.5	27.5	73		19.1	51		30-150	36		50	A
trans-Chlordane	ND	37.5	36.6	98		22.4	59		30-150	48		50	A

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID: L1935927-08
Client ID: HVRA-OF1-190808
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/08/19 16:00
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 08/19/19 13:53
Analyst: AMC
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 02:18
Cleanup Method: EPA 3620B
Cleanup Date: 08/18/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.85	0.362	1	A
Lindane	ND		ug/kg	0.770	0.344	1	A
Alpha-BHC	ND		ug/kg	0.770	0.219	1	A
Beta-BHC	ND		ug/kg	1.85	0.701	1	A
Heptachlor	ND		ug/kg	0.924	0.414	1	A
Aldrin	ND		ug/kg	1.85	0.651	1	A
Heptachlor epoxide	ND		ug/kg	3.47	1.04	1	A
Endrin	ND		ug/kg	0.770	0.316	1	A
Endrin aldehyde	207	E	ug/kg	2.31	0.809	1	B
Endrin ketone	ND		ug/kg	1.85	0.476	1	A
Dieldrin	ND		ug/kg	1.16	0.578	1	A
4,4'-DDE	1.65	J	ug/kg	1.85	0.428	1	B
4,4'-DDD	ND		ug/kg	1.85	0.659	1	B
4,4'-DDT	ND		ug/kg	3.47	1.49	1	A
Endosulfan I	ND		ug/kg	1.85	0.437	1	A
Endosulfan II	ND		ug/kg	1.85	0.618	1	A
Endosulfan sulfate	ND		ug/kg	0.770	0.367	1	A
Methoxychlor	ND		ug/kg	3.47	1.08	1	A
Toxaphene	ND		ug/kg	34.7	9.70	1	A
cis-Chlordane	ND		ug/kg	2.31	0.644	1	A
trans-Chlordane	ND		ug/kg	2.31	0.610	1	A
Chlordane	ND		ug/kg	15.0	6.12	1	A

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 11/06/19

SAMPLE RESULTS

Lab ID:	L1935927-07	Date Collected:	08/08/19 14:20
Client ID:	HVRA-EB01-190808	Date Received:	08/09/19
Sample Location:	WAPPINGERS FALLS, NY	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	ND		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Calcium, Total	0.202		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Iron, Total	0.0210	J	mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	08/15/19 14:42	08/15/19 23:43	EPA 7470A	1,7470A	MG
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 15:56	EPA 3005A	1,6020B	AM

Project Name: HVRA **Lab Number:** L1935927

Project Number: 18.8090 **Report Date:** 11/06/19

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): 03-07,10,12-13 Batch: WG1271502-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Calcium, Total	ND		mg/l	0.100	0.0394	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	08/12/19 22:45	08/13/19 14:26	1,6020B	AM

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): 08-09 Batch: WG1272465-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Antimony, Total	ND		mg/kg	2.00	0.152	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB
Arsenic, Total	0.100	J	mg/kg	0.400	0.083	1	08/14/19 21:28	08/15/19 15:49	1,6010D	AB

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 11/06/19

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): 03-07,10,12-13 QC Batch ID: WG1271502-7 WG1271502-8 QC Sample: L1935927-05 Client ID: HVRA-MW100-190808												
Aluminum, Total	0.0100	2	1.99	99		2.22	110		75-125	11		20
Antimony, Total	ND	0.5	0.4019	80		0.4579	92		75-125	13		20
Arsenic, Total	0.00032J	0.12	0.1248	104		0.1283	107		75-125	3		20
Barium, Total	0.01562	2	2.012	100		2.147	106		75-125	6		20
Beryllium, Total	ND	0.05	0.05898	118		0.05549	111		75-125	6		20
Cadmium, Total	ND	0.051	0.05334	104		0.05600	110		75-125	5		20
Calcium, Total	37.4	10	41.4	40	Q	45.0	76		75-125	8		20
Chromium, Total	0.00069J	0.2	0.1996	100		0.2156	108		75-125	8		20
Cobalt, Total	ND	0.5	0.5023	100		0.5347	107		75-125	6		20
Copper, Total	0.00095J	0.25	0.2401	96		0.2516	101		75-125	5		20
Iron, Total	0.0211J	1	1.12	112		1.14	114		75-125	2		20
Lead, Total	ND	0.51	0.5286	104		0.5648	111		75-125	7		20
Magnesium, Total	7.72	10	17.1	94		18.5	108		75-125	8		20
Manganese, Total	0.03920	0.5	0.5259	97		0.5702	106		75-125	8		20
Nickel, Total	0.00057J	0.5	0.5061	101		0.5414	108		75-125	7		20
Potassium, Total	3.16	10	12.7	95		13.7	105		75-125	8		20
Selenium, Total	ND	0.12	0.131	109		0.142	118		75-125	8		20
Silver, Total	ND	0.05	0.05033	101		0.05215	104		75-125	4		20
Sodium, Total	135.	10	127	0	Q	137	20	Q	75-125	8		20
Thallium, Total	ND	0.12	0.1241	103		0.1337	111		75-125	7		20
Vanadium, Total	ND	0.5	0.5003	100		0.5506	110		75-125	10		20

Serial_No:11061919:27

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 11/06/19

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): 03-07,10,12-13 QC Batch ID: WG1271502-3 WG1271502-4 QC Sample: L1935927-03 Client ID: HVRA-MAINTBLDG-190807												
Aluminum, Total	ND	2	2.09	104		2.16	108		75-125	3		20
Antimony, Total	0.00125J	0.5	0.4393	88		0.4867	97		75-125	10		20
Arsenic, Total	0.00810	0.12	0.1390	109		0.1377	108		75-125	1		20
Barium, Total	0.1521	2	2.260	105		2.359	110		75-125	4		20
Beryllium, Total	ND	0.05	0.05027	100		0.05284	106		75-125	5		20
Cadmium, Total	ND	0.051	0.05822	114		0.06010	118		75-125	3		20
Calcium, Total	148.	10	142	0	Q	147	0	Q	75-125	3		20
Chromium, Total	ND	0.2	0.2105	105		0.2185	109		75-125	4		20
Cobalt, Total	ND	0.5	0.5412	108		0.5532	111		75-125	2		20
Copper, Total	0.00093J	0.25	0.2577	103		0.2587	103		75-125	0		20
Iron, Total	0.434	1	1.58	115		1.58	115		75-125	0		20
Lead, Total	ND	0.51	0.5548	109		0.5836	114		75-125	5		20
Magnesium, Total	42.7	10	49.9	72	Q	51.1	84		75-125	2		20
Manganese, Total	0.2582	0.5	0.7640	101		0.7783	104		75-125	2		20
Nickel, Total	0.00112J	0.5	0.5324	106		0.5666	113		75-125	6		20
Potassium, Total	3.04	10	13.3	103		13.8	108		75-125	4		20
Selenium, Total	ND	0.12	0.125	104		0.138	115		75-125	10		20
Silver, Total	ND	0.05	0.05292	106		0.05378	108		75-125	2		20
Sodium, Total	86.9	10	89.7	28	Q	91.5	46	Q	75-125	2		20
Thallium, Total	0.00018J	0.12	0.1297	108		0.1353	113		75-125	4		20
Vanadium, Total	ND	0.5	0.5446	109		0.5554	111		75-125	2		20

Matrix Spike Analysis
Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935927

Report Date: 11/06/19

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): 08-09 QC Batch ID: WG1272465-3 WG1272465-4 QC Sample: L1935927-08 Client ID: HVRA-OF1-190808												
Aluminum, Total	8980	186	8440	0	Q	8490	0	Q	75-125	1		20
Antimony, Total	0.777J	46.6	45.7	98		46.5	101		75-125	2		20
Arsenic, Total	5.14	11.2	16.3	100		17.1	108		75-125	5		20
Barium, Total	64.5	186	220	83		226	88		75-125	3		20
Beryllium, Total	0.253J	4.66	4.59	98		4.46	97		75-125	3		20
Cadmium, Total	0.641J	4.76	4.99	105		4.79	102		75-125	4		20
Calcium, Total	19600	932	6690	0	Q	33000	1460	Q	75-125	133	Q	20
Chromium, Total	9.22	18.6	25.8	89		24.4	83		75-125	6		20
Cobalt, Total	6.50	46.6	45.5	84		43.1	80		75-125	5		20
Copper, Total	16.4	23.3	40.0	101		37.8	93		75-125	6		20
Iron, Total	18600	93.2	22000	3640	Q	18400	0	Q	75-125	18		20
Lead, Total	21.9	47.6	56.4	72	Q	56.8	74	Q	75-125	1		20
Magnesium, Total	13000	932	6630	0	Q	17000	435	Q	75-125	88	Q	20
Manganese, Total	891	46.6	516	0	Q	616	0	Q	75-125	18		20
Nickel, Total	13.9	46.6	52.2	82		49.4	77		75-125	6		20
Potassium, Total	283	932	1160	94		1180	98		75-125	2		20
Selenium, Total	ND	11.2	10.8	96		10.8	98		75-125	0		20
Silver, Total	ND	28	28.2	101		29.4	107		75-125	4		20
Sodium, Total	87.5J	932	1050	112		1080	118		75-125	3		20
Thallium, Total	ND	11.2	8.73	78		8.41	76		75-125	4		20
Vanadium, Total	10.4	46.6	54.4	94		54.5	96		75-125	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935927

Report Date: 11/06/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 08-09 Batch: WG1271126-2 WG1271126-3								
Cyanide, Total	75	Q	70	Q	80-120	0		35
General Chemistry - Westborough Lab Associated sample(s): 03-04,06-07,10,12-13 Batch: WG1271313-2 WG1271313-3								
Cyanide, Total	109		108		85-115	1		20
General Chemistry - Westborough Lab Associated sample(s): 05 Batch: WG1271717-2 WG1271717-3								
Cyanide, Total	106		106		85-115	0		20

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Poughkeepsie, New York

Lab Number: L1940894

Alpha Analytical

Report Date: September 25, 2019

Prepared by

Barr Engineering Co.

November 8, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical #L1940894
Date: November 8, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of 1,4-dioxane and per- and polyfluorinated alkyl substances (PFAS) data contained within Alpha Analytical report #L1940894 for C.T. Male Associates, Poughkeepsie, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Deuterated Monitoring Compounds (DMC)/Surrogates
- Extracted internal standards
- Additional items noted by the laboratory

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blank(s).

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/tao

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on September 6, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA, which is accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing trip blank sample analysis. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Trip Blank

One trip blank sample was collected and it was analyzed to determine the extent of potential PFAS contamination introduced during sample transport and handling. No target compounds were detected above the MDL in the trip blank sample with the exception of perfluorohexanoic acid (PFHxA). Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_1. PFHxA was also detected in the method blank at a slightly higher concentration. Data evaluation based on blank detections is addressed under the method blank section.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. They were analyzed by the laboratory for each parameter, where applicable. No target compounds were detected above the MDL in the method blank with the exception of PFHxA. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_2. The higher blank concentration for this analyte was compared against the project sample analyte concentrations. Sample concentrations less than or equal to five times the higher blank sample concentration were qualified “UB” in the Table 1 - Qualifier Summary attached. Sample concentration greater than five times the higher blank detection were not qualified.

Accuracy and Precision Data

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), surrogate standards, and extracted internal standards to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the relative percent difference (RPD) of the LCS/LCSD and MS/MSD sample pairs.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria with the exception of the perfluorotridecanoic acid (PFTA) LCSD recovery that exceeded laboratory acceptance criteria indicating a potential high bias; however, no data were qualified because the associated sample results were non-detects. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_3.

Surrogate Standard

Surrogate standards are compounds added to every blank, project sample, and quality control sample for organic analyses to evaluate analytical efficiency by measuring recovery (accuracy). Surrogate standards are compounds not expected to be detected in environmental media. Surrogate standard recoveries were within laboratory acceptance criteria.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. The extracted internal standard recoveries were within laboratory acceptance criteria.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chain of custody.

Additional Laboratory Items

Continuing Calibration Verification

It was noted by the laboratory that the branched perfluorohexanesulfonic acid (br-PFHxS) continuing calibration verification (CCV) standard was outside laboratory acceptance criteria; however, no data were qualified because the PFHxS CCV was within laboratory acceptance criteria. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_4.

Table 1 - Qualifier Summary

Alpha Report #: L1940894

QC Item	Sample ID	Compound	Qualification	Comment
Method Blank	HVRA-1601RT376-190906	PFHxA	UB	Remove 'J' qualifier and change to non-detect

Serial_No:09251915:53

Project Name: HVRA

Lab Number: L1940894

Project Number: 18.8090

Report Date: 09/25/19

SAMPLE RESULTS

Lab ID:	L1940894-03	Date Collected:	09/06/19 00:00
Client ID:	LTB01-190906	Date Received:	09/06/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	09/19/19 15:11
Analytical Date:	09/24/19 22:12		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.79	0.366	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.79	0.355	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.79	0.213	1
Perfluorohexanoic Acid (PFHxA)	0.373	J	ng/l	1.79	0.294	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.79	0.202	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.79	0.337	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.79	0.211	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.79	1.19	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.79	0.616	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.79	0.280	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.79	0.452	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.79	0.272	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.79	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.79	0.581	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.79	0.233	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.79	0.878	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.79	0.520	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.79	0.720	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.79	0.333	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.79	0.293	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.79	0.222	1
PFOA/PFOS, Total	ND		ng/l	1.79	0.211	1

ATTACHMENT_PFAS_2

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940894
Report Date: 09/25/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 09/24/19 15:34
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 09/19/19 15:11

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1286055-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.424	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Serial_No:09251915:53

Lab Control Sample Analysis

Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940894
Report Date: 09/25/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1286055-2 WG1286055-3								
Perfluorobutanoic Acid (PFBA)	134		133		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	121		120		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	106		111		65-157	5		30
Perfluorohexanoic Acid (PFHxA)	130		130		69-168	0		30
Perfluoroheptanoic Acid (PFHpA)	130		131		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	136		138		69-177	1		30
Perfluorooctanoic Acid (PFOA)	128		124		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	120		149		49-187	22		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		108		61-179	9		30
Perfluorononanoic Acid (PFNA)	130		131		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	123		128		52-151	4		30
Perfluorodecanoic Acid (PFDA)	131		127		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	119		134		56-173	12		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	127		144		60-166	13		30
Perfluoroundecanoic Acid (PFUnA)	126		133		60-153	5		30
Perfluorodecanesulfonic Acid (PFDS)	119		118		38-156	1		30
Perfluorooctanesulfonamide (FOSA)	114		110		46-170	4		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	109		136		45-170	22		30
Perfluorododecanoic Acid (PFDoA)	132		133		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	158		164	Q	48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	134		133		59-182	1		30

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940894
Report Date: 09/25/19

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.

Perfluorinated Alkyl Acids by Isotope Dilution

The WG1286055-3 LCSD recovery, associated with L1940894-01 through -03, is above the acceptance criteria for perfluorotridecanoic acid (pftrda) (164%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

WG1287384-7: The continuing calibration standard had the response for Perfluorohexanesulfonic Acid-Branched (br-PFHxS), outside of acceptance criteria. The response for Perfluorohexanesulfonic Acid (PFHxS) was within acceptance criteria; therefore, no further action was taken.

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: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative

Date: 09/25/19

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Latham, New York

Lab Number: L1931643

Alpha Analytical

Report Date: November 4, 2019

Prepared by

Barr Engineering Co.

November 12, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical #L1936143
Date: November 12, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of volatile, organic compounds (VOCs), semi-volatile organic compounds (SVOCs), 1,4-dioxane, per- and polyfluorinated alkyl substances (PFAS), polychlorinated biphenyls (PCBs), pesticides, metals (TAL 23), cyanide, and total solids data contained within Alpha Analytical report #L1936143 for C.T. Male Associates, Latham, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Matrix spikes/matrix spike duplicates (MS/MSD)
- Laboratory duplicate
- Deuterated Monitoring Compounds (DMC)/Surrogates
- Extracted internal standards
- Additional items noted by the laboratory

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blank(s).

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/tao

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on August 12, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA and Alpha Analytical in Westborough, MA as indicated within the laboratory report. Each of these Alpha locations are accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing rinse, trip, and field blank samples analyses. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Rinse Blank / Trip Blank / Field Blank

Six rinse blank samples, one trip blank sample and one field blank sample were collected. The rinse blanks were used to check that equipment being used for the investigation would not introduce PFAS to the samples being collected. The trip blank was analyzed to determine the extent of potential PFAS contamination introduced during sample transport and handling. The field blank sample was collected to monitor PFAS contamination from any or all the following sources: sampling activities, sample transport, and storage. No target compounds were detected above the MDL in the rinse, trip, and field blank samples with the exception of perfluorooctanesulfonic acid (PFOS) that was detected in rinse blank HVRA-RB06-190812. Since rinse blank samples are intended to verify equipment is PFAS free prior to sampling in the field, they were not used in data evaluation. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_1.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. They were analyzed by the laboratory for each parameter, where applicable. No target compounds were detected above the MDL in the method blank with the exception of perfluorobutanoic acid (PFBA), iron, and sodium. The blank concentrations were compared against the project sample analyte concentrations. Sample concentrations less than or equal to five times the blank sample concentration were qualified “UB” in the Table 1 - Qualifier Summary attached. Sample concentrations greater than five times the blank detection were not qualified. Excerpts from the laboratory report are provided in ATTACHMENT_PFAS_2 and ATTACHMENT_METALS_1.

Accuracy and Precision Data

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), matrix spike (MS) samples, matrix spike duplicate (MSD) samples, surrogate standards, and extracted internal standards to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the relative percent difference (RPD) of the LCS/LCSD, MS/MSD, and laboratory duplicate sample pairs.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria with the following exceptions. The carbon disulfide LCS percent recovery exceeded laboratory acceptance criteria indicating a potential high bias; however, no carbon disulfide data were qualified because the associated sample results were non-detects. Excerpt from the laboratory report is provided in ATTACHMENT_VOC_1. The 1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS) LCS/LCSD RPD exceeded laboratory acceptance criteria; however, no 8:2 FTS data were qualified because the LCS and LCSD percent recoveries were acceptable. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_3. The cyanide LCS and LCSD percent recoveries were below laboratory acceptance criteria. The cyanide results were qualified 'J' in the Table 1 – Qualifier Summary attached. Excerpts from the laboratory report are provided in ATTACHMENT_CYANIDE_1.

Matrix Spike / Matrix Spike Duplicate (MS/MSD)

An MS is a sample spiked with known concentrations of target analytes that is carried through the sample preparation and analytical procedures in order to assess the accuracy of a method in a given sample matrix. The MS/MSD sample results reported by the laboratory included both project and non-project specific samples. Results of MS/MSD samples not specific to this project were not evaluated. Where MS/MSD recoveries and/or associated RPDs failed acceptance criteria and where the sample was associated with another laboratory client, evaluation of the sample results was based on the LCS/LCSD data. Sample HVRA-MW101-1.0 served as the PFOS MS source sample. The MS percent recovery was below the laboratory acceptance criteria; however, no data were qualified because the native sample concentration was greater than four times the spike concentration so spike criteria do not apply. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_4.

Laboratory Duplicate

A laboratory duplicate is a second aliquot of a sample that is carried through the same sample preparation and analytical procedures as the native sample in order to determine the precision of the method. Laboratory duplicate sample results were evaluated for compounds where both the native and duplicate sample concentrations were greater than five times the reporting limit. Sample HVRA-MW101-0.5 served as the PFAS laboratory duplicate source sample and the RPDs were within the laboratory acceptance criteria.

Surrogate Standard

Surrogate standards are compounds added to every blank, project sample, and quality control sample for organic analyses to evaluate analytical efficiency by measuring recovery (accuracy). Surrogate standards are compounds not expected to be detected in environmental media. Surrogate standard recoveries were within laboratory acceptance criteria with the exception of a low surrogate recovery in the 1,4-dioxane LCS; however, no data were qualified since the 1,4-dioxane LCS and LCSD recoveries were within laboratory acceptance criteria. Excerpt from the laboratory report is provided in ATTACHMENT_1,4-DIOXANE_1.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. Some of the extracted internal standard recoveries were outside of laboratory acceptance criteria. Where the extracted internal standard exceeded the laboratory acceptance criteria indicating a potential high bias, and the target result was not detected, no qualification was applied. If the target result was detected or when the extracted internal standard was below the laboratory acceptance criteria, the results were qualified in the Table 1 - Qualifier Summary attached.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chains of custody. On November 30, 2007, the Integrated Risk Information System (IRIS) changed the chemical name for CAS #108-60-1 from bis(2-chloroisopropyl)ether to 2,2'-oxybis(1-chloropropane). This revised name was included in EPA method 8270D and in the SVOC target analyte lists (TCL) from recent Statement of Works; however, the laboratory used the name bis(2-chloroisopropyl)ether in this report. The laboratory is reviewing how to handle this naming convention for future work.

Additional Laboratory Items

Diluted Sample

PFOS for sample HVRA-MW100-1.0 was analyzed at a 5x dilution. The laboratory also reported the 1x dilution PFOS result for this sample with an 'E' qualifier indicating that the concentration exceeded the laboratory's calibration range. The 5x dilution result should be used and the 'E' qualified, 1x dilution result should be considered unusable. The PFOS 1x dilution result was qualified 'R' in the Table 1 – Qualifier Summary attached. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_5.

Dual-Column Agreement

For the pesticides analysis, samples were analyzed using a dual-column analysis system where a second dissimilar column was utilized to confirm positive results. An RPD is calculated using the analyte result from each column and a result is considered confirmed when the RPD is ≤ 40%. However, the 4,4'-DDE in sample HVRA-MW103-0.5 was qualified by the laboratory as not meeting this criteria. The laboratory reports the higher of the two results unless obvious interference is present on one of the columns. Since the result was between the MDL and RL and already had a 'J' qualifier indicating an estimated value, no further qualification was necessary. Excerpt from the laboratory report is provided in ATTACHMENT_PESTICIDES_1.

Table 1 - Qualifier Summary

Alpha Report #: L1936143

QC Item	Sample ID	Compound	Qualification	Comment
Extracted Internal Standard	HVRA-MW100-1.0	PFBS	J	Result already 'J' qualified
		PFHxS		Add 'J' to detected result
		6:2 FTS		Add 'J' to detected result
		8:2 FTS		Add 'J' to detected result
	HVRA-MW101-2.0	NMeFOSAA		Add 'J' to non-detect result
		PFTA		Add 'J' to non-detect result
	HVRA-MW102-0.5	NMeFOSAA		Add 'J' to non-detect result
	HVRA-MW102-2.0	NMeFOSAA		Add 'J' to non-detect result
		NEtFOSAA		Add 'J' to non-detect result
	HVRA-MW103-0.5	NMeFOSAA		Add 'J' to non-detect result
	HVRA-MW104-0.5	PFHxS		Add 'J' to detected result
		NMeFOSAA		Add 'J' to non-detect result
	HVRA-MW104-2.0	NMeFOSAA		Add 'J' to non-detect result
		NEtFOSAA		Add 'J' to non-detect result
	HVRA-MW105-0.5	NMeFOSAA		Add 'J' to non-detect result
		NEtFOSAA		Result already 'J' qualified
	HVRA-MW105-2.0	PFBA		Result already 'J' qualified
		PFPeA		Add 'J' to detected result
		PFHxA		Result already 'J' qualified
		PFHxS		Result already 'J' qualified
		6:2 FTS		Add 'J' to non-detect result
		PFOS		Add 'J' to detected result
		NMeFOSAA		Add 'J' to non-detect result
		NEtFOSAA		Add 'J' to non-detect result
Sample Dilution	HVRA-MW100-1.0	PFOS - 1x dilution	R	Remove 'E' qualifier, use 5x dilution result

Table 1 - Qualifier Summary

Alpha Report #: L1936143

QC Item	Sample ID	Compound	Qualification	Comment
Method Blank	HVRA-MW100-1.0	PFBA	UB	Remove 'J' qualifier and change to non-detect
	HVRA-MW101-1.5			
	HVRA-MW101-2.0			
	HVRA-MW102-0.5			
	HVRA-MW102-2.0			
	HVRA-MW103-0.5			
	HVRA-MW103-2.0			
	HVRA-MW104-2.0			
LCS/LCSD	HVRA-MW100-1.0	Cyanide	J	LCS/LCSD recoveries below laboratory acceptance criteria

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 11/04/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,07-08,12-13 Batch: WG1273356-3 WG1273356-4								
Chloroethane	100		93		50-151	7		30
1,1-Dichloroethene	135		128		65-135	5		30
trans-1,2-Dichloroethene	95		89		70-130	7		30
Trichloroethene	96		92		70-130	4		30
1,2-Dichlorobenzene	114		114		70-130	0		30
1,3-Dichlorobenzene	112		110		70-130	2		30
1,4-Dichlorobenzene	112		110		70-130	2		30
Methyl tert butyl ether	94		92		66-130	2		30
p/m-Xylene	114		111		70-130	3		30
o-Xylene	114		108		70-130	5		30
cis-1,2-Dichloroethene	94		91		70-130	3		30
Styrene	115		111		70-130	4		30
Dichlorodifluoromethane	96		92		30-146	4		30
Acetone	107		99		54-140	8		30
Carbon disulfide	**140**	Q	126		59-130	11		30
2-Butanone	98		99		70-130	1		30
4-Methyl-2-pentanone	104		102		70-130	2		30
2-Hexanone	101		100		70-130	1		30
Bromochloromethane	94		92		70-130	2		30
1,2-Dibromoethane	111		111		70-130	0		30
1,2-Dibromo-3-chloropropane	101		102		68-130	1		30
Isopropylbenzene	116		113		70-130	3		30
1,2,3-Trichlorobenzene	108		107		70-130	1		30

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 11/04/19

SAMPLE RESULTS

Lab ID:	L1936143-17	Date Collected:	08/12/19 12:30
Client ID:	HVRA-RB06-190812	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	08/22/19 07:26
Analytical Date:	08/26/19 12:49		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.91	0.389	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.91	0.378	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.91	0.227	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.91	0.313	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.91	0.215	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.91	0.359	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.91	0.225	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.91	1.27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.91	0.656	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.91	0.298	1
Perfluorooctanesulfonic Acid (PFOS)	0.542	J	ng/l	1.91	0.481	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.91	0.290	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.91	1.16	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.91	0.618	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.91	0.248	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.91	0.935	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.91	0.553	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.91	0.767	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.91	0.355	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.91	0.312	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.91	0.237	1
PFOA/PFOS, Total	0.542	J	ng/l	1.91	0.225	1

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	11/04/19

Method Blank Analysis
Batch Quality Control

Analytical Method:	122,537(M)	Extraction Method:	EPA 537(M)
Analytical Date:	08/21/19 04:23	Extraction Date:	08/19/19 09:28
Analyst:	AJ		

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04-05,07-08,12-13,15-16,18-19 Batch: WG1273984-1					
Perfluorobutanoic Acid (PFBA)	0.092	J	ug/kg	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ug/kg	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ug/kg	1.00	0.039
Perfluorohexanoic Acid (PFHxA)	ND		ug/kg	1.00	0.053
Perfluoroheptanoic Acid (PFHpA)	ND		ug/kg	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ug/kg	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ug/kg	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ug/kg	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ug/kg	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ug/kg	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ug/kg	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ug/kg	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ug/kg	1.00	0.287
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ug/kg	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ug/kg	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ug/kg	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ug/kg	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ug/kg	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ug/kg	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ug/kg	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ug/kg	1.00	0.054
PFOA/PFOS, Total	ND		ug/kg	1.00	0.042

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 11/04/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03,06,09-11,14,17 Batch: WG1275389-2 WG1275389-3								
Perfluorobutanoic Acid (PFBA)	104		103		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	106		104		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	108		104		65-157	4		30
Perfluorohexanoic Acid (PFHxA)	105		104		69-168	1		30
Perfluoroheptanoic Acid (PFHpA)	107		106		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	108		109		69-177	1		30
Perfluorooctanoic Acid (PFOA)	104		102		63-159	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	100		97		49-187	3		30
Perfluoroheptanesulfonic Acid (PFHpS)	107		107		61-179	0		30
Perfluorononanoic Acid (PFNA)	103		103		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	110		109		52-151	1		30
Perfluorodecanoic Acid (PFDA)	107		104		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	123		81		56-173	**41**	Q	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	107		98		60-166	9		30
Perfluoroundecanoic Acid (PFUnA)	104		101		60-153	3		30
Perfluorodecanesulfonic Acid (PFDS)	95		113		38-156	17		30
Perfluorooctanesulfonamide (FOSA)	110		111		46-170	1		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	113		109		45-170	4		30
Perfluorododecanoic Acid (PFDoA)	108		109		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	98		98		48-158	0		30
Perfluorotetradecanoic Acid (PFTA)	112		112		59-182	0		30

Matrix Spike Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1936143

Report Date: 11/04/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05,07-08,12-13,15-16,18-19 QC Batch ID: WG1273984-4 QC Sample: L1936143-02 Client ID: HVRA-MW100-1.0												
Perfluorooctanesulfonic Acid (PFOS)	363	4.71	362	0	Q	-	-		68-136	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90				65-151

Case Narrative (continued)

Report Revision

November 04, 2019: The Client ID was changed on L1936143-04.

Report Submission

August 26, 2019: This final report includes the results of all requested analyses.

August 22, 2019: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

1,4-Dioxane by 8270-SIM

The surrogate recovery for the WG1272498-2 LCS, associated with L1936143-02, is outside the acceptance criteria for 1,4-dioxane-d8 (114%). The LCS spike compounds are within overall method allowances; therefore, no further action was taken.

Perfluorinated Alkyl Acids by Isotope Dilution

L1936143-02, -05, -07, -08, -12, -15, -16, -18, -19 and WG1273984-2/-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L1936143-02: The sample was re-analyzed on dilution in order to quantify the results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound that exceeded the calibration range.

The WG1275389-3 LCS/LCSD RPD, associated with L1936143-01, -03, -06, -09, -10, -11, -14 and -17, is above the acceptance criteria for 1h,1h,2h,2h-perfluorodecanesulfonic acid (8:2fts) (41%).

The WG1273984-4 MS recovery, performed on L1936143-02, is outside the acceptance criteria for perfluorooctanesulfonic acid (pfos) (0%). The unacceptable percent recoveries are attributed to the elevated

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 11/04/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 02 Batch: WG1272498-2 WG1272498-3								
1,4-Dioxane	97		101		40-140	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	**114**	Q	108		15-110

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 11/04/19

SAMPLE RESULTS

Lab ID:	L1936143-12	Date Collected:	08/12/19 11:50
Client ID:	HVRA-MW103-0.5	Date Received:	08/12/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8081B	Extraction Date:	08/17/19 20:01
Analytical Date:	08/20/19 03:54	Cleanup Method:	EPA 3620B
Analyst:	BM	Cleanup Date:	08/19/19
Percent Solids:	65%		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	2.41	0.471	1	A
Lindane	ND		ug/kg	1.00	0.448	1	A
Alpha-BHC	ND		ug/kg	1.00	0.285	1	A
Beta-BHC	ND		ug/kg	2.41	0.913	1	A
Heptachlor	ND		ug/kg	1.20	0.540	1	A
Aldrin	ND		ug/kg	2.41	0.848	1	A
Heptachlor epoxide	ND		ug/kg	4.51	1.35	1	A
Endrin	ND		ug/kg	1.00	0.411	1	A
Endrin aldehyde	ND		ug/kg	3.01	1.05	1	A
Endrin ketone	ND		ug/kg	2.41	0.620	1	A
Dieldrin	ND		ug/kg	1.50	0.752	1	A
4,4'-DDE	0.886	JP	ug/kg	2.41	0.557	1	A
4,4'-DDD	ND		ug/kg	2.41	0.859	1	A
4,4'-DDT	ND		ug/kg	4.51	1.94	1	B
Endosulfan I	ND		ug/kg	2.41	0.569	1	A
Endosulfan II	ND		ug/kg	2.41	0.804	1	A
Endosulfan sulfate	ND		ug/kg	1.00	0.477	1	A
Methoxychlor	ND		ug/kg	4.51	1.40	1	A
Toxaphene	ND		ug/kg	45.1	12.6	1	A
cis-Chlordane	ND		ug/kg	3.01	0.838	1	A
trans-Chlordane	ND		ug/kg	3.01	0.794	1	A
Chlordane	ND		ug/kg	19.6	7.97	1	A

Project Name: HVRA **Lab Number:** L1936143

Project Number: 18.8090 **Report Date:** 11/04/19

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): 02,04-05,07-08,12-13 Batch: WG1272975-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Antimony, Total	ND		mg/kg	2.00	0.152	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Arsenic, Total	ND		mg/kg	0.400	0.083	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Barium, Total	ND		mg/kg	0.400	0.070	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Beryllium, Total	ND		mg/kg	0.200	0.013	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Cadmium, Total	ND		mg/kg	0.400	0.039	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Calcium, Total	ND		mg/kg	4.00	1.40	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Chromium, Total	ND		mg/kg	0.400	0.038	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Cobalt, Total	ND		mg/kg	0.800	0.066	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Copper, Total	ND		mg/kg	0.400	0.103	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Iron, Total	0.692	J	mg/kg	2.00	0.361	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Lead, Total	ND		mg/kg	2.00	0.107	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Magnesium, Total	ND		mg/kg	4.00	0.616	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Manganese, Total	ND		mg/kg	0.400	0.064	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Nickel, Total	ND		mg/kg	1.00	0.097	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Potassium, Total	ND		mg/kg	100	5.76	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Selenium, Total	ND		mg/kg	0.800	0.103	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Silver, Total	ND		mg/kg	0.400	0.113	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Sodium, Total	2.74	J	mg/kg	80.0	1.26	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Thallium, Total	ND		mg/kg	0.800	0.126	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Vanadium, Total	ND		mg/kg	0.400	0.081	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC
Zinc, Total	ND		mg/kg	2.00	0.117	1	08/15/19 22:40	08/19/19 15:10	1,6010D	LC

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): 02,04-05,07-08,12-13 Batch: WG1273559-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	08/17/19 06:20	08/19/19 15:20	1,7471B	AL

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1936143
Report Date: 11/04/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02,04-05,07-08,12-13 Batch: WG1271656-2 WG1271656-3								
Cyanide, Total	62	Q	71	Q	80-120	8		35

Data Usability Summary Report

Based on Level IIA Data Review

Prepared for:

C.T. Male Associates

Latham, New York

Lab Number: L1940308

Alpha Analytical

Report Date: September 20, 2019

Prepared by

Barr Engineering Co.

November 8, 2019

Data Usability Summary Report

To: C.T. Male Associates
Project: Hudson Valley Regional Airport (HRVA)
Report #: Alpha Analytical #L1940308
Date: November 8, 2019

This Data Usability Summary Report (DUSR) was prepared to document the Level IIA review of 1,4-dioxane and per- and polyfluorinated alkyl substances (PFAS) data contained within Alpha Analytical report #L1940308 for C.T. Male Associates, Latham, New York.

The analytical data were reviewed based on laboratories' acceptance criteria and US EPA Level IIA procedures, and this DUSR complies with NYCRR Part 375 and following guidelines in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's Technical Guidance for Site Investigation and Remediation DER-10, Appendix 2B (Guidance for Data Deliverables and the Development of Data Usability Summary Reports) as the limitations of a Level IIA data report and validation allows.

Areas covered by the review process (where applicable) included:

- Holding time
- Blanks
- Laboratory control samples/laboratory control sample duplicates (LCS/LCSD)
- Deuterated Monitoring Compounds (DMC)/Surrogates
- Extracted internal standards
- Additional items noted by the laboratory

Data Qualifier Definitions

Qualifiers in the laboratory report should be retained unless adjusted in the Table 1 – Qualifier Summary.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the method detection limit (MDL).

UB = The analyte was not detected substantially above the level reported in the associated blank(s).

Overall Assessment

The data quality evaluation assessed the overall analytical process and determined that the results were analytically sound and are useable as reported and qualified. Additional detail is included in the following paragraphs.

Please feel free to call me at (952) 832-2660 or email at wswanson@barr.com if you have any questions regarding the documentation.

Sincerely,

Ward Swanson
Vice President
BARR ENGINEERING CO.

/dlb

Introduction

The Hudson Valley Regional Airport (HVRA) project samples for this report were collected on September 6, 2019. The sample analyses were performed by Alpha Analytical in Mansfield, MA, which is accredited in the State of New York. Both field sampling and laboratory analytical procedures were examined in the review. Field sampling procedures were evaluated utilizing trip blank sample analysis. Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness.

Field Sampling Procedures

Trip Blank

One trip blank sample was collected and it was analyzed to determine the extent of potential PFAS contamination introduced during sample transport and handling. No target compounds were detected above the MDL in the trip blank sample with the exception of perfluorohexanoic acid (PFHxA). Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_1. PFHxA was also detected in the method blank at a slightly higher concentration. Data evaluation based on blank detections is addressed under the method blank section.

Laboratory Procedures

Technical Holding Times / Preservation

Technical holding times and preservation were evaluated for each sample and target parameter based on EPA and method recommendations. The technical holding times were within these recommendations for the analyses. The samples arrived at the laboratory at the correct temperatures and with the appropriate preservation.

Method Blank

Method blanks were analyzed to determine the extent of potential contamination introduced by laboratory sources. They were analyzed by the laboratory for each parameter, where applicable. No target compounds were detected above the MDL in the method blank with the exception of PFHxA. Excerpt from the laboratory report is provided in ATTACHMENT_PFAS_2. The higher blank concentration for this analyte was compared against the project sample analyte concentrations. Sample concentrations less than or equal to five times the higher blank sample concentration were qualified "UB" in the Table 1 - Qualifier Summary attached. Sample concentration greater than five times the higher blank detection were not qualified.

Accuracy and Precision Data

Accuracy is the degree of agreement between an observed value and an accepted reference value and measures bias in a measurement system. Data accuracy was evaluated by comparing laboratory percent recoveries from laboratory control samples (LCS), laboratory control sample duplicates (LCSD), surrogates, and extracted internal standards to laboratory acceptance criteria. Precision measures the reproducibility of measurements under a given set of conditions and was evaluated by calculating the relative percent difference (RPD) of the LCS/LCSD sample pairs.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

An LCS is a sample of analyte-free media spiked with known concentrations of target analytes that is carried through the same sample preparation and analytical procedures as the project samples. LCS recoveries are used to estimate overall analytical method accuracy independent of sample matrix effects. The LCS and LCSD percent recoveries and RPDs were within laboratory acceptance criteria.

Surrogate Standard

Surrogate standards are compounds added to every blank, project sample, and quality control sample for organic analyses to evaluate analytical efficiency by measuring recovery (accuracy). Surrogate standards are compounds not expected to be detected in environmental media. Surrogate standard recoveries were within laboratory acceptance criteria.

Extracted Internal Standard

Individually labeled standards were used as the extracted internal standards for the PFAS analysis. Extraction standards were the labeled analog of the target compounds with the exception of perfluoroheptanesulfonic acid (PFHpS), perfluorodecanesulfonic acid (PFDS), and perfluorotridecanoic acid (PFTA). The target compound concentrations were calculated using the extracted internal standards and should normalize extraction or matrix issues. The extracted internal standard recoveries were within laboratory acceptance criteria.

Data Package Completeness

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chains of custody.

Additional Laboratory Items

Continuing Calibration Verification

It was noted by the laboratory multiple instances where the continuing calibration verification (CCV) standard was outside of acceptance criteria. The 8:2FTS CCV standard was outside of laboratory acceptance criteria as noted in the report; however, no data were qualified since the laboratory followed their protocol which allows 10% of the reported analytes to be greater than 30%, but less than 40%. Also, the laboratory noted that two branched Perfluorooctanesulfonic Acid (PFOS) CCV standard were outside laboratory acceptance criteria; however, no data were qualified because the PFOS CCV was within laboratory acceptance criteria. Excerpt from the laboratory report discussing CCVs is provided in ATTACHMENT_PFAS_4.

Table 1 - Qualifier Summary

Alpha Report #: L1940308

QC Item	Sample ID	Compound	Qualification	Comment
Method Blank	HVRA-1610_RT_376-190904	PFHxA	UB	Remove 'J' qualifier and change to non-detect

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940308
Report Date: 09/20/19

SAMPLE RESULTS

Lab ID:	L1940308-03	Date Collected:	09/04/19 14:04
Client ID:	HVRA-FTB01-190904	Date Received:	09/04/19
Sample Location:	WAPPINGERS FALLS, NY	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 537
Analytical Method:	122,537(M)	Extraction Date:	09/18/19 08:53
Analytical Date:	09/20/19 02:07		
Analyst:	JW		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.94	0.395	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.94	0.384	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.94	0.231	1
Perfluorohexanoic Acid (PFHxA)	0.368	J	ng/l	1.94	0.318	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.94	0.218	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.94	0.364	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.94	0.229	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.94	1.29	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.94	0.667	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.94	0.302	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.94	0.488	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	0.294	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.94	1.17	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.94	0.628	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.94	0.252	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.94	0.950	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.94	0.562	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.94	0.779	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.94	0.360	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.94	0.317	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.94	0.240	1
PFOA/PFOS, Total	ND		ng/l	1.94	0.229	1

Project Name: HVRA **Lab Number:** L1940308

Project Number: 18.8090 **Report Date:** 09/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537(M)
Analytical Date: 09/19/19 19:46
Analyst: JW

Extraction Method: EPA 537
Extraction Date: 09/18/19 08:53

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1285457-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
Perfluorohexanoic Acid (PFHxA)	0.392	J	ng/l	2.00	0.328
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

Project Name: HVRA **Lab Number:** L1940308
Project Number: 18.8090 **Report Date:** 09/20/19

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.

Perfluorinated Alkyl Acids by Isotope Dilution

WG1286210-1: The continuing calibration standard had the response for 8:2 FTS outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1286210-3: The continuing calibration standard had the response for Perfluoroctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

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: Susan O' Neil

Title: Technical Director/Representative Date: 09/20/19

APPENDIX H

SUMMARY TABLE OF OFF-SITE POTABLE WELL INVESTIGATION

Appendix H - Summary Table of Off-Site Potable Well Investigation

Map ID#	Address	Date(s) Contacted	Date Sampled	Sample Results	POET System Installation Date
Location A / A1	1581-1584 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 (Note that since results from 2019 indicated that a POET was required - no additional SC sampling as required at this location.)	9/4/2019	1,4-Dioxane: 0.216 ppb PFOS: 42.6 ppt PFOA: 33.2 ppt	August 2021
A2	1589 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	3/26/2021	1,4-Dioxane: ND PFOS: 6.63 ppt PFOA: 5.56 ppt	NA
A3	1593 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	4/13/2021	1,4-Dioxane: ND PFOS: 1.22 ppt PFOA: ND	NA
A4	1597 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/3/2021	1,4-Dioxane: ND PFOS: 14.2 ppt PFOA: 1.16 ppt	Installed by others
Location B / A5	1601 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	9/6/2019 & 3/5/2021	9/6/2019: 1,4-Dioxane: ND PFOS: 0.748 ppt PFOA: ND 3/5/2021: 1,4-Dioxane: ND PFOS: 2.22 ppt PFOA: 0.941 ppt	NA
A6	1607 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/5/2021	1,4-Dioxane: ND PFOS: ND PFOA: 0.55 ppt	NA
A7	1611-1619 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A8	1629 Route 376, Wapp. Falls, NY 12591	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A9	Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A10	Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A11	30 Airport Dr, Wapp. Falls, NY 12590	1st attmept sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt by NYSDEC sent 6/24/2021 4th attempt by DCDB&CH sent 7/1/2021	NA	NA	NA
A12	1612 Route 376, Wapp. Falls, NY 12591	1st attempt sent 2/24/2021	3/3/2021	1,4-Dioxane: ND PFOS: 0.803 ppt PFOA: 0.68 ppt	NA
Location C / A13	1610 Route 376, Wapp. Falls, NY 12591	1st attempt sent 2/24/2021	9/4/2019 & 3/3/2021	9/4/2019: 1,4-Dioxane: ND PFOS: ND PFOA: ND 3/3/2021: 1,4-Dioxane: ND PFOS: 1.38 ppt PFOA: 0.669 ppt	NA
A14	1606 Route 376, Wapp. Falls, NY 12591	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	3/30/2021	1,4-Dioxane: ND PFOS: 70.1 ppt PFOA: 4.42 ppt	August 2021
A15	1602 Route 376, Wapp. Falls, NY 12591	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	3/30/2021	1,4-Dioxane: ND PFOS: 67 ppt PFOA: 5.76 ppt	December 2021
A16	Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A17	1592 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attemp by NYSDEC sent 6/24/2021 4th attempt by DCDB&CH sent 7/1/2021	NA	NA	NA
Location E / A18	7 Hackensack Heights Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	9/4/2019 & 3/26/2021	9/4/2019: 1,4-Dioxane: ND PFOS: 22.1 ppt PFOA: 10.4 ppt 3/26/2021: 1,4-Dioxane: ND PFOS: 12.1 ppt PFOA: 6.03 ppt	Installed by others

Appendix H - Summary Table of Off-Site Potable Well Investigation

Map ID#	Address	Date(s) Contacted	Date Sampled	Sample Results	POET System Installation Date
A19	13 Hackensack Heights Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/5/2021	1,4-Dioxane: ND PFOS: 2.67 ppt PFOA: 4.49 ppt	NA
A20	17 Hackensack Heights Rd, Wapp. Falls, NY 12590	1st attempt on 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt by NYSDEC sent 6/24/2021 4th attempt by DCDB&CH sent 7/1/2021	NA	NA	NA
A21	21 Hackensack Heights Rd, Wapp. Falls, NY 12590	1st attempt on 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt by NYSDEC sent 6/24/2021 4th attempt by DCDB&CH sent 7/1/2021	7/9/2021	1,4-Dioxane: ND PFOS: 11.1 ppt PFOA: 6.84 ppt	Installed by others
A22	26 Hackensack Heights Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A23	18 Hackensack Heights Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/9/2021	1,4-Dioxane: ND PFOS: ND PFOA: 0.31 ppt	NA
A24	16 Hackensack Heights Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	3/26/2021	1,4-Dioxane: ND PFOS: ND PFOA: 0.37 ppt	NA
A25	14 Hackensack Heights Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/9/2021	1,4-Dioxane: ND PFOS: 2.09 ppt PFOA: 1.7 ppt	NA
A26	12 Hackensack Heights Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/3/2021	1,4-Dioxane: ND PFOS: 1.08 ppt PFOA: 0.893 ppt	NA
A27	10 Hackensack Heights Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/3/2021	1,4-Dioxane: ND PFOS: 1.88 ppt PFOA: 1.63 ppt	NA
A28	8 Hackensack Heights Rd. Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A29	6 Hackensack Heights Rd. Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/9/2021	1,4-Dioxane: ND PFOS: ND PFOA: ND	NA
A30	4 Hackensack Heights Rd. Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/3/2021	1,4-Dioxane: ND PFOS: 1.68 ppt PFOA: 0.902 ppt	NA
Location D	2 Hackensack Heights Rd. Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	9/6/2019	1,4-Dioxane: ND PFOS: 22.5 ppt PFOA: 20.7 ppt	Installed by others
A32	1560-1580 Route 376, Wapp. Falls, NY 12590	Per NYSDEC request, contacted on 2/12/2021	2/17/2021	1,4-Dioxane: ND PFOS: 1.38 ppt PFOA: 1.49 ppt	NA
A33	1540 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	3/26/2021	1,4-Dioxane: ND PFOS: 1.12 ppt PFOA: 1.66 ppt	NA
A34	21 Rabenda Hill Dr, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	6/16/2021	1,4-Dioxane: 0.214 ppb PFOS: 11.8 ppt PFOA: 9.09 ppt	Installed by others
A35	17 Rabenda Hill Dr, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A36	9 Rabenda Hill Dr, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A37	1534 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A38	Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	NA	NA	NA
A39	1541 Route 376, Wapp Falls, NY 12590	1st attempt sent 2/24/2021	3/8/2021	1,4-Dioxane: ND PFOS: 5.52 ppt PFOA: 1.49 ppt	NA
A40	5 Lane Gate Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	3/26/2021	1,4-Dioxane: ND PFOS: 5.05 ppt PFOA: 7.62 ppt	Installed by others
A41	11 All Angels Hill Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt in person delivery of letter by Dutchess County Legislator Lisa Paoloni on 4/3/2021	NA	NA	NA

Appendix H - Summary Table of Off-Site Potable Well Investigation

Map ID#	Address	Date(s) Contacted	Date Sampled	Sample Results	POET System Installation Date
A42	1553 Route 376, Wapp Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt in person delivery of letter by Dutchess County Legislator Lisa Paoloni on 4/3/2021 4th attempt by NYSDEC sent 6/24/2021	NA	NA	NA
A43	1561-1565 Route 376, Wapp. Falls, 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt in person delivery of letter by Dutchess County Legislator Lisa Paoloni on 4/3/2021	6/16/2021	1,4-Dioxane: ND PFOS: 6.72 ppt PFOA: 5.1 ppt	Installed by others
A44	1571 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt in person delivery of letter by Dutchess County Legislator Lisa Paoloni on 4/3/2021	4/21/2021	1,4-Dioxane: ND PFOS: 0.87 ppt PFOA: 1.77 ppt	NA
A45	1575 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt in person delivery of letter by Dutchess County Legislator Lisa Paoloni on 4/3/2021 4th attempt by NYSDEC sent 6/24/2021 - 5th attempt by DCDB&CH sent 7/1/2021	NA	NA	NA
A46	300 New Hackensack Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt in person delivery of letter by Dutchess County Legislator Lisa Paoloni on 4/3/2021 4th attempt by NYSDEC sent 6/24/2021 5th attempt by DCDB&CH sent 7/1/2021	NA	NA	NA
A47	288 New Hackensack Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt in person delivery of letter by Dutchess County Legislator Lisa Paoloni on 4/3/2021	NA	NA	NA
A48	6 All Angels Hill Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt in person delivery of letter by Dutchess County Legislator Lisa Paoloni on 4/3/2021	NA	NA	NA
A49	21 Germaine Ln, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/8/2021	1,4-Dioxane: ND PFOS: ND PFOA: ND	NA
A50	4-10 Germaine Ln, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/8/2021	1,4-Dioxane: ND PFOS: ND PFOA: 0.688 ppt	NA
A51	20 All Angels Hill Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	NA	NA	NA
A52	32 Padasana Ct, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/9/2021	1,4-Dioxane: ND PFOS: ND PFOA: 1.48 ppt	NA
A53	40 Padasana Ct, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt in person delivery of letter by Dutchess County Legislator Lisa Paoloni on 4/3/2021	3/30/2021	1,4-Dioxane: ND PFOS: ND PFOA: ND	NA
A54	280 New Hackensack Road, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/3/2021	1,4-Dioxane: ND PFOS: ND PFOA: 0.292 ppt	NA
A55	282 New Hackensack Road, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/8/2021	1,4-Dioxane: ND PFOS: ND PFOA: 0.267 ppt	NA

Appendix H - Summary Table of Off-Site Potable Well Investigation

Map ID#	Address	Date(s) Contacted	Date Sampled	Sample Results	POET System Installation Date
A56	27 Hackensack Heights Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021 3rd attempt by NYSDEC sent 6/24/2021 4th attempt by DCDB&CH sent 7/1/2021	NA	NA	NA
A57	1528 Route 376, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/9/2021	1,4-Dioxane: ND PFOS: 2.56 ppt PFOA: 1.38 ppt	NA
A58	26 Padasana Ct, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A59	274 New Hackensack Rd, Wapp. Falls, Ny 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A60	44 Padasana Ct, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/9/2021	1,4-Dioxane: ND PFOS: ND PFOA: ND	NA
A61	8 Lane Gate Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/3/2021	1,4-Dioxane: ND PFOS: 1.36 ppt PFOA: 6.02 ppt	NA
A62	32 All Angels Hill Rd, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021 2nd attempt sent 3/17/2021	NA	NA	NA
A63	49 Padasana Ct, Wapp. Falls, NY 12590	1st attempt sent 2/24/2021	3/3/2021	1,4-Dioxane: ND PFOS: 0.598 ppt PFOA: 0.474 ppt	NA
A64	18 Lane Gate Road, Wappingers Falls, NY	Scheduled on 4/15/2021	4/21/2021	1,4-Dioxane: ND PFOS: ND PFOA: 0.344 ppt	NA
A65*	16 Lane Gate Road, Wappingers Falls, NY	6/30/2021	NA	NA	NA
A66*	3 Baker Court, Wappingers Falls, NY	6/30/2021	7/12/2021	1,4-Dioxane: ND PFOS: 1.45 ppt PFOA: 6.84 ppt	NA
A67*	5 Baker Court, Wappingers Falls, NY	6/30/2021	NA	NA	NA
A68*	9 Baker Court, Wapp. Falls, NY	6/30/2021	7/9/2021	1,4-Dioxane: ND PFOS: 1.94 ppt PFOA: 3.15 ppt	NA
A69*	13 Baker Court, Wapp. Falls, NY	6/30/2021	NA	NA	NA
A70*	23 Lane Gate Road, Wappingers Falls, NY	Scheduled on 7/8/2021	7/12/2021	1,4-Dioxane: ND PFOS: 0.74 ppt PFOA: 7.15 ppt	NA

ND - Non-Detect
NA - Not Applicable
NYSDEC - New York State Department of Conservation
DCDB&CH - Dutchess County Department of Behavioral & Community Health
* - Location added by NYSDEC request in June 2021

APPENDIX I

STORMWATER POLLUTION PREVENTION PLAN AND SPDES MULTI-SECTOR GENERAL PERMIT MAY 2018

Stormwater Pollution Prevention Plan

Hudson Valley Regional Airport

263 New Hackensack Rd.
Wappingers Falls, NY

May 2018

Prepared by

C&S COMPANIES®

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

FOR

Hudson Valley Regional Airport
263 New Hackensack Road
Wappingers Falls, New York 12590

C&S ENGINEERS, INC.
499 Colonel Eileen Collins Boulevard
Syracuse, New York 13212

May 2018

Hudson Valley Regional Airport
Emergency Contact List

Oil and chemical spills, regardless of quantity, must be reported to the Director of Aviation. The Director will determine appropriate response and regulatory notifications. Refer to **Section 6.4** - Spill Prevention and Response Procedures for more detailed spill reporting requirements.

New York State regulations require any person with knowledge of a spill, leak, or discharge of petroleum to report the incident to the NYSDEC within two hours of the discovery. Notification must be made by calling the telephone hotline (518-457-7362).

When reporting a spill be sure to provide an accurate description of the facility and spill location. The address of the facility is: 263 New Hackensack Road, Wappinger Falls, New York 12590. A Discharge Notification Form containing information required to be reported in the event of a spill is located in the facility SPCC Plan.

Affiliation	**Contact**	**Telephone**
Director of Aviation	Jeff Durand (emergency)	(845) 463-6002 (845) 337-1659
Dutchess County Department of Emergency Response		(845) 486-2080
NYS Emergency Management Office	Region II Office	(845) 454-0430
Local Police and Fire Departments	Emergency	Dial 911
Dutchess County Health Department		(845) 486-4007
MidHudson Regional Hospital		(845) 483-5000
USEPA Region 2		(212) 637-3000
New York State Department of Environmental Conservation (NYSDEC)	Spill Hotline Region 3 Office	(800) 457-7362 (845) 256-3000
National Response Center		(800) 424-8802
Cleanup Contractor	Environmental Products and Services	(518) 465-4000
Environmental Consultant / Engineer	C&S Engineers	(315) 455-2000

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<u>Attached Documents:</u>

FIGURES

APPENDICES

Applicability

New York State Department of Environmental Conservation (NYSDEC or Department) Environmental Conservation Law (ECL) Article 17, Titles 7 and 8 and Article 70 requires that facilities possess a State Pollution Discharge Elimination System (SPDES) Multi-Sector General Permit (MSGP) for stormwater discharges to surface waters of the State from a point source or outlet that conduct industrial activities identified within 40 CFR Part 122.26(b)(14)(i) through (ix) and (xi), as well as other miscellaneous industrial activities designated by the NYSDEC on a case by case basis. Except as in compliance with the MSGP or an Individual Permit, discharges associated with industrial activities are unlawful. The facility is required to obtain a SPDES MSGP and prepare and implement this SWPPP because of its standard industrial code of 4581 (airports, flying fields, and terminal services); industrial activities / materials are exposed on the facility exterior; and stormwater is conveyed from the facility to waters of New York State (i.e. Wappinger Creek) via outfalls (i.e. point sources).

Maintaining Water Quality Standards

The NYSDEC expects that compliance with the conditions of the MSGP will control discharges necessary to meet applicable water quality standards. It is a violation of the ECL for any discharge authorized by the MSGP to either cause or contribute to a violation of water quality standards as contained in Parts 700-705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, including, but not limited to:

a. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

b. There shall be no suspended, colloidal and settleable solids from sewage, industrial wastes or other wastes that will cause deposition or impair the waters for their best usages; and

c. There shall be no residue from oil and floating substances attributable to sewage, industrial wastes or other wastes, nor visible oil film nor globules of grease.

If there is evidence indicating that the stormwater discharges authorized by the MSGP are causing, have the reasonable potential to cause, or are contributing to an excursion above an applicable water quality standard, the owner or operator must take appropriate corrective action and notify the NYSDEC of corrective actions taken. The NYSDEC may require the owner or operator to conduct follow-up monitoring or provide additional information, may require the owner or operator to include and implement appropriate controls in the SWPPP to correct the problem, may require the owner or operator to obtain an individual permit and / or may take appropriate enforcement action.

If there is evidence indicating that despite compliance with the terms and conditions of the MSGP it is demonstrated that the stormwater discharges authorized are causing or contributing to a violation of water quality standards, or if the NYSDEC determines that a modification of the permit is necessary to prevent a violation of water quality standards, the authorized discharges will no longer be eligible for coverage under the MSGP. The NYSDEC may require the owner or operator to obtain an SPDES individual permit to continue discharging.

Management Approval

As required by the NYSDEC SPDES MSGP GP-0-17-004, effective March 1, 2018, a responsible corporate officer of Dutchess County must commit to the following statement regarding the contents of this Stormwater Pollution Prevention Plan (SWPPP) for the facility:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name:_______________________________ Date: ________________
(Signature)

Name:_______________________ Title: ________________
(Print)

Certification Statement

To the best of my knowledge, information, and belief, this Stormwater Pollution Prevention Plan has been prepared in substantial conformance with the NYSDEC SPDES MSGP for Stormwater Discharges Associated with Industrial Activity (GP-0-17-004) effective March 1, 2018, and the EPA Guidance Manual "Developing Your Stormwater Pollution Prevention Plan – A Guide to Industrial Operators" (EPA 833-B-09-002) dated February, 2009. The information regarding the facility contained within this report was based on a site visit, as well as available drawings and reports.

Robert N. Duclos, P.E.
New York State Registration No. 070428

Date: May 25, 2018

Plan Availability

A copy of the SWPPP will be located on-site or locally available to the Department for review at the time of an on-site inspection. The SWPPP will be made available upon request to the Department, local agency approving stormwater management plans, or the owner of a municipal separate storm sewer receiving discharge from the site. Also, in the interest of the public's right to know, the permittee must make a copy of the SWPPP available to the public upon written request.

Non-Stormwater Discharge Certification

As required by the MSGP, a responsible corporate officer of the facility must verify that stormwater discharges from the facility consist of stormwater and allowable non-stormwater sources. Allowable non-stormwater discharges are listed in 6 NYCRR Part 750-1.2(a)(29)(vi) and include the following:

- Discharges from firefighting; fire hydrant flushings; testing of firefighting equipment (water from actual firefighting activities that are emergencies or unplanned);
- Potable water sources including waterline flushings; irrigation drainage; lawn watering; uncontaminated infiltration and inflow; leakage from raw water conveyance systems;
- Exterior building, pavement, or vehicle washing that does not use soaps / detergents;
- Pavement wash waters where spills of toxic or hazardous materials, other than minor releases from motor vehicles, have occurred (unless such material has been removed);
- Air conditioning and steam condensate;
- Springs; uncontaminated groundwater; and foundation or footing drains where flows are not contaminated with process materials such as solvents provided that the permittee has implemented an effective plan for minimizing the discharge of pollutants; and
- Incidental wind-blown mist from cooling towers.

"I certify under penalty of law that the only non-stormwater that may potentially be mixed with stormwater and discharged from the site includes uncontaminated air conditioner condensate. This statement is based on information from personnel familiar with the facility. This statement was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name: ____

Title: ____

Date: ______________________________

Note: The following information is required to be attached to this certification: 1) identification of potential significant sources of non-stormwater at the site, 2) a description of the results of any test and / or evaluation for the presence of non-stormwater discharges, 3) the evaluation criteria or testing method used, 4) the date of any testing and / or evaluation, and 5) the outfalls or on-site drainage points that were directly observed during the test.

The information required in the note above is included on Annual Dry Weather Flow Monitoring Forms (**Appendix A**), completed on an annual basis and filed with the SWPPP.

Review and Evaluation

Consistent with the MSGP, the permittee will amend the SWPPP whenever:

1. There is a change in design, construction, operation, or maintenance at the facility which may have an effect on the potential for the discharge of pollutants from the facility, which has not otherwise been addressed in the SWPPP; or

2. During inspections, monitoring, or investigations by facility personnel or by local, state, or federal officials, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants from sources identified or is otherwise not achieving the general objectives of controlling pollutants in discharges from the facility.

The NYSDEC can require the SWPPP be amended if it does not meet one or more of the minimum requirement of the permit.

Completion of the Annual Site Compliance Evaluation Form and Annual Certification Report (**Appendix A**) will serve as the annual SWPPP review. Tables for documenting plan review / evaluation and technical amendments are provided below.

Table IV
Plan Review and Evaluation Documentation

Review Date	Plan Amendment		Name and Signature of Person Authorized to Review This Plan
	Will Amend	Will Not Amend	
			Print: Signature:
			Print: Signature:
			Print: Signature:
			Print: Signature:
			Print: Signature:

Table V
Amendment Log

Examples of conditions that may require amendment of the SWPPP include:

1. When facility design, construction, operation, or maintenance negatively affects the potential for stormwater contamination;
2. When BMPs fail to perform as designed;
3. When the results of inspections / sampling indicate stormwater contamination; and / or
4. When storage tanks or significant materials are added, removed, replaced, or modified.

Amendments must be documented below.

Date	Description of Amendment	Name of P.E. Certifying Technical Amendment
May 2018	Updated to reflect the requirements of MSGP GP-0-17-004. Major permit changes included: electronic DMR reporting, biannual benchmark sampling, clarifications to BMPs, changes to the representative outfall waiver, etc.	Robert N. Duclos, P.E.

1.0 FACILITY DESCRIPTION

1.1 Facility Owner and Operator:

(i) Facility Owner, Address, and Telephone:
Dutchess County
22 Market Street
Poughkeepsie, New York 12601
(845) 486-2120

(ii) Facility Operator, Address, and Telephone:
Hudson Valley Regional Airport
263 New Hackensack Road
Wappinger Falls, New York 12804
(845) 4963-6000

Contact: Jeff Durand, Director of Aviation

1.2 Physical Layout:

Hudson Valley Regional Airport (The Airport) is located along New Hackensack Road in the Town of Wappinger Falls, Dutchess County, New York. The Airport is approximately 640 acres in size and includes two runways: 6-24 which is 5,000-feet and runway 15-33 which is 3,000-feet. At the time of the preparation of this Plan, aircraft services were being handled by the fixed base operator (FBO). The FBO is contracted to provide fueling and de-icing, and provide aircraft maintenance within hangars leased from Dutchess County (The County).

Figure 1 is a United States Geologic Survey (USGS) topographic map depicting the location of the facility and surrounding features. **Figure 2** is an aerial photograph of the industrial portions of the facility. **Figure 3** is a site plan that depicts oil and chemical storage locations, activities exposed to stormwater, transfer areas, waste handling areas, impervious areas, catch basins and other stormwater features.

The facility stores and uses oils such as diesel, gasoline, virgin vehicle lubricants, jet fuel, aviation gasoline, used fuels and oils, and chemicals such as urea for runway deicing and aqueous firefighting foam (AFFF) for fire control. Activities present outdoors which could potentially be exposed to stormwater are described in Section 5.

2.0 STORMWATER POLLUTION PREVENTION TEAM

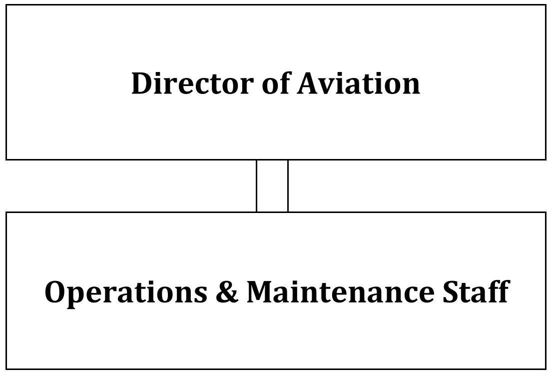
The Pollution Prevention Team for the facility was designed to identify a specific group within the facility organization that is responsible for assisting the facility in the implementation, maintenance, and revision of the SWPPP. This section of the SWPPP identifies the personnel associated with the Pollution Prevention Team and their respective responsibilities. The purpose of designating a specific personnel or team to implement the pollution prevention plan serves two main purposes:

- Identifying the personnel or team members identifies individual responsibilities in preventing stormwater pollution, and

- Identifying a specific personnel provides a point of contact with which those outside the facility can discuss key aspects of the SWPPP.

The Pollution Prevention Team was designed to identify key personnel onsite who are most familiar with the facility and its operations as well as to provide adequate structure and direction to the facility's stormwater management program. To ensure that this Plan remains effective, the Pollution Prevention Team should be aware of changes which are made in facility operations to determine if the Plan should be modified. Facility management is ultimately responsible for the implementation of this Plan and for compliance with all applicable stormwater requirements. Accordingly, the Pollution Prevention Team outlines a clear line of communication with facility management to ensure that they are able to function in a cooperative partnership. **Figure 2-1**, on the next page, is the Pollution Prevention Team organizational chart for facility.

Figure 2-1
Pollution Prevention Team Organizational Chart



Title: Director of Aviation

Responsibilities: Signatory authority. Responsible for plan development and oversight, as well as overall implementation of the SWPPP. Supervises the operation / maintenance staff to see that they are well trained and performing in accordance with procedures, evaluating operation and process changes that may influence stormwater management. Implements spill prevention and response procedures, maintain records, and ensure reports are submitted

---

Title: Operations & Maintenance Staff

Responsibilities: Responsible for maintenance. Note any operation or process changes that may influence stormwater management, housekeeping, preventive maintenance, spill prevention, and response procedures.

3.0 DOCUMENTATION OF PERMIT ELGIBILITY RELATED TO ENDANGERED SPECIES AND HISTORIC PLACES

The MSGP requires that if discharges from industrial activities may adversely affect endangered or threatened species, the owner or operator must obtain a permit issued pursuant to 6 NYCRR Part 182 or a letter of non-jurisdiction from the NYSDEC. According to the NYSDEC Environmental Resource Mapper Online Tool, endangered bats may live near the Airport. However, the continued operation of the airport's stormwater drainage system is not expected to impact environmentally sensitive areas.

According to the New York State Parks, Recreation and Historic Preservation Cultural Resource Information System (CRIS) internet application, the Airport is located in an archeologically sensitive area. However, there are no historic sites listed for the Airport. Further, the MSGP states that it is the opinion of the New York State Office of Parks, Recreation and Historic Preservation (OPRHP), that the discharge of stormwater from industrial sites will have no impact upon cultural resources eligible for inclusion in the State and National Register of Historic Places.

4.0 STORMWATER DISCHARGES TO IMPAIRED WATERBODIES

Facilities that discharge stormwater to:

1) An impaired waterbody that is included in the New York State Section 303(d) List of Impaired / TMDL Waters; or

2) In a watershed for which a Total Maximum Daily Load (TMDL) has been developed, and the cause of the impairment is a pollutant of concern included in the benchmarks and / or effluent limitations to which the facility is subject to, must perform quarterly compliance monitoring and identify:

   - The impaired waterbody,
   - The pollutants of concern,
   - The potential for presence in stormwater, and
   - The associated stormwater controls.

Stormwater is conveyed from the Airport to Wappinger Creek. The creek is not listed as being impaired. Therefore, the requirement to perform quarterly compliance monitoring for discharges to impaired waterbodies is not applicable at this time.

5.0 ASSESSMENT OF POTENTIAL POLLUTANT SOURCES

This section is a potential pollutant source assessment which describes the drainage of the site, and materials and practices which could potentially impact stormwater discharged from the site. Historic spills and sampling data are described, when applicable. The following subheadings are contained within this section:

1) Site Drainage;
2) Industrial Activities and Materials Exposed to Stormwater;
3) Spills and Leaks; and
4) Sampling Data.

5.1 Site Drainage

An investigation of the facility's drainage area was performed to gather qualitative and quantitative information on the characteristics of the stormwater runoff. A stormwater outfall is defined as the point where stormwater enters a natural waterway or a separate storm sewer system, or otherwise exits the property.

The airport is approximately 640 acres in size, with impervious areas such as building roofs and concrete and asphalt pavement areas covering approximately 25% of the grounds. Based on the observations made during C&S' May 2018 site walkover and stormwater utility mapping, there are three drainage areas at the airport associated with industrial activity (see **Figure 3**).

The nearest receiving water to the facility is Wappinger Creek. Wappinger Creek southwest to the Hudson River in New Hamburg. Stormwater from the airport discharges to the creek through various swales and underground stormwater piping systems. Sanitary wastewater from the facility flows into various onsite septic systems.

According to the Dutchess County Soil and Water Conservation District website, the Town of Wappinger Falls is regulated by the Municipal Separate Storm Sewer System (MS4) Program.

The following describes the significant features of the drainage areas:

<u>Drainage Area A</u>

This area includes the eastern and southeastern portions of the airport, which include aircraft hangars, the County maintenance facility, the fuel farms, salt storage barn, and portions of runways and taxiways. Generally, stormwater from this area is conveyed by a closed system, which extends westward beyond the terminal to the southern side of New Hackensack Road, where it discharges to a small pond. The area is tributary to Outfall 001.

Drainage Area B

This area includes the area surrounding the terminal, and includes apron area, the deicing pad, and automobile parking areas. Stormwater from this area is conveyed by a closed system, which extends to the southern side of New Hackensack Road, where it discharges to a small pond.

Drainage Area C

This area includes the northern portion of the airport, including several aircraft hangars, apron, runway, and taxiway. Stormwater from this area is conveyed by a closed system, which discharges to a swale in a wooded area to the north of Jackson Road.

Table 5-1
Drainage Area Summary

Drainage Area	Contributing Area	Potential Industrial Sources	Direction of Flow Resulting from a Discharge	Total Area (acres)	Runoff Coefficient [1]	Discharge Point
A	Southern and eastern portion of the airport	Aircraft fueling, bulk fuel loading and unloading, aircraft and vehicle maintenance, salt handling, chemical tote handling (urea), AFFF testing	To proximate catch basins or swale	66.3	Medium to High	Outfall 001
B	Terminal Area	Aircraft fueling and deicing	South via catch basins to outfall	17.7	Medium to High	Outfall 002
C	Northern portion of airport	Aircraft fueling, aircraft maintenance, AFFF testing, GA hangar activities (see note)	North via catch basins to outfall	106.4	Medium to High	Outfall 003
NA	Runways	Runway deicing	To adjacent turf	NA	NA	Outfalls 001, 002, 003

1 High: 70-100% impervious (example: paved surfaces and buildings)
Medium: 40-70% impervious (example: packed soils or mixture of paved surfaces and buildings and grassy areas)
Low: 0-40% impervious (example: grassy areas)

2 GA Hangar activities are varied and may include the offloading, use, and storage of various aircraft maintenance fluids (e.g. lube oils, aviation gasoline, deicing fluids, etc.), aircraft maintenance, and generation of refuse or aircraft maintenance fluid wastes. Aircraft maintenance and storage / use of fluids is conducted indoors, but could impact stormwater under certain circumstances.

5.2 Industrial Activities and Materials Exposed to Stormwater

A description of exposed industrial sources and an identification of pollutants of concern that may be generated by on-site activities has been prepared to determine which areas, activities, or materials may contribute pollutants to stormwater runoff from the site. This information assists in the selection of the most appropriate practices to prevent or control pollutants from these areas.

Significant industrial materials, as defined in 40 CFR 122.26(B)(12), are substances related to industrial activities such as process chemicals, raw materials, fuels, pesticides, and fertilizers, that when exposed to stormwater runoff may be carried to a receiving stream with the stormwater flow. Potential stormwater contaminants which are used, stored and / or transferred in areas exposed to stormwater include the following:

Table 5-2
Industrial Materials and Activities Potentially Exposed to Stormwater

Material / Activity [1]	Pollutants	Drainage Area(s)	Potential for Stormwater Impact [2]
Aircraft Fueling	Jet Fuel, Aviation Gasoline	A, B, C	Low – Refer to Section 6.15 for supporting documentation
Aircraft Deicing	Glycol	B	Low – Refer to Section 6.15 for supporting documentation
Aircraft / Vehicle Maintenance	Maintenance Fluids (motor oil, antifreeze, etc.)	A, C	Low – Refer to Section 6.15 for supporting documentation
Offloading / Handling of Oil / Chemical Drums / Totes	Virgin and Used Oils / Chemical s (e,g, motor oil, urea, antifreeze, etc.)	A, C	Low – Refer to Section 6.15 for supporting documentation.
Bulk Loading / Offloading of Fuel	Jet-A, Aviation Gasoline, Unleaded Gasoline, Diesel	A, B	Low – Refer to Section 6.15 for supporting documentation
Vehicle / Equipment Leaks	Vehicle Fuels and Lubricants	A, B, C	Low – Refer to Section 6.3
Salt Storage	Salinity	A	Low – Refer to Section 6.12 for supporting documentation.
Runway Deicing	Urea	NA	Low – Refer to Section 6.15 for supporting information

[1] The locations of activities exposed to stormwater are depicted on **Figure 4**.
[2] The areas identified in this table are formally inspected on a monthly basis and on an ongoing basis as personnel pass the areas during their day-to-day activities.

5.3 Spills and Leaks

The purpose of this section is to list significant spills and releases of toxic or hazardous materials that have occurred in the drainage areas tributary to facility stormwater system.

The EPA has defined "significant spills" to include releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act, and Section 102 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Spills and leaks that are not reportable but have adversely affected water quality must also be summarized in this Plan.

According to facility personnel, there have been no spills / leaks above reportable quantities or that have adversely affected water quality in at least the last three years. Spill record forms are maintained in the facility's SPCC Plan (separate document).

Predictions of the spill pathways and the pollutants that may be conveyed by the release of the potentially exposed industrial materials and / or activities are summarized in **Table 5-1** and **Table 5-2** above. Section 6.0 outlines the Best Management Practices implemented by the facility to prevent pollutants from entering the site stormwater as well as tributary waterbodies.

5.4 Sampling Data

Appendix B contains sampling data, chain of custody records, laboratory reports, quarterly visual monitoring reports, and annual certification reports, as applicable.

6.0 APPROPRIATE MEASURES AND CONTROLS

6.1 Best Management Practices (BMPs)

BMPs are measures used to prevent or mitigate pollution from activities that could result in the discharge of contaminants to stormwater. BMPs may include processes, procedures, schedule of activities, prohibitions on practices, and other management practices for the prevention or reduction of stormwater pollution. In general, BMPs could be any measure or control that results in preventing materials such as oil, and toxic and hazardous substances from entering the environment.

Baseline BMPs are practices which most facilities already have in place for use in product loss prevention, accident and fire prevention, worker health and safety, or to comply with other applicable environmental regulations.

The BMPs identified in the SWPPP must be maintained in effective operating condition. If the site inspections discussed in Section 7.0 below, identify BMPs that are not operating effectively, maintenance must be performed before the next anticipated storm event, or as necessary to maintain the continued effectiveness of stormwater controls. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable, but not more than 12 weeks after completion of the routine facility inspection or the comprehensive site evaluation, unless permission for a later date is granted in writing by the NYSDEC. In the case of nonstructural BMPs, the effectiveness of the BMP must be maintained by appropriate means (e.g., spill response supplies available and personnel trained, etc.).

The following measures and controls are required by the MSGP or have been otherwise incorporated by the facility to protect stormwater and are discussed in the subsections below:

1. Develop and implement good housekeeping practices to keep exposed areas clean (exposed areas are those that are not protected from contact with rain, snow, snowmelt, and / or run-off);
2. Test, maintain, and repair industrial equipment and systems (e.g. Preventative Maintenance);
3. Minimize the potential for leaks, spills, and other releases and develop a response plan;
4. Perform regular inspections;
5. Provide training and education;
6. Eliminate unauthorized non-stormwater discharges;
7. Ensure that waste, garbage, and floatable debris are not discharged;
8. Minimize generation of dust and off-site tracking of materials;
9. Stabilize exposed areas through erosion and sediment control;
10. Divert, infiltrate, re-use, contain, and otherwise reduce stormwater runoff;
11. Enclose or cover salt piles;
12. Recordkeeping and internal reporting procedures; and
13. Security.

In addition, due to the nature of activities at the facility, site specific BMPs have also been developed for the following areas and activities as described in Section 6.15:

1. Oil Bulk Transfers (6.15.1);
2. Aboveground Storage Tanks and Containers (6.15.2);
3. Maintenance (6.15.3);
4. Aircraft Fueling (6.15.4); and
5. Aircraft and Runway Deicing (6.15.5)

The various measures, controls and BMPs are described in detail in the subsections below:

6.2 Good Housekeeping Practices

Good housekeeping practices offer a practical and cost-effective way to maintain a clean and orderly facility to prevent potential pollution sources from coming into contact with stormwater. They also help to enhance safety and improve the overall work environment. An effective good housekeeping program not only benefits stormwater quality but makes the facility a clean, safe place for employees and clients. A clean and orderly work place reduces the possibility of accidental spills occurring from mishandling oils, chemicals, and equipment, and will in turn help to reduce safety hazards to personnel. Typical good housekeeping practices incorporated at the facility are shown below and discussed in later subsections.

- Tanks, drums, and totes storing oil and chemical products are located indoors and are provided secondary containment per applicable regulations.

- Oil storage tanks / containers are operated in accordance with applicable state and federal regulations as outlined in the facility's SPCC Plan.

- Tanks, drums, and containers containing oils or chemicals are stored away from traffic routes to prevent accidental spills.

- Spill control / cleanup kits are located in areas where spills and leaks can occur.

- Batteries and other significant materials are stored indoors.

- **Discharge of waste materials to floor drains, sinks, catch basins, etc. is prohibited (e.g. chemicals, automotive fluids, etc.).**

- SRE, airport passenger vehicles, and aircraft are washed and repaired indoors. **Washing and repair of equipment, vehicles, and aircraft on the property exterior is prohibited.**

- Runways, taxiways, aprons, ingress / egress areas, and other exterior surfaces are typically inspected daily and periodically swept and cleaned to remove sediment and other solid waste materials.

- Facility personnel are trained to collect and properly dispose of litter and garbage.

- Spills are cleaned immediately upon discovery utilizing dry cleanup methods.

6.3 Preventative Maintenance

Preventative maintenance involves the regular inspection, testing, and repair of equipment and operational systems. Maintenance programs are intended to ensure that structural control measures and industrial equipment are kept in good operating condition and to prevent or minimize leaks and other release of pollutants. Preventative maintenance programs help to prevent breakdowns and failures by adjustment, repair, or replacement of faulty equipment. Preventative maintenance completed at the facility specific to the protection of stormwater is discussed in the subsections below.

6.4 Spill Prevention and Response Procedures

The MSGP requires the facility to provide information and procedures in the Plan to enable a person reporting a discharge to relay vital information regarding the discharge. The information required to be documented and / or reported is summarized at the end of this section. The contacts that may need to be notified in the event of a discharge are shown under the front cover of this plan. Internal, local, state and federal spill reporting procedures are further described below.

INTERNAL DISCHARGE NOTIFICATION PROCEDURES

Oil and chemical spills must be reported to the Director of Aviation. The Director will determine the appropriate personnel or contractor to remediate the spill and will also contact regulatory agencies, as applicable. If unavailable, the person who has discovered, or the person who has knowledge of a spill, must immediately notify his / her supervisor, who should in turn contact a member of the Pollution Prevention Team.

LOCAL DISCHARGE NOTIFICATION PROCEDURES

- If a discharge poses a threat to personnel or public health, the local fire and police departments must be contacted by dialing 911.

- Per the Emergency Planning and Community Right-to-Know Act (EPCRA) Section 304 requirements, in the event of certain chemical releases the facility must notify the State Emergency Response Commission and the Local Emergency Planning Committee for any area affected by the release, and provide a detailed written follow-up as soon as practical. The following types of chemicals in an amount greater than or equal to the minimum reportable quantity are required to be notified:

- Extremely Hazardous Substances (Emergency Planning and Notification, 40 CFR part 355)
- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) hazardous substances (Designation, Reportable Quantities, and Notification, 40 CFR part 302).

The full text of 40 CFR Parts 302 and 355 can be found at http://www.gpoaccess.gov/cfr/index.html.

<u>STATE DISCHARGE NOTIFICATION PROCEDURES</u>

As excerpted from 6 NYCRR Part 613-6:

"Subpart 613-6 Release Response and Corrective Action

613-6.1 General

A facility must, in response to a release from a tank system, comply with the requirements of 613-6. Note that, detailed response and remediation actions are described in 613-4.4 for aboveground storage tanks.

613-6.2 Initial Response

In response to a release from a tank system, a facility must immediately perform the following initial response actions:

(a) Identify and mitigate fire, explosion, and vapor hazards;
(b) Take immediate action to prevent any further release of petroleum; and
(c) Report the release to Department's Spill Hotline (518-457-7362) within two hours after discovery.

613-6.3 Initial Abatement Measures and Site Check

(a) Unless directed to do otherwise by the Department, the facility must perform the following abatement measures:

(1) Remove as much of the petroleum from the tank system as is necessary to prevent further release;
(2) Visually inspect any aboveground releases or exposed belowground releases and prevent further petroleum migration;

(3) *Continue to monitor and mitigate any additional fire and safety hazards posed by vapors or free product that have migrated from the excavation zone and entered into subsurface structures (such as sewers or basements);*
(4) *Remedy hazards posed by contaminated soils that are excavated or exposed as a result of release confirmation, site investigation, abatement, or corrective action activities. If these remedies include treatment or disposal of soils, the facility must comply with applicable State and local requirements;*
(5) *Measure for the presence of a release where contamination is most likely to be present at the facility, unless the presence and source of the release have been confirmed in accordance with the site check required by sections 2.4(c)(2), 3.4(c)(2), or 4.4(c)(2) of this Part* (6 NYCRR Part 613), *or the site assessment required by section 2.6(c) of this Part* (6 NYCRR Part 613)*. In selecting sample types, sample locations, and measurement methods, the facility must consider the nature of the petroleum stored, the type of backfill, depth to groundwater and other factors as appropriate for identifying the presence and source of the release; and*
(6) *Investigate to determine the possible presence of free product, and begin free product removal as soon as practicable and in accordance with section 6.5 of this Part* (6 NYCRR Part 613)*.*

(b) Within 20 days after release confirmation, a facility must submit:

(1) *A report to the Department summarizing the initial abatement steps taken under subdivision (a) of this section; and*
(2) *Any resulting information or data."*

Per 613-4.4(d)(1), spills that meet the following conditions are not reportable:

1. *"The quantity is known to be less than 5 gallons; and*
2. *The spill is contained and under the control of the spiller; and*
3. *The spill has not and will not reach the State's water or any land (A spill is considered to have not impacted land if it occurs on a paved surface such as asphalt or concrete. A spill in a dirt or gravel parking lot is considered to have impacted land and is reportable); and*
4. *The spill is cleaned up within 2 hours of discovery."*

Fire Code of New York State:

The Fire Code of New York State, specifically Chapter 20: Aviation Fuel Facilities and the Fire Code of NYS Chapter 57: Flammable and Combustible Liquids, contain spill reporting procedures applicable to the facility.

Per Chapter 11:

- The facility must notify the local fire department of any spill which is considered a hazard to people or property or which meets one or more of the following criteria:

- Any dimension of the spill is greater than 10 feet,
- The spill area is greater than 50 square feet, and / or
- The fuel flow is continuous in nature.

- The facility must perform an investigation and complete corrective actions for all spills requiring notification to the local fire department.

- Perform standard spill prevention activities per 1106.11. This portion of the Code is provided in **Appendix D**.

Per Chapter 57:

- A consistent or accidental loss of liquid, or other indication of a leak from a tank system, shall be reported immediately to the fire department, the code enforcement official and other authorities having jurisdiction.

In addition to the regulatory requirements of the Fire Code of New York State, the National Fire Protection Association (NFPA), specifically NFPA 407: Standard for Aircraft Fuel Servicing, offers guidance relative to the prevention of and response to spills. The guidance is located in Section 5.2 and Appendix A of that standard and is included in **Appendix D** of this Plan.

FEDERAL DISCHARGE NOTIFICATION PROCEDURES

1. The Discharge of Oil regulation at 40 CFR Part 110 (also referred to as the "sheen rule") defines a discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in quantities that may be harmful under the Clean Water Act (CWA) as that which:

   - Causes a sheen or discoloration on the surface of the water or adjoining shorelines;
   - Causes a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines; or
   - Violates an applicable water quality standard.

   A discharge meeting any of the above criteria triggers requirements to report to the National Response Center (NRC). The failure to report such a discharge may result in criminal sanctions under the CWA.

2. According to 40 CFR Part 112.4(a), whenever a facility has discharged more than 1,000-gallons of oil in a single discharge, or discharged more than 42 gallons of oil in each of two discharges occurring within any 12 month period, the EPA Regional Administrator must be notified within 60 days. Information to provide to the Regional Administrator is shown below. A discharge is generally defined as any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil.

DISCHARGE DOCUMENTATION

Documentation should be prepared immediately after appropriate individuals have taken control of the release. In addition, any incident requiring corrective actions (as described in Section 7.7) must be documented on the form. The form is included in the facility's SPCC Plan (separate document). The form provides a record of the events leading up to the spill and subsequent actions. That documentation will be used to help prevent future spills and document the circumstances in which the spill occurred. The form should be completed for reportable spills and for spills that would otherwise be reportable except that they meet certain exemption criteria as described above.

6.5 Inspections

Inspections are important for visually evaluating potential stormwater pollution sources at the facility. Types of inspections required by the MSGP and applicable to the facility include monthly routine facility inspections, quarterly visual inspections, annual dry weather flow monitoring, annual site compliance evaluation, and annual certification reporting. Refer to Section 7.0 for detailed descriptions of these inspections.

6.6 Employee Education and Training

Employee training is necessary to provide personnel at the facility with a basic knowledge of the SWPPP so that it can be effectively implemented. The training program should be designed to teach all employees who work in areas where industrial materials or activities are exposed to stormwater, or who are responsible for implementing activities necessary to meet the conditions of this permit (e.g., inspectors, maintenance personnel), including all members of the pollution prevention team. When properly trained, facility personnel are more capable of preventing spills, responding safely and effectively to a spill, if and when one occurs and recognizing situations that could potentially lead to contamination of stormwater. By providing frequent and proper training of BMP techniques for employees, the possibility of oil / chemical and equipment mishandling is reduced.

The following personnel must be trained to understand the requirements of the MSGP and their specific responsibilities with respect to those requirements:

- Personnel who are responsible for the design, installation, maintenance, and / or repair of control measures;
- Personnel responsible for the storage and handling of chemicals and materials that could become contaminants found in stormwater discharges;
- Personnel who are responsible for conducting and documenting monitoring and inspections; and,
- Personnel who are responsible for taking and documenting corrective actions.

At a minimum the training session / sessions are required to cover:

- An overview of what is in the SWPPP and the purpose of the SWPPP;
- Spill response procedures, good housekeeping, maintenance requirements and material management practices;
- How to recognize unauthorized discharges;
- The location of all controls on the site required by this permit, and how to evaluate their condition and maintenance needs;
- The proper procedures to follow with respect to permit's pollution prevention requirements, including sampling and reporting; and
- When and how to conduct inspections, record applicable findings, and take corrective actions.

Training is conducted on an <u>annual basis</u> and whenever a new employee becomes involved in the implementation of the SWPPP. A SWPPP Training Record Form is provided in **Appendix A** to document training.

6.7 Elimination of Unauthorized Non-Stormwater Discharges

As of the date of this Plan, there are no known unauthorized non-stormwater discharges. In support of this, a Non-Stormwater Discharge Certification is provided on *page ii* of this Plan.

6.8 Waste, Garbage, and Floatable Debris

Due to the nature of the facility as an airport; waste, garbage, and debris control is a high priority to ensure the safe operation of aircraft. The following BMPs are implemented to ensure that waste, garbage, and floatable debris are not discharged:

- Waste containers (i.e. dumpsters) are covered and maintained in good condition to prevent infiltration of stormwater.

- The areas surrounding dumpsters are inspected and swept on an as-needed basis.

- Waste is removed and disposed of regularly.

6.9 Dust Generation and Off-Site Tracking of Materials

The exterior of the facility is entirely concrete / asphalt pavement or turf, therefore generation and tracking of dust is not believed to be a concern. In addition, due to the nature of the facility as an airport, dust control is a high priority to ensure the safe operation of aircraft.

6.10 Erosion and Sediment Control

The facility must stabilize exposed areas and control runoff using structural and / or non-structural control measures to minimize onsite erosion and sedimentation. Erosion and sediment controls must be in accordance with current New York State Standards & Specification for Erosion & Sediment Control. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the owner or operator must demonstrate equivalence to the technical standard.

Based on the topography of the site, lack of disturbed areas, and cover types present; erosion and sediment control is not believed to be an issue at the facility under normal conditions.

6.11 Reduction and Management of Stormwater Runoff

The MSGP requires that facilities divert, infiltrate, reuse, contain, or otherwise reduce stormwater runoff to minimize pollutants in discharges. The measures that are implemented by the facility include:

- Catch Basins – Catch basins provide a means of removing particulate matter and sediment from the stormwater. Catch basins and areas surrounding any other erosion control devices are inspected regularly and cleaned as needed by removing sediment, small solid materials, and other obstruction materials. Significant materials are stored away from the catch basins and periodic cleaning of the outside grounds take places to remove miscellaneous debris. The MSGP requires that catch basins be cleaned when the depth of debris reaches two-thirds of the sump depth and the debris surface must be kept at least six inches below the lowest outlet pipe.

- Pervious Cover – Pervious cover such as turf, vegetation, and stone naturally filter sediment and other pollutants from stormwater as well as reducing overland flow rates. Pervious areas at the facility represent approximately 75% of the grounds.

6.12 Enclose or Cover Salt Piles

Bulk salt is stored in an enclosed building protected from precipitation.

6.13 Recordkeeping and Internal Reporting Procedures

Keeping records of stormwater related events that occur at the facility is an effective way of tracking progress of pollution prevention efforts. For example, analyzing past spill records can provide information that is useful for improving BMPs at the facility to help prevent future occurrences of spills. Recordkeeping and internal reporting are good operating practices which help to increase efficiency of facility operations and the effectiveness of BMPs. A recordkeeping system, such as a spill database, should be set up for documenting spills, leaks, and other discharges, including discharges of hazardous substances in reportable quantities. It is important to track reportable incidents and to follow up on results of inspections.

Records will include the following basic information:

- Documentation of Spill Records: If a spill of a petroleum or chemical substance occurs at the facility, the release will be recorded. Review forms annually to evaluate incidents and make decisions on how to improve facility BMP procedures to avoid future spill occurrences. Spill Report Forms are maintained in the facility's SPCC Plan.

- Documentation of Inspections: The recordkeeping requirements for various inspections required by the SWPPP are summarized in **Table 7-2**.

- Additional Documentation**:** Records documenting SWPPP Training are maintained with this Plan.

6.14 Security

There is chain-linked fencing around the facility, which limits points of access from the perimeter. In addition, each fence and building entrance is locked allowing only those who have an authorized swipe card to enter.

6.15 Site Specific Best Management Practices:

The following details the site specific BMPs implemented at the facility:

6.15.1 Oil Bulk Transfers

Oil products are stored in an aggregate amount greater than the federal Oil Pollution Prevention Rule (40 CFR Part 112) threshold; therefore, a SPCC Plan (separate document) has been prepared for the facility. The Plan addresses the proper storage, use, and transfer of oils. The storage, use, and transfer of oils at the airport are presumed to be conducted in general accordance with the SPCC Plan. Oils products transferred at the facility in bulk include jet fuel, aviation gasoline, unleaded gasoline, and diesel. The following BMPs are instituted regarding the transfer of these products:

- Oil tanks are operated in accordance with the USEPA SPCC and / or NYSDEC PBS Rules, which includes, but is not limited to the following BMPs:

- Offloading of jet fuel at the respective fuel farm is completed within a contained transfer area. Drainage from the area is controlled with a manually operated valve, which is placed in the closed position during transfers.

- Offloading of aviation gasoline, diesel, and auto gasoline at the respective fuel farm is completed on a pervious surface surrounded by turf.

- Drums are unloaded from transport vehicles and moved within the facility by personnel trained in SPCC requirements.

- Spill cleanup materials (i.e. spill kit) are readily available and spills and leaks are cleaned up immediately. If a spill occurs, dry cleanup methods are used rather than hosing down the area.

- Trained facility personnel oversee the transfers.

6.15.2 Aboveground Storage Tanks and Containers

The facility maintains a number of oil ASTs as described in the facility SPCC Plan. The following BMPs are instituted in regards to the storage of the products:

- Tanks / containers are inspected and monitored per state and federal regulations to detect potential leaks before they occur. Inspections include verification of the condition of the tanks, piping, pumps, flanges, couplings, hoses, valves, etc.

- Operators are trained at least annually on the proper maintenance and operation of the tank systems.

- The ASTs are either constructed with double-walls or located in secondary containment structures.

- Oil tanks are equipped with one or more overfill protection measures including electronic alarms, level gauges, and / or personnel oversight.

- Drums are stored away from traffic routes.

- Drums are clearly labeled to identify their contents and hazards.

- Petroleum and chemical drums are stored on impervious flooring within the facility or otherwise contained.

6.15.3 Maintenance

FBO or facility personnel perform aircraft, vehicle, and equipment maintenance activities which include the utilization of various oils and chemicals, including engine oil, hydraulic fluid, windshield washer fluid, antifreeze, gear oil, etc. The following BMPs are instituted to ensure that these oils and chemicals do not impact stormwater:

- Maintenance activities are completed indoors. Vehicles awaiting maintenance are stored indoors, when feasible.

- Vehicles are washed indoors. **Washing, rinsing, spraying-down, etc. of vehicles and equipment, including parts and components on the property exterior is strictly prohibited.**

- Drip pans or drain boards are used to contain leaks.

- Spill cleanup materials are readily available and spills and leaks are cleaned up immediately.

- Incoming and outgoing vehicles / equipment are inspected for leaks. Significant leaks are repaired before going back into service.

- Tanks and containers are properly labeled, clean and visible. Containers are kept in good condition and tightly closed when not in use.

- Batteries, chemical fluids, supplies, and other significant materials are stored indoors pending off-site disposal. When feasible, these items are recycled.

- Fluids are drained completely from parts and equipment before disposal or if they are to be stored outdoors. Liquids are drained from out-of-service vehicles / equipment when leaks are present.

6.15.4 Aircraft Fueling

Aircraft may be fueled in the following locations:

1. At the terminal apron. Incidental fuel releases will likely be contained on the apron.

2. At the AAG hangar apron where fueling of helicopters is conducted by the FBO. Aircraft is fueled by mobile refueler vehicles. Incidental fuel releases will likely be contained on the apron.

3. At the general aviation hangars where fueling of small, privately owned, non-commercial aircraft is conducted by the FBO. Aircraft is fueled by mobile refueler vehicles. Incidental fuel releases will likely be contained on the apron.

The following additional BMPs are instituted relative to these practices:

- Spill cleanup materials (i.e. spill kit) are readily available and spills and leaks are cleaned up immediately.
- If a spill occurs, dry cleanup methods are used rather than hosing down the area.
- Trained FBO oversee the transfers.

6.15.5 Aircraft and Runway Deicing / Anti-Icing

The Airport uses deicing chemicals during winter months to provide for anti-icing and de-icing of aircraft and surfaces. Aircraft is de-iced utilizing a mobile dispensing unit containing a 55% propylene glycol solution. If runway de-icing or anti-icing is required, pelletized urea is utilized, which is applied with a truck mounted spreader. On average, less than 300 gallons of glycol and less than 20 tons of urea are utilized annually.

The Federal Aviation Administration (FAA) established safety requirements for airport movement surfaces including runways and taxiways. FAA has developed guidance documents entitled "Advisory Circulars" (AC) which provide airport operators with the means and methods to ensure safe passenger travel during wintertime conditions. Airport deicing / anti-icing removes or prevents the accumulation of frost, snow, or ice on aircraft, runways, taxiways, aprons, and ramps. Combinations of mechanical methods and / or chemical deicing / anti-icing are used.

"De-icing" is defined as a procedure by which frost, ice, or snow is removed in order to provide clean surfaces.

"Anti-icing" is defined as a precautionary procedure that provides protection against the formation of frost or ice and accumulation of snow on treated surfaces for a limited period of time.

Aircraft De-icing / Anti-icing

Aircraft de-icing / anti-icing procedures vary depending primarily on aircraft type, type of ice accumulations on the aircraft, and the FPD fluid type. The aircraft chemicals are applied to aircraft using a mobile dispensing unit. Concentrated aircraft deicing agent is mixed with water to produce a solution consisting of 55% deicing agent (presently propylene glycol). Propylene glycol anti-icing agents are applied in concentrated form and are used to anti-ice aircraft.

Runway Pavement De-icing / Anti-icing

The airport has a collection of SRE including plows, brushes, and blowers. Under certain conditions, mechanical methods alone will not adequately provide safe operating conditions. In these cases, airport personnel will utilize chemical deicing / anti-icing in conjunction with mechanical methods to provide safe operating conditions.

Pavement anti-icing is a method for maintaining safe operation conditions at the airport. Anti-icing can prevent the development of strong bonds from forming between the pavement and ice, which enables snow and ice to be more easily removed by mechanical means. The proper application of anti-icing chemicals can dramatically reduce the amount of pavement deicing and / or anti-icing chemicals used by the airport. According to some reports, airport deicing can take up to five times the quantity of chemical as anti-icing. The timing of the application of pavement anti-icing chemicals is critical. In order for anti-icing agents to be most effective they should be applied to a clean pavement and while the surface temperature is above freezing. The airport utilizes weather forecasts in effort to accurately predict runway surface conditions in order to determine the appropriate timing of anti-icing chemical application.

Good Winter Maintenance Practices

Airport personnel utilize the following winter maintenance practices to prevent unnecessary or over-application of pavement deicing / anti-icing chemicals:

- Prompt treating of airfield pavements using mechanical methods or anti-icing chemicals to prevent strong bonds from forming between the frozen precipitation and the pavement surface;

- Using mechanical methods to remove dry snow from airfield pavements, rather than applying deicing / anti-icing chemicals;

- Applying pavement anti-icing chemicals prior to a storm event or icing conditions, when weather forecasts indicate that ice or snow will bond to pavement surfaces.

7.0 INSPECTIONS

Inspections are important for visually evaluating potential stormwater pollution sources at the facility. The inspections required by the MSGP and applicable to the facility include:

- Routine Facility Inspections;
- Visual Monitoring;
- Dry Weather Flow Monitoring;
- Site Compliance Evaluation; and
- Certification Reporting.

The types of monitoring, inspections, and recordkeeping requirements, as well as submittal deadlines are summarized in **Table 7-1**, below.

Please note that failure to complete the required inspections and monitoring because timing is inconvenient (e.g. outside of normal operating hours, after dark, etc.), is not deemed by the NYSDEC to be acceptable and may be considered a violation of the MSGP.

Table 7-1
Summary of Required Monitoring, Recordkeeping and Deadlines

Requirement	Frequency	Recordkeeping Requirement	Submittal Deadline
Secondary Containment Discharge Screening	Every Discharge	Retain documentation with SWPPP	NA
Routine Facility Inspections	Monthly	Retain documentation with SWPPP	NA
Visual Monitoring	Quarterly	Retain documentation with SWPPP	NA
Dry Weather Flow Monitoring	Annually	Retain documentation with SWPPP	NA
Site Compliance Evaluation		Retain documentation with SWPPP	NA
Certification Report (ACR)		Submit a copy to the DEC	January 28th Annually

7.1 Secondary Containment Discharge Screening

7.1.1 General

Prior to each discharge from a secondary containment system (e.g. the containment systems for the Jet-A fuel farm transfer area, mobile refueler loading area, and diesel / auto gasoline tanks), stormwater must be visually screened for contamination. If the screening indicates contamination, the permittee must collect and analyze a representative sample of the stormwater to verify the absence or presence of contamination. If the water contains no pollutants, it may be discharged. Otherwise it must either be disposed of in an onsite or offsite wastewater treatment plant designed to treat and permitted to discharge such wastewater, or the NYSDEC Regional Water Engineer can be contacted to determine if it may be discharged without treatment.

The Secondary Containment Discharge Screening Form provided in **Appendix B** can be used to document the screening method, results of the screening, date and time, volume of the discharge (gallons), and personnel involved.

7.1.2 Special Conditions for Secondary Containment Where Spills Have Occurred

All spilled or leaked substances must be removed from secondary containment systems as soon as practical, unless authorization to do otherwise is received from the NYSDEC. The containment system must be thoroughly cleaned to remove any residual contamination which could cause contamination of stormwater and the resulting discharge of pollutants to the waters of the State. Following spill cleanup the affected area must be flushed with clean water three times and the water removed after each flushing for proper treatment in an onsite or offsite wastewater treatment plant designed to treat and permitted to discharge such wastewater. Alternatively, the first batch of stormwater following the spill cleanup may be sampled and analyzed to determine discharge acceptability.

A representative sample will be collected of the first discharge following any cleaned up spill or leak within the containment. The sample must be analyzed for pH, the substance(s) stored within the containment area and any other pollutants known or believed to be present. All analysis must be performed by a New York State certified Environmental Laboratory Accreditation Program (ELAP) laboratory. The results of the monitoring must be maintained with the SWPPP.

7.2 Routine Monthly Facility Inspections

Routine facility inspections are meant to act as a regular examination of the facility in an effort to identify conditions which could result in contamination of stormwater runoff. The routine facility inspections are conducted monthly to:

- Evaluate conditions and maintenance needs of stormwater management devices (e.g. cleaning oil/water separators, catch basins) to avoid situations that may result in the practice becoming a source of pollutants.
- Detect leaks and ensure the good condition of drums, tanks, and containers.
- Evaluate the performance of the existing stormwater BMPs described in the SWPPP.

The USEPA recommends that the inspections be completed during or immediately following a measureable rain event and during normal business hours. Observing site conditions during storm events provides real-time feedback on control measures that are working and those that are not working effectively.

The Routine Facility Inspection Checklist provided in **Appendix A** is recommended to be used as a guideline for items to be examined. Inspection records document when inspections were performed, who conducted the inspection, which areas were inspected, issues that were identified, and steps taken to correct the identified issues (including personnel notified). Inspection records are kept on file with this Plan. The MSGP requirements indicate that records must be kept on file until at least five years after coverage of the facility under the permit expires.

7.3 Quarterly Visual Monitoring

The MSGP requires quarterly visual examination of stormwater discharges associated with industrial activity. No analytical tests are required to be performed on the collected stormwater samples for the purpose of meeting the visual monitoring requirements. However, the examination must document observations of color, odor, clarity, floating solids, suspended solids, foam, oil sheen, and any other obvious indicators of stormwater pollution. The visual examination must be made during daylight hours and conducted in a well-lit area. Where practicable, the same individual should carry out the collection and examination of discharges for the entire permit term for consistency.

The inspections must be made at least once in each of the following three-month periods and at each of the industrial outfalls:

- January through March;
- April through June;
- July through September; and
- October through December.

The samples must be collected from a discharge resulting from a storm event that is greater than 0.1 inches and occurs at least 72 hours from the previous measurable storm event. The grab sample must be taken in the first 30 minutes (or as soon as practical, not to exceed an hour) of the discharge. If there is no qualifying storm event in the monitoring quarter, the facility would be exempt from this monitoring requirement for that quarter. However, the lack of a qualifying event must be documented and retained with the SWPPP.

If the visual examination indicates the presence of stormwater pollution such as color, odor, floating solids, foam, oil sheen or other indication of pollution, the facility must, at a minimum, complete and document corrective actions as outlined in Section 7.7.

The visual examination must be documented and maintained on-site with the SWPPP. Inspection records will document the outfall location, the examination date and time, the examination personnel, the nature of the discharge (e.g. rain or snow), the visual quality of the stormwater, probable sources of any observed stormwater contamination, and actions taken or proposed to eliminate the sources. The Quarterly Visual Monitoring Form can be downloaded from the NYSDEC website at http://www.dec.ny.gov/chemical/9009.html.

7.4 Annual Dry Weather Flow Monitoring Inspection

The facility must perform and document at least one dry weather flow inspection each year following at least three consecutive days of no precipitation. The dry weather flow inspection shall be conducted to determine the presence of non-stormwater discharges from the industrial drainage areas of the property through the various stormwater piping systems. The inspection report must include the outfall locations, the inspection date and time, inspection personnel, description of discharges identified, the sources of any discharges and actions taken to address any newly identified allowable non-stormwater discharges or elimination of non-authorized discharges.

If a non-stormwater discharge is discovered, the facility must perform corrective actions as described in Section 7.7.

Results of the dry weather flow inspections must be documented and retained on-site with the SWPPP. A copy of the Annual Dry Weather Flow Monitoring Inspection sheet is included in **Appendix A**.

7.5 Benchmark Monitoring / Annual Certification Report

Airports that use more than 100,000 gallons of glycol-based deicing / anti-icing chemicals and / or 100 tons or more of urea on an average annual basis are required to sample their stormwater discharges. Based on the information provided, the airport uses a negligible amount of propylene glycol and urea annually. Therefore, benchmark monitoring is not required at this time.

However, the airport must complete an Annual Certification Report (ACR) on an annual basis. ACRs must be completed and returned to the NYSDEC by January 28th, annually. The Annual Site Compliance Evaluation discussed in Section 7.6, below is not the same as the ACR. The ACR can be downloaded from the NYSDEC website at http://www.dec.ny.gov/chemical/9009.html.

Prior to December 20, 2020, Annual Certification Reports can be mailed to:

MSGP Permit Coordinator
NYSDEC, Bureau of Water Compliance
625 Broadway
Albany, New York 12233-3506

Subsequent to December 20, 2020, ACRs must be submitted electronically via the NYS online portal (http://www.dec.ny.gov/pubs/95925.html).

7.6 Annual Site Compliance Evaluation

The facility is required to conduct an Annual Site Compliance Evaluation no less than one time a year. The inspection must be done by qualified personnel who may be either facility employees or outside consultants and the inspection must be conducted during actual periods of deicing activities or when deicing is likely to occur. The inspectors must be familiar with the industrial activity, the BMPs, the SWPPP, and must possess the skills to assess conditions at the facility that could impact stormwater quality and assess the effectiveness of the BMPs that have been chosen to control the quality of the stormwater discharges.

Inspections must include all areas where industrial activities are exposed to stormwater, and areas where spills and leaks have occurred in the past three years. Inspectors should look for, at a minimum:

- Industrial materials, residue or trash on the ground that could contaminate or be washed away in stormwater;

- Leaks or spills from industrial equipment, drums, barrels, tanks or similar containers;

- Unauthorized non-stormwater discharges or allowable non-stormwater discharges that are not certified by the general permit;

- Off-site tracking of industrial materials or sediment where vehicles enter or exit the site;

- Tracking or blowing of raw, final or waste materials from areas of no exposure to exposed areas; and

- Evidence of, or the potential for, pollutants entering the drainageway.

- Inspection of areas found to be the source of pollutants observed during visual and analytical monitoring done during the year.

- Stormwater BMPs identified in the SWPPP must be observed to ensure that they are operating correctly.

- If discharge locations or points are accessible, they must be inspected to see whether BMPs are effective in preventing significant impacts to receiving waters. Where discharge locations are inaccessible, nearby downstream locations must be inspected.

Results of visual and analytical monitoring done during the year must be taken into consideration during the evaluation. Stormwater BMPs identified in the SWPPP must be observed to ensure that they are operating correctly (if applicable). Where discharge locations or points are accessible, they must be inspected to see whether BMPs are effective in preventing significant impacts to receiving waters. Where discharge locations are inaccessible, nearby downstream locations must be inspected, if possible. Based on the results of the inspection, the SWPPP shall be modified as necessary.

An Annual Site Compliance Report must be made and retained as part of the SWPPP for at least five years from the date permit coverage expires of is terminated. At a minimum, the report must include:

- The scope of the inspection;

- The names of the personnel making the inspection;

- The weather at the time of the inspection;

- The date(s) of the inspection;

- Major observations relating to the implementation of the SWPPP, including:
    - The locations of discharges of pollutants from the site;
    - The locations of previously unidentified discharges of pollutants from the site;
    - Locations of BMPs that need to be maintained;
    - Location of BMPs that failed to operate as designed or proved inadequate for a particular location;
    - Locations where additional BMPs are needed that did not exist at the time of the inspection;
    - Any incidents of non-compliance; and
    - A summary of sample analysis.

The report must identify any incidents of non-compliance and required corrective action, as described in Section 7.7. Where a report does not identify any incidents of noncompliance, the report must contain a certification that the facility is in compliance with the SWPPP and the MSGP. An Annual Site Compliance Evaluation form is included in **Appendix A**.

7.7 Corrective Actions

Failure to document and take necessary corrective action is a violation of the permit. Continued exceedance of benchmark cut-off concentrations and / or numeric effluent limitations may identify facilities that would be more appropriately covered under an individual SPDES permit. If there is an exceedance of either a benchmark or numeric effluent limit at an outfall where a representative outfall waiver has been claimed, the waiver no longer applies and corrective actions must be performed on all outfalls covered by the waiver.

Corrective action requirements differ and are based on requirement for stormwater discharges and non-stormwater discharges.

Stormwater Discharge Corrective Actions:

When a visual examination indicates the presence of pollution or when the benchmark or numeric effluent limit sample results indicate exceedances of the pollutants, the owner or operator must:

- Inspect the facility for potential sources of stormwater contamination and / or causes of the exceedance to numeric limits;
- Implement additional non-structural and / or structural BMPs to address any sources of contamination that are identified to prevent recurrence within the following timeframes:
    - The implementation must be completed before the next anticipated storm event, if practicable, but not more than 12 weeks after discovery.
    - If implementation will take longer than 12 weeks, the owner or operator must submit a proposed schedule for completion of the project and obtain a written approval from the Regional Water Engineer.

- Revise the facility's SWPPP; and

- Continue efforts to implement additional BMPs at the facility if corrective actions do not result in achieving benchmark monitoring cut-off concentrations and/or numeric effluent limitation.

Non-Stormwater Discharge Corrective Actions:

If a non-stormwater discharge is discovered the owner or operator must:

- Identify its source and determine whether it is an authorized discharge.
    - Upon determination that the discharge is not covered under this permit or another SPDES permit, the owner or operator shall notify the Regional Water Engineer of the unauthorized discharge and begin immediate

actions to eliminate the discharge. These actions must be documented in the SWPPP.

- Upon determination that the discharge is an authorized non-stormwater discharge that was not previously certified, the owner or operator shall update the discharge certification and keep with the SWPPP.

Corrective Action Documentation:

Owners or operators must document the existence of any of the conditions listed in Parts V.A or V.B within 24 hours of becoming aware of such condition. Unless required by Part VI.A.2.b or as requested by the Department, the corrective action documentation is not required to be submitted and should be kept with the facility's SWPPP. Include the following information in your documentation:

- A description of the condition triggering the need for corrective actions. For any spills or leaks, include the following information: a description of the incident including material, date/time, amount, location, and reason for spill, and any leaks, spills or other releases that resulted in discharges of pollutants to waters of the state, through stormwater or otherwise;
- Date the condition was identified;
- The date when each corrective action was initiated and completed (or is expected to be completed);
- A description of the corrective actions to minimize or prevent the discharge of pollutants. For any spills or leaks, include response actions, the date/time clean-up completed, notifications made, and staff involved. Also include any control measures taken to prevent the reoccurrence of such releases; and
- A statement, signed and certified.

7.8 Monitoring Waivers

Unless specifically stated otherwise by the NYSDEC, the following waivers may be applied to any monitoring required by the MSGP:

7.8.1 Adverse Climatic Conditions Waiver

When adverse weather conditions prevent the collection of samples, a substitute sample may be taken during a qualifying storm event in the next monitoring period. This waiver may only be claimed if the only qualifying event in a monitoring period created dangerous conditions for personnel, created conditions which made the sample location inaccessible or made collection of a sample impossible. Adverse weather conditions are those that are dangerous or create inaccessibility for personnel, and may include such things as local flooding, high winds, electrical storms, or situations that otherwise make sampling impracticable, such as drought or extended frozen conditions.

This waiver may not be claimed to indicate that samples were not collected due to inconvenient timing of storms or other failure to collect water samples.

7.8.2 Inactive and Unstaffed Sites

An annual comprehensive site inspection is not required at a facility that is inactive and unstaffed for an entire monitoring period and if no industrial materials or activities are exposed to stormwater for the entire monitoring period. If this waiver is exercised, the facility must:

a. Maintain a certification with the SWPPP stating the dates the site is inactive and unstaffed and that performing visual examinations or benchmark and compliance monitoring during a qualifying storm event is not feasible.

b. A dry weather flow inspection must be performed prior to shut down, recorded and maintained in the SWPPP. The certification must include the results of the dry weather flow inspection performed prior to shut down.

c. The certification must be signed in accordance with Part V.H. of the MSGP, and submitted to the Department with the annual certification report and DMR.

7.8.3 Representative Outfalls

The facility has three outfalls associated with industrial activity. However, based on the variation of activities taking place in the drainage areas, the representative outfall waiver will not be utilized.

8.0 SCHEDULE OF IMPLEMENTATION

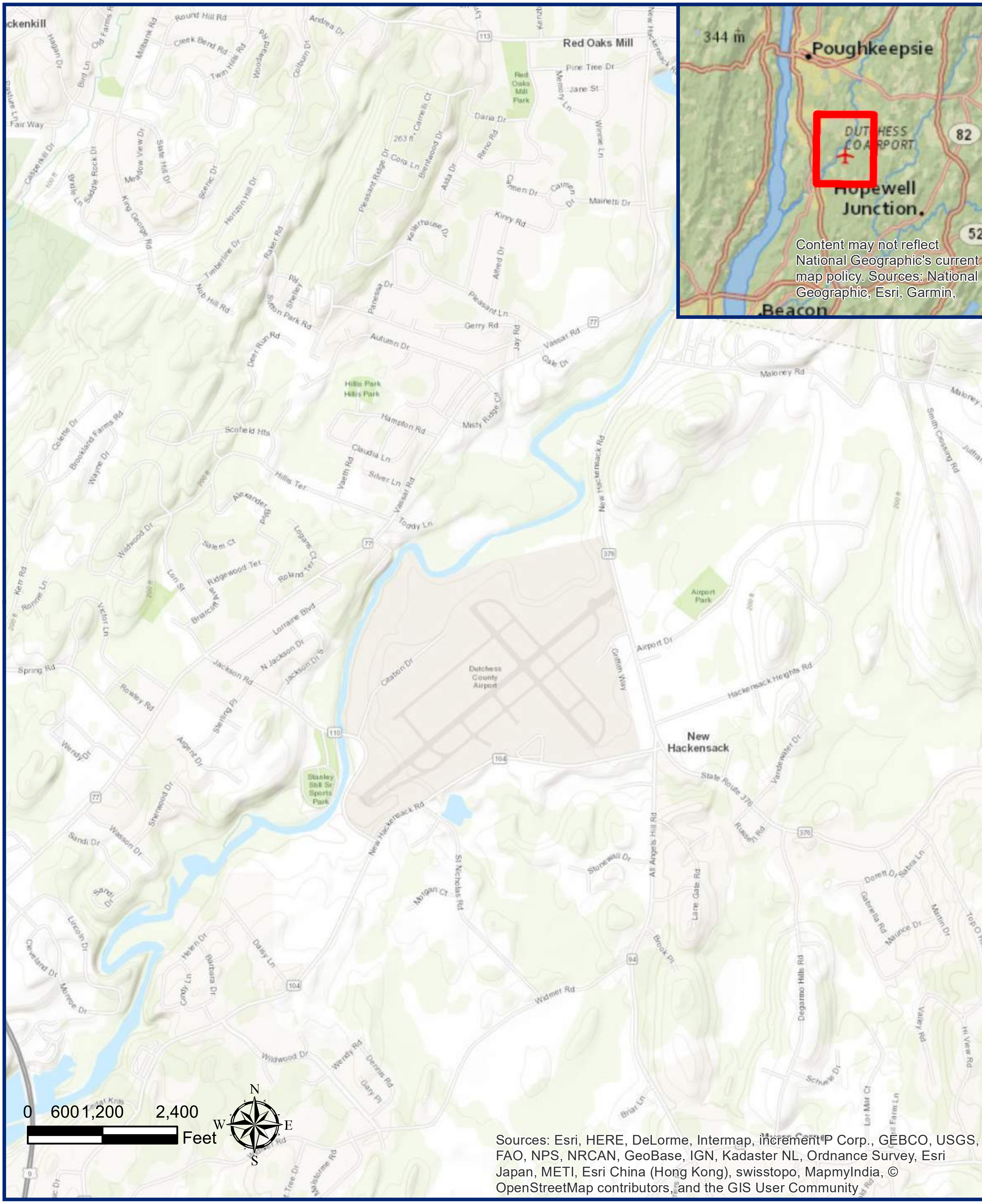
The following Schedule of Implementation is a summary of key action items described in this Plan. The following items must be performed and / or addressed in order to comply with the MSGP.

Table 8-1
Schedule of Implementation

Task	Plan Section	Monthly	Quarterly	Annually	As Needed
Plan Review / Update [3]	Page iii			X	X
Spill Recording [2]	6.4				X
Personnel Training [1]	6.6			X	X
Secondary Containment Discharge Screening [1]	7.1				X
Routine Facility Inspections [1]	7.2	X			
Visual Inspections [4]	7.3		X		
Dry Weather Flow Monitoring [1]	7.4			X	
Annual Certification Report [4]	7.5			X	
Site Compliance Evaluation [1]	7.6			X	

[1] Documentation forms for these tasks are located in **Appendix A**.
[2] A documentation form for this task is located in the facility's SPCC Plan.
[3] A documentation form for this task is located on *page iii*.
[4] Documentation forms are available on the NYSDEC website.

FIGURES



C&S COMPANIES®

Sormwater Pollution Prevention Plan (SWPPP)
Hudson Valley Airport
263 New Hackensack Road
Wappingers Falls, NY 12590

Figure 1

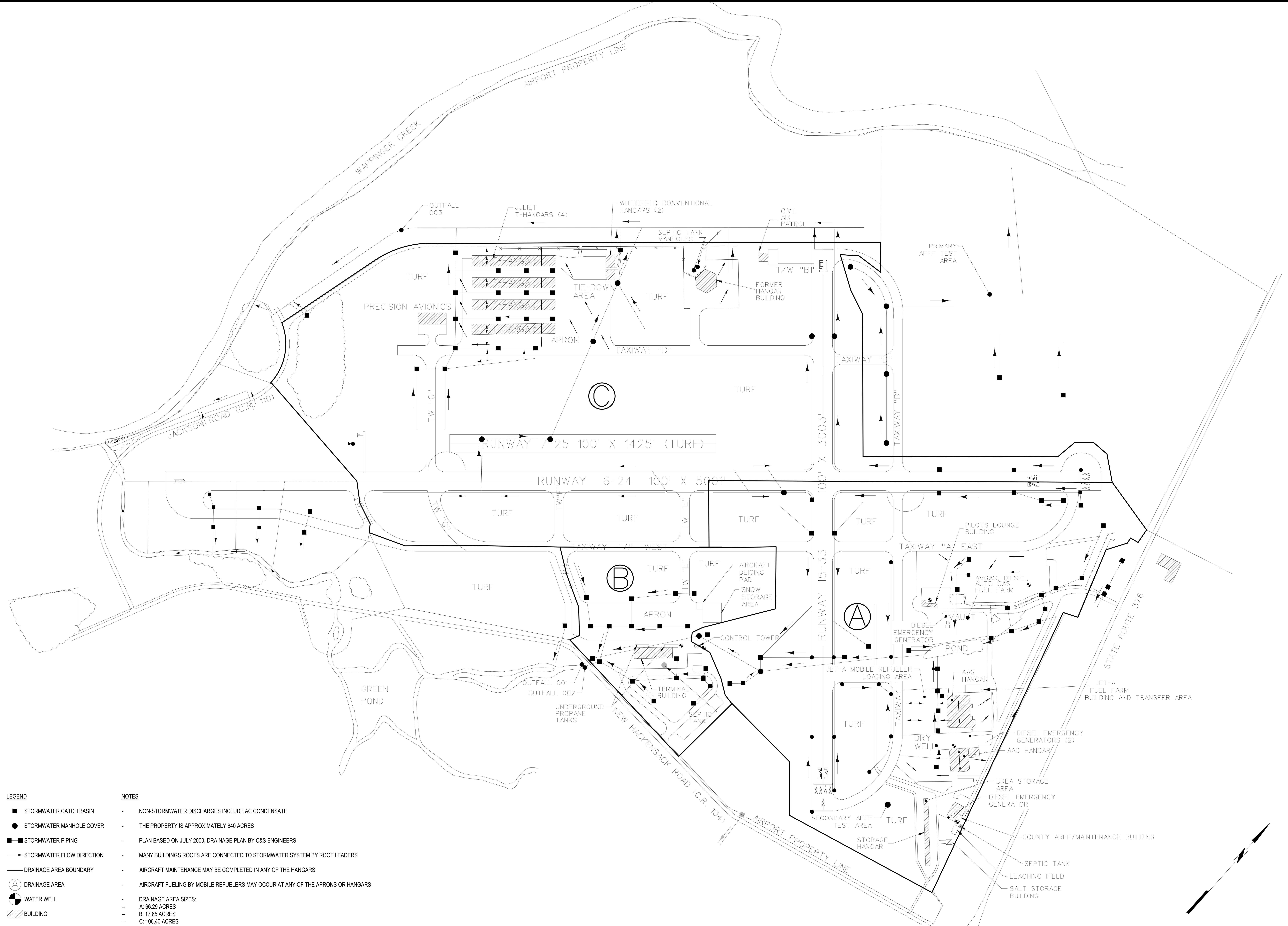
C&S COMPANIES®

Sormwater Pollution Prevention Plan (SWPPP)
Hudson Valley Airport
263 New Hackensack Road
Wappingers Falls, NY 12590

Figure 2

C&S COMPANIES®
C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, New York 13212
Phone: 315-455-2000
Fax: 315-455-9667
www.cscos.com

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
HUDSON VALLEY AIRPORT
263 NEW HACKENSACK ROAD
WAPPINGERS FALLS, NY 12590



LEGEND

- STORMWATER CATCH BASIN
- STORMWATER MANHOLE COVER
- STORMWATER PIPING
- STORMWATER FLOW DIRECTION
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA
- WATER WELL
- BUILDING

NOTES

- NON-STORMWATER DISCHARGES INCLUDE AC CONDENSATE
- THE PROPERTY IS APPROXIMATELY 640 ACRES
- PLAN BASED ON JULY 2000, DRAINAGE PLAN BY C&S ENGINEERS
- MANY BUILDINGS ROOFS ARE CONNECTED TO STORMWATER SYSTEM BY ROOF LEADERS
- AIRCRAFT MAINTENANCE MAY BE COMPLETED IN ANY OF THE HANGARS
- AIRCRAFT FUELING BY MOBILE REFUELERS MAY OCCUR AT ANY OF THE APRONS OR HANGARS
- DRAINAGE AREA SIZES:
  -- A: 66.29 ACRES
  -- B: 17.65 ACRES
  -- C: 106.40 ACRES

A1 SITE PLAN
SCALE: 11x17 1" = 500'-0" 22x34 1"=250'-0"

MARK	DATE	DESCRIPTION

REVISIONS

PROJECT NO:	128.325.001
DATE:	MAY 2018
DRAWN BY:	JCT
DESIGNED BY:	JCT
CHECKED BY:	MDH

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK EDUCATION LAW

SWPPP SITE PLAN

FIGURE 3

May 22, 2018 – 8:48am
F:\Project\128 – DUTCHESS COUNTY\128325001 – Hudson Valley Airport Industrial SWPPP\Planning-Study\CADD\Hudson Valley Drainage 2018.dwg

APPENDIX A

Inspection Checklists & Forms

Routine Facility Inspection Checklist

Routine Facility Inspection Checklist
Hudson Valley Regional Airport

Inspector:

Date:

Time:

Inspection Item	Yes	No	NA	Comments
Property Exterior				
1a. Are there totes, drums, or other containers storing chemicals or oils outdoors?				
1b. Are they in poor condition, leaking, uncovered, or uncontained?				
1c . Are any empty drums corroded or otherwise soiled?				
2. Is there evidence of spills in areas where aircraft are fueled?				
3. Is there evidence of spills in the bulk fuel loading / offloading areas?				
4. Is there evidence of solids such as sediment, stones, wood, metal, or trash on the property exterior?				
5. Is there evidence of solids such as sediment, stones, wood, metal, or trash within the stormwater catch basins or outfalls?				
6. Is there stressed or dead vegetation in the vicinity of the deicing pad / snow storage area?				
7. Is there evidence of glycol de-icing outside of the dedicated area?				
8. Is salt being improperly stored or accumulated outside of the barn?				
9a. Are there dumpsters that are uncovered or in poor condition?				
9b. Do the covers need to be adjusted or repaired?				
10. Are there areas of erosion that require corrective actions?				
11. Are there any other areas of concern that could potentially impact the storm water quality in the area?				
12. Are BMPs ineffective or not functioning as designed?				
13. Are there any spill response kits missing absorbents, booms, protective equipment, etc?				

Inspection Item	Yes	No	NA	Comments
Interior				
14. Are there oil or chemical products stored near overhead doors or mandoors that have the potential to escape the building?				
15. Are oil, chemical, or paint containers improperly stored, leaking, or being handled improperly?				
16. Have maintenance activities caused or have the potential to impact stormwater?				
17. Are there any other areas of concern that could potentially impact stormwater quality?				
18. Are any of the spill response kits missing absorbents, booms, protective equipment, etc?				

Notes:

All "YES" responses are indicative of an actual or suspected source of stormwater contamination. The Director of Aviation should be notified of all YES responses. In addition, all YES responses must be followed up with an attempt to identify the source and steps to prevent a reoccurance.

Item 1: It is Airport policy that totes, drums, and containers containing oils or chemicals be stored indoors and never outdoors. If this condition is observed, notify your supervisor. The item should be corrected as necessary and safely moved indoors.

Items 4 / 5: The exterior grounds and catch basins must be cleaned periodically to prevent runoff of TSS and contaminant laden stormwater.

Item 5: The MSGP reqires that catch basins be cleaned when or before the sump reaches 2/3 capacity.

Item 9: The MSGP requires that dumpsters be covered or contained.

Inspection Item	Yes	No	NA	Comments
All ***Yes*** answers must be addressed below (use additional page if necessary)				
Problems Found (if any):				
Who was Notified of the Problems:				
Corrective Actions Taken:				

Annual Dry Weather Flow Monitoring Form

ANNUAL DRY WEATHER INSPECTION FORM

INSTRUCTIONS:

1. This inspection must be performed annually following three days of dry weather (i.e. no precipitation of any kind).
2. The purpose of this inspection is to verify that there is no discharge of liquids (e.g., process wastewater) from the facility to the stormwater outfalls.
3. The inspection will be completed at the stormwater outfalls by visual inspection. If inspection was completed by a method other than visual, describe the testing / evaluation method utilized and attach the results. Record all inspection results below.
4. Flowing water/liquid, or recent signs of flowing water/liquid, during dry weather is evidence of a non-storm water discharge. If non-storm water discharges are detected they must be reported to the Facility Response Coordinators immediately.
5. This inspection form and original signatures must be maintained with the SWPPP.

OUTFALL INSPECTION:

1. Circle the outfall number(s) that was(were) inspected: 001, 002, 003
2. Circle non-stormwater discharges that may be present at facility: Air Conditioning Condensate, Landscaping Water, Building and/or Pavement Wash Water, Footing Drainage, Hydrant Waterline Flushings, and / or Other(s): ______________________________
3. Was a discharge, or evidence of discharge, observed (describe evidence)? ______________________________
4. If yes, what is the likely source of the discharge? ______________________________
5. What follow-up actions are to be taken to determine and / or eliminate the source? ______________________________
6. What is the date that all follow-up actions were completed? ______________________________

INSPECTION BLOCK:

INPECTOR'S NAME	
INPECTOR'S SIGNATURE	
INPECTOR'S TITLE	
INPECTION DATE	

CERTIFICATION BLOCK: *Based on my inspection, I certify that there are no non-stormwater discharges from this facility. The certifier must be a president, secretary, treasurer, or vice-president in charge of principal business function or a manager authorized to make management decisions.*

CERTIFIER'S NAME	
CERTIFIER'S SIGNATURE	
CERTIFIER'S TITLE	
DATE OF CERTIFICATION	

Note: If a non-stormwater discharge is discovered, the facility must identify its source to determine whether it is an authorized discharge. The facility must modify the SWPPP to address any newly identified allowable non-stormwater discharges. The facility must notify the DEC within 14 days of any non-stormwater discharge that cannot be easily eliminated.

Annual Site Compliance Evaluation

Annual Site Compliance Evaluation
Hudson Valley Regional Airport

Inspector:

Date:

Time:

Weather:

Inspection Item	Yes	No	Comments
SWPPP Review			
Are the individuals currently responsible for implementing the SWPPP inconsistent with those names referenced in the Plan?			
Are the quantities and types of oil / chemical products described / listed within the Plan inconsistent with those present at the facility? Explain.			
Are the measures to reduce pollutant loading (e.g. BMPs, inspections, training and recordkeeping) inadequate or improperly implemented? Explain.			
Are there items or areas within the Plan that are outdated or inconsistent? Explain.			
Have any non-stormwater discharges been added to the facility? List.			
Has the facility failed to complete the required sampling, inspections, and visual monitoring?			
Has the required sampling, inspections, and visual monitoring revealed any incidents of non-compliance? Explain.			
Have any operations been added which could impact stormwater?			
Have any material spills occurred since the last evaluation that have or will impact stormwater quality?			
Physical Inspection			
Do any of the following areas which have the potential to contribute to storm water discharge have evidence of, or the potential for, pollutants to enter the drainage system?			
Fuel Storage Tanks			
Fuel Offloading / Loading Areas			
Oil and Chemical Drums / Totes			
Drum / Tote Transfer Areas			
Salt Storage			
De-icing Pad			
Snow Storage Area			
Vehicle Maintenance or Cleaning Areas			
Equipment Maintenance or Cleaning Areas			
Aircraft Maintenance or Cleaning Areas			
Leaky Vehicles, Equipment, or Aircraft			
Exterior Storage of Used Parts, Equipment, etc.			
Waste Hoppers / Dumpsters, Residue or Trash			
Is there any evidence of tracking or blowing of sediment, industrial materials, raw or finished products, etc.? Explain.			
Does inspection of the outfalls indicate that BMPs are ineffective in preventing impacts to receiving waters? Explain.			
Are the structural stormwater control measures not intact or not in proper working order? Explain.			
Were unauthorized or allowable non-stormwater discharges (not listed in the SWPPP) observed? Explain.			
Did inspection of areas found to be the source of pollutants during the year, indicate continued concern? Explain.			
Is there any evidence of industrial stormwater pollution on the property exterior?			
Is spill response equipment inadequate to effectively respond to a release?			

Inspector:

Date:

Time:

Weather:

Inspection Item	Yes	No	Comments
Results of Annual Comprehensive Evaluation of Site Compliance			
As a result of the completion of this evaluation, does the SWPPP require revision?			
All *Yes* answers must be addressed below (use additional page if necessary)			

" I certify under penalty of law that this document and all attachments were prepared under my direction supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Responsible Corporate Officer Print Name

Responsible Corporate Officer Signature

SWPPP Training Record Form

SWPPP Training Record Form

Date of Training: Person Conducting Training:

By signing below, I acknowledge that I have been trained on the requirements listed in the airport's SWPP Plan. I understand the information presented and had the opportunity to ask questions.

Person Trained	Person Trained

APPENDIX B

Stormwater Sampling / Monitoring Data

APPENDIX C

NOI, NOI Authorization Letter, and NYSDEC Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES MULTI-SECTOR GENERAL PERMIT

FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

Permit No. GP-0-17-004

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: March 01, 2018

Expiration Date: February 28, 2023

John J. Ferguson
Chief Permit Administrator

2.16.18

Authorized Signature

Date

Address: NYSDEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

Preface

The Clean Water Act (CWA)[1] requires that *stormwater discharges associated with industrial activity* from a *point source* to *waters of the United States* are unlawful, unless authorized by a *National Pollutant Discharge Elimination System (NPDES)* permit. New York's *State Pollutant Discharge Elimination System (SPDES)* is a NPDES-approved program with permits issued in accordance with the *Environmental Conservation Law* (*ECL*).

Coverage under the Multi-Sector General Permit for *Stormwater Discharges Associated with Industrial Activity* (MSGP) can be obtained by facilities, that conduct industrial activities identified within 40 CFR Part 122.26(b)(14)(i) through (ix) and (xi), with *stormwater* discharges to *surface waters of the State* from a *point source*.

To obtain coverage under this permit, an eligible facility must submit a Notice of Intent (NOI) form. Blank NOI forms are available by calling (518) 402-8111 or can be downloaded from the *Department*'s website at: http://www.dec.ny.gov

Be sure to review and understand the requirements that apply to your facility. This permit includes general requirements applicable to all facilities with permit coverage (Parts I through VI) and industry specific requirements in Part VII which are applicable to 29 different industrial activities.

This MSGP, identified as GP-0-17-004, is effective on March 01, 2018 and will expire on February 28, 2023.

NOTE
All italicized words within this *SPDES General Permit* are defined in Part VIII. Acronyms and Definitions

[1] Also known as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972 (Pub.L. 92-500, as amended Pub. L. 92-217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq.)

Table of Contents

Part I – Coverage under this Permit

A. Applicability

1. Coverage under this permit can be obtained in all areas of New York State where the *Department* implements CWA §402, where facilities:

   a. Conduct industrial activities identified within 40 CFR Part 122.26(b)(14)(i) through (ix) and (xi);

   b. Have a primary *industrial activity* that has a Standard Industrial Classification (SIC) code listed in Appendix B; and

   c. Have *stormwater discharges* to *surface waters of the State* from a *point source*.

2. An industrial facility that meets the criteria in Part I.A.1 that is owned *and* operated by a *municipality* covered by a *Municipal Separate Storm Sewer System (MS4)* Permit does not need coverage under this MSGP permit provided that the *MS4:*

   a. Includes the facility in the *MS4*'s *Stormwater* Management Program Plan;

   b. Implements the plan in accordance with the *MS4* Permit; and

   c. Completes all the applicable monitoring, corrective actions and reporting requirements specified in the MSGP. The deadlines for reporting are specified in the *MS4* permit.

B. Eligibility

Any *stormwater discharges* that are ineligible for coverage under Part I.C of this permit are not authorized by this permit and the *owner or operator* must either apply for a separate SPDES permit to cover those ineligible *discharges* or take steps necessary to make the *discharges* eligible for coverage under this permit.

1. Stormwater Discharges Authorized

Subject to compliance with the terms and conditions of this permit, the following *stormwater discharges* are authorized by this permit.

a. *Stormwater discharges* associated with industrial activities whose primary *industrial activity* has a Standard Industrial Classification (SIC) code listed in Appendix B.

b. *Discharges* subject to numeric effluent limitations listed in Part IV.F.3.e or Appendix D.

c. *Discharges* to impaired waterbodies that meet the requirements of Part II.C.2.

d. This permit also provides permit coverage to facilities in Sectors J and L for construction activities pursuant to 40 CFR 122.26(b)(14)(x).

e. *Stormwater discharges associated with industrial activity* that are mixed with stormwater *discharges* authorized under a different *SPDES* general permit or an *individual SPDES permit* provided that all *discharges* are in compliance with the terms and conditions of the various permits;

f. *Stormwater discharges associated with industrial activity* which are authorized by this permit may be combined with other sources of stormwater which are not classified as associated with *industrial activity* pursuant to 40 CFR 122.26(b)(14), provided that the combined *discharge* is in compliance with this permit and has not been designated by the Department as requiring an individual SPDES Permit.

g. *Stormwater discharges associated with industrial activity* listed in Part I.C.2 are eligible for coverage if the Department makes a determination that coverage under this general permit will not result in backsliding as specified in 6 NYCRR 750-1.10.

2. *Non-Stormwater Discharges Authorized*

Subject to compliance with the terms and conditions of this permit, only the following non-*stormwater discharges are authorized* by this permit provided that the SWPPP contains the documentation specified in Part III.A.7.f.

a. Non-*stormwater discharges* listed in Part 750-1.2(a)(29)(vi), with the following exception:

- *Discharges* from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned.

b. Incidental windblown mist from cooling towers that collect on rooftops or adjacent portions of the facility, but not intentional *discharges* from cooling tower (e.g.; "piped" cooling tower blowdown or drains).

C. Activities which are Ineligible for Coverage under this General Permit

The following are **not** authorized by this permit:

1. *Discharges* from *industrial activity* that are mixed with sources of non-*stormwater* other than those expressly authorized under this permit.

2. Unless otherwise determined by the Department to be eligible under Part I.B.g, *stormwater discharges from industrial activity* where:

a. an *individual SPDES permit* authorizing such *discharges* has been revoked, suspended or denied;

b. the facility has failed to renew an expired *individual SPDES permit* which authorized such *discharges*; or

c. the *discharge* is covered by another SPDES permit.

3. *Discharges* from *industrial activity* which are subject to an *effluent limitation guideline* addressing *stormwater* which is not specifically listed in Table IV-3 or Appendix D (or a combination of *stormwater* and process water);

4. *Discharges* from *industrial activity* from *construction activities*, except *stormwater discharges* from portions of a construction site at facilities covered under Sectors J & L or that can be classified as an *industrial activity* under 40 CFR 122.26(b)(14)(i) through (ix) or (xi).

5. *Discharges from industrial activities* that may adversely affect an endangered or threatened species, or its critical habitat, unless the *owner or operator* has obtained a permit issued pursuant to Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (NYCRR) Part 182 for the facility or the *Department* has issued a letter of non-jurisdiction for the facility.

6. *Discharges* occurring on federal lands from *industrial activity* from either: inactive mining, inactive landfills, or inactive oil and gas operations where an *owner or operator* cannot be identified.

7. *Discharges* from *industrial activity* to impaired waterbodies at facilities that fail to maintain eligibility in accordance with Part II.C.2.

8. *Discharges* of hazardous substances (as listed in 6 NYCRR Part 597) or petroleum.

D. Permit Authorization

1. How to Obtain Authorization

a. To obtain authorization under this permit, the *owner or operator* of an eligible facility must:

(1) Develop and implement a *Stormwater* Pollution Prevention Plan (SWPPP) or update the existing SWPPP, in accordance with the requirements in Part III and applicable sections of Part VII prior to submitting the NOI; and

(2) Submit a complete Notice of Intent in accordance with Part I.D.2 and signed in accordance with Appendix H.8. The NOI certifies that the facility is eligible for coverage according to Part I.B, and provides information on the facility's industrial activities and related *discharges*.

- If more than one activity listed in Appendix B is being performed at a facility, all SIC codes must be included in the NOI submitted to the *Department* to gain or renew coverage under MSGP.

b. New *stormwater discharges associated with industrial activity* which require any other *Uniform Procedures Act* permits (*Environmental Conservation Law*, 6 NYCRR Part 621) cannot be covered under this permit until the other required permits are obtained (see Appendix E). In addition to the requirements in Part I.D.1.a, new dischargers must:

(1) Satisfy any project review pursuant to the State Environmental Quality Review Act ("SEQRA"), when SEQRA is applicable (see Appendix E). See the Department's website (http://www.dec.ny.gov/) for more information; and

(2) Obtain all necessary Department permits subject to the Uniform Procedures Act ("UPA") (see 6 NYCRR Part 621), unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4) (see Appendix E).

(3) Submit a report including the information specified in Appendix E with the NOI. A copy of this report must be retained with the SWPPP.

2. *Submitting the Notice of Intent*

a. An *owner or operator* of a facility meeting the eligibility requirements in Part I.B must submit a complete NOI, which is signed in accordance with Appendix H.8, to the *Department.*

(1) Prior to December 20, 2020, the *owner or operator* may elect to submit the Notice of Intent by mailing a paper form to the address below or by using the *Department*'s online NOI.

(2) Beginning December 21, 2020 and in accordance with the EPA's *NPDES* Electronic Reporting Rule, the *owner or operator* must submit the NOI electronically using the *Department*'s online NOI. Both versions of the NOI are located on the *Department*'s website http://www.dec.ny.gov/.

b. An *owner or operator* who submits a complete NOI will be authorized to *discharge stormwater* under the terms and conditions of this permit, unless otherwise notified by the Department, Thirty (30) calendar days after the date the *Department* receives a complete NOI (electronic or paper).

c. The paper NOI is to be submitted to the following address:

MSGP Permit Coordinator
NYSDEC, Division of Water
Bureau of Water Permits
625 Broadway
Albany, NY 12233-3505

3. *Modifying the Notice of Intent*

After gaining authorization under this permit, an owner or operator must notify the Department of any corrections or updates to the information provided in the original NOI. All modifications must be reported. Stormwater Discharges associated with industrial activity or outfalls not included in the most recent NOI that is on file at the Department are not authorized unless and until the corrections or updates have been received by the Department.

In order to modify the original NOI, an *owner or operator* must submit corrections or updated information, by submitting:

a. Changes electronically using the Departments electronic NOI; or

b. A completed paper NOI.

Modifications to the original NOI become effective on the date the *Department* receives the electronic NOI or a complete paper NOI.

4. *Change of Owner or Operator*

When the *owner or operator* of a facility changes, the original *owner or operator* should notify the new *owner or operator* in writing of the possible requirement to have coverage under this permit.

a. The original *owner or operator* must submit the Notice of Termination to end coverage under this permit for their facility in accordance with Part I.E; and,

b. The new *owner or operator* shall refer to Part I of this permit to determine if they need coverage under this permit.

c. The original *owner or operator* will continue to be responsible for compliance with all permit conditions and fees until the NOT has been received.

5. Conditional Exclusion for No Exposure

a. Facilities may qualify for a "Conditional Exclusion for No Exposure" when all industrial activities and materials are completely sheltered from exposure to rain, snow, snowmelt and/or runoff. Facilities qualifying for this exclusion are not required to obtain coverage under this permit.

   (1) Facilities with uncovered parking areas for vehicles awaiting maintenance may be eligible for this waiver if only routine maintenance is performed inside and all other *No Exposure* criteria are met.

b. Facilities accepting or repairing disabled vehicles and/or vehicles that have been involved in accidents are not eligible for the Conditional Exclusion for *No Exposure*.

c. To obtain the "Conditional Exclusion of No Exposure", the *owner or operator* must submit a certification of *no exposure* to the *Department* using forms provided by the *Department*. This certification must be submitted once every 5 years and is non-transferable.

d. Facilities must maintain the condition of *no exposure*. The *no exposure* exclusion ceases to apply when industrial activities or materials become exposed. The *Department* reserves the right to require permit coverage when *stormwater discharges* from the facility are likely to have an adverse impact on water quality.

E. Terminating Coverage

To terminate permit coverage, the *owner or operator* must submit a complete Notice of Termination (NOT) which is signed in accordance with Appendix H.8. The *owner or operator* continues to be responsible for meeting permit requirements and payment of annual fees until a complete NOT is received by the *Department.* The *owner or operator* must submit an NOT to terminate coverage under this permit when one or more of the following conditions are met:

1. When all *stormwater discharges* associated with *industrial activity* authorized by this permit are eliminated;

2. If all *stormwater discharges* are conveyed to a sanitary sewer, treatment works or a combined sewer system and the *owner or operator* of such system has accepted responsibility or approved connection for the *discharge*;

3. All industrial activities covered under this *SPDES* permit cease AND all materials, equipment or other potential *pollutants*, including but not limited to, residue in soils are removed;

4. When a different *SPDES* authorization for all *discharges* covered under this permit becomes effective; or

5. When the *owner or operator* of the *stormwater discharges* associated with *industrial activity* at a facility changes. (See Part I.D.4)

F. Deadlines for submittal of NOIs and NOTs and Changes to the NOI

1. New *discharger*s or other owners or operators of facilities who intend to obtain coverage under this general permit shall submit a complete NOI according to the following schedule:

   a. For electronic NOIs - at least thirty (30) calendar days before *industrial activity* begins at the facility; or

   b. For paper NOIs - at least thirty (30) calendar days before *industrial activity* begins at the facility.

2. Facilities with effective coverage on September 30, 2017, under the *SPDES* General Permit for *Stormwater Discharges Associated with Industrial Activity* (GP-0-12-001), are eligible for continued coverage under this permit (GP-0-17-004) on an interim basis for up to one-hundred twenty (120) calendar days from the effective date of the permit. During this interim period, an *owner or operator* must:

   a. Update the facility's SWPPP to comply with the requirements of this permit prior to submitting the NOI; and,

   b. Submit a complete NOI, signed in accordance with Appendix H.8. The complete NOI must be received within ninety (90) calendar days from the date this permit becomes effective.

3. When the *owner or operator* of a facility which is covered by this permit changes, the previous *owner or operator* must submit an NOT in accordance with Part I.E. The new *owner or operator* shall refer to Part I of this permit to determine if they need coverage under this permit.

4. An Owner or Operator must promptly notify the *Department* of any changes or corrections to the submitted NOI by submitting changes according to the following procedures:

   a. For electronic NOIs - If there is an electronic NOI on file with the Department, submit the changes/updates to the NOI electronically;

   b. For Paper NOIs - submit a new fully completed NOI. An incomplete NOI will not be accepted by the Department.

   Stormwater discharges from industrial activities or *outfalls* not included in previously submitted NOIs are not authorized until a complete NOI is received.

Part II – Effluent Limitations

Effluent limits are required to *minimize* the *discharge* of *pollutants*. The term "*minimize*" means reduce and/or eliminate to the extent achievable using *control measures* (including *Best Management Practices* (BMPs) selected and designed in accordance with Part II.D) that are technologically available and economically practicable and achievable in light of best industry practice. *Control measures* are selected to meet the limits (non-numeric, numeric and water quality based) contained in this Part.

A. Non-Numeric Technology Based Effluent Limits

The Owner or Operator must comply with the following non-numeric effluent limits as well as any sector-specific non-numeric effluent limits in Part VII.

1. Minimize Exposure

The *owner or operator* must *minimize* the exposure of manufacturing, processing, and material storage areas to rain, snow, snowmelt, and runoff in order to *minimize pollutant discharges* by either locating these industrial materials and activities inside or protecting them with storm resistant coverings. This includes areas used for loading and unloading, storage, disposal, cleaning, maintenance, and fueling operations. Unless not technologically possible or not economically practicable and achievable in light of best industry practices, the *owner or operator* must also:

a. Use grading, berming, or curbing to prevent runoff of contaminated flows and divert run-on away from these areas;

b. Locate materials, equipment, and activities so that leaks and spills are contained in existing containment and diversion systems (confine the storage of leaky or leak-prone vehicles and equipment awaiting maintenance to protected areas);

c. Clean up spills and leaks promptly using dry methods (e.g., absorbents) to prevent the *discharge* of *pollutants*;

d. Store leaky vehicles and equipment indoors or, if stored outdoors, use drip pans and absorbents;

e. Use spill/overflow protection equipment;

f. Perform all vehicle and/or equipment cleaning operations indoors, under cover, or in bermed areas that prevent runoff and run-on and also that capture any overspray; and ensure that all washwater drains to a proper collection system (i.e., not the *stormwater* drainage system);

g. Drain fluids from equipment and vehicles that will be decommissioned, and, for any equipment and vehicles that will remain unused for extended periods of time, inspect at least monthly for leaks; and

h. *Minimize* exposure of chemicals by replacing with a less toxic alternative.

Note: The *discharge* of vehicle and equipment washwater, including tank cleaning operations, is not authorized by this permit. These wastewaters must be covered under a separate *SPDES* permit, *discharge*d to a sanitary sewer in accordance with applicable industrial pretreatment requirements, or disposed of otherwise in accordance with applicable law.

2. Good Housekeeping

The *owner or operator* must keep clean all exposed areas that are potential sources of *pollutants.* The *owner or operator* must perform good housekeeping measures in order to *minimize pollutant discharges*, including but not limited to, the following:

a. Sweep or vacuum at regular intervals or, alternatively, wash down the area and collect and/or treat, and properly dispose of the washdown water;

b. Store materials in appropriate containers;

c. Keep all dumpster lids closed when not in use. For dumpsters and roll off boxes that do not have lids and could leak, ensure that *discharges* have a control (e.g., secondary containment, treatment); and,

d. Prevent the discharge of waste, garbage and floatable debris by keeping exposed areas free of such materials, or by intercepting them before they are *discharge*d;

- Plastic Materials Requirements: Facilities that handle pre-production plastic must implement *Best Management Practices* to eliminate *discharges* of plastic in *stormwater*. Examples of plastic material required to be addressed as *stormwater pollutants* include plastic resin pellets, powders, flakes, additives, regrind, scrap, waste and recycling.

3. Maintenance

a. In order to *minimize pollutant discharges* and achieve the effluent limits in this permit, the *owner or operator* must maintain all industrial equipment and systems and *control measures* in effective operating condition. This includes:

(1) Performing inspections and preventive maintenance of *stormwater* drainage, source controls, treatment systems, and plant equipment and systems that could fail and result in contamination of *stormwater*;

(2) Maintaining non-structural *control measures* (e.g., keep spill response supplies available, personnel appropriately trained);

(3) Inspecting and maintaining baghouses quarterly during periods of operation, or in accordance with manufacturers recommendations, to prevent the escape of dust from the system and immediately removing any accumulated dust at the base of the exterior baghouse; and,

(4) Cleaning catch basins when the depth of debris reaches two-thirds of the sump depth and keeping the debris surface at least six inches below the lowest outlet pipe.

b. Routine maintenance shall be performed to ensure BMPs are operating properly. When a BMP is not functioning to its designed effectiveness and is in need of repair or replacement:

(1) Maintenance shall be performed before the next anticipated storm event, or as necessary to maintain the continued effectiveness of stormwater controls. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable, but not more than 12 weeks after completion of the most recent routine facility inspection or the comprehensive site inspection, unless permission for a later date is granted in writing by the Department; and,

(2) All reasonable steps shall be taken to prevent or minimize the discharge of pollutants until the final repair or replacement is implemented, including cleaning up any contaminated surfaces so that the material will not be discharged during subsequent storm events.

4. Spill Prevention and Response Procedures

a. The *owner or operator* must *minimize* the potential for leaks, spills and other releases that may be exposed to *stormwater* and develop plans for effective response to such spills if or when they occur in order to *minimize pollutant discharges*. At a minimum, the *owner or operator* must:

(1) Plainly label containers (e.g., “Used Oil,” “Spent Solvents,” “Fertilizers and Pesticides”) that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;

(2) Implement procedures for material storage and handling, including the use of secondary containment and barriers between material storage and traffic areas, or a similarly effective means designed to prevent the *discharge* of *pollutants* from these areas;

(3) Where practicable, protect industrial materials and activities with a storm resistant shelter to prevent exposure to rain, snow, snowmelt, or runoff;

(4) Develop training on the procedures for stopping, containing, and cleaning up leaks, spills, and other releases. As appropriate, execute such procedures as soon as possible;

(5) Keep spill kits on-site, located near areas where spills may occur or where a rapid response can be made; and

(6) Develop procedures for notification of the appropriate facility personnel, emergency response agencies, and regulatory agencies when a leak, spill, or other release occurs. If possible, one of these individuals should be a member of the *stormwater* pollution prevention team (see Part III.A.1). Any spills must be reported in accordance with Part VI.A.3.

b. Measures for cleaning up spills or leaks must be consistent with applicable petroleum bulk storage, chemical bulk storage or hazardous waste management regulations at 6 NYCRR Parts 596-599, 613 and 370-373.

c. This permit does not relieve the *owner or operator* of any reporting or other requirements related to spills or other releases of petroleum or hazardous substances. Any spill of a hazardous substance must be reported in accordance with 6 NYCRR 597.4. Any spill of petroleum must be reported in accordance with 6 NYCRR 613.6 or 17 NYCRR 32.3.

5. *Erosion and Sediment Controls*

The *owner or operator* must stabilize exposed areas and control runoff using structural and/or non-structural *control measures* to *minimize* onsite erosion and sedimentation. Erosion and Sediment Controls must be in accordance with the New York State Standards & Specification for Erosion & Sediment Control (2016). Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate equivalence to the technical standard.

6. *Management of Runoff*

The *owner or operator* must divert, infiltrate, reuse, contain, or otherwise reduce *stormwater* runoff, to *minimize pollutants* in the *discharges*.

7. *Salt Storage Piles or Piles Containing Salt*

In order to *minimize pollutant discharges* the *owner or operator* must enclose or cover storage piles of salt, or piles containing salt, used for deicing, maintenance of paved surfaces, or for other commercial or industrial purposes. The *owner or operator* must implement appropriate measures (e.g., good housekeeping, diversions, containment) to *minimize* exposure resulting from adding to or removing materials from the pile.

8. Employee Training

a. The *owner or operator* must train all employees who work in areas where industrial materials or activities are exposed to *stormwater*, or who are responsible for implementing activities necessary to meet the conditions of this permit (e.g., inspectors, maintenance personnel), including all members of the *Stormwater* Pollution Prevention Team.

b. At a minimum, all training must be conducted annually.

c. The *owner or operator* must ensure the following personnel understand the requirements of this permit and their specific responsibilities with respect to those requirements:

(1) Personnel who are responsible for the design, installation, maintenance, and/or repair of *control measures*;

(2) Personnel responsible for the storage and handling of chemicals and materials that could become contaminants found in *stormwater discharges*;

(3) Personnel who are responsible for conducting and documenting monitoring and inspections as required in Part IV; and,

(4) Personnel who are responsible for taking and documenting corrective actions as required in Part V.

d. Personnel identified in Part II.A.8.c must be trained in the following subjects if the subject is appropriate to the scope of their SWPPP responsibilities.

(1) An overview of what is in the SWPPP and the purpose of the SWPPP;

(2) Spill response procedures, good housekeeping, maintenance requirements and material management practices;

(3) How to recognize unauthorized *discharges;*

(4) The location of all controls on the site required by this permit, and how to evaluate their condition and maintenance needs;

(5) The proper procedures to follow with respect to permit's pollution prevention requirements, including sampling and reporting; and

(6) When and how to conduct inspections, record applicable findings, and take corrective actions.

9. Non-Stormwater Discharges

The *owner or operator* must eliminate non-*stormwater discharges* not authorized by a *SPDES* permit in accordance with Part I.B.2.

10. Waste, Garbage and Floatable Debris

The *owner or operator* must ensure that waste, garbage, and floatable debris are not *discharge*d to *surface waters of the state* by keeping exposed areas free of such materials or by intercepting them before they are *discharge*d.

11. Dust Generation and Vehicle Tracking of Industrial Materials

The *owner or operator* must *minimize* generation of dust and off-site tracking of raw, final, or waste materials in order to *minimize* the *pollutant discharges*.

12. Secondary Containment

The *owner or operator* must ensure that compliance is maintained with all applicable regulations including, but not limited to, those involving releases, registration, handling and storage of petroleum, chemical bulk and hazardous waste storage facilities (6 NYCRR 596-599, 613 and 370-373).

Where it is not feasible to eliminate *discharges* from handling and storage areas, the *owner or operator* must implement the following BMPs:

a. Loading and unloading areas shall be operated to *minimize* spills, leaks or the *discharge* of *pollutants* in *stormwater*. Protection such as roofs, overhangs or door skirts to enclose trailer ends at truck loading/unloading docks shall be provided as appropriate.

   (1) During deliveries, have staff familiar with spill prevention and response procedures present to ensure that any leaks/spills are immediately contained and cleaned up; and

b. Use of spill and overflow protection (e.g., drip pans, and/or other containment devices placed beneath fuel oil connectors to contain potential spillage during deliveries or from leaks at the connectors).

c. All spilled or leaked substances must be removed from secondary containment systems as soon as practical and for Chemical Bulk Storage (CBS) storage areas within 24 hours of the *owner or operator* discovering the spill, unless authorization is received from the *Department*.

   (1) The containment system must be thoroughly cleaned to remove any residual contamination which could cause contamination of *stormwater* and the resulting *discharge* of *pollutants* to *waters of the State*.

(2) Following spill cleanup the affected area must be completely flushed with clean water three times and the water removed after each flushing for proper disposal in an on-site or off-site wastewater treatment plant designed to treat and permitted to *discharge* such wastewater.

(3) The *owner or operator* shall test the first batch of *stormwater* following the spill cleanup to determine *discharge* acceptability. If the water contains no *pollutants* it may be *discharge*d, otherwise it must be disposed of as noted above. (See Part IV.F.1.e for the list of parameters to be sampled.)

d. *Stormwater* must be removed from a secondary containment system before it compromises the system's capacity. Each *discharge* may only proceed with the prior approval of the facility representative responsible for ensuring *SPDES* permit compliance. Bulk storage secondary containment drainage systems must be locked in a closed position except when the *owner or operator* is in the process of draining accumulated *stormwater*. Transfer area secondary containment drainage systems must be locked in a closed position during all transfers and must not be reopened unless the transfer area is clean of contaminants. *Stormwater discharges* from secondary containment systems should be avoided during periods of precipitation. A logbook shall be maintained on site noting, for each *discharge*:

- Screening method;
- Results of screening;
- Date time and volume; and,
- Supervising personnel.

e. Prohibited *Discharges* - In all cases, any *discharge* which contains a visible sheen, foam, or odor, or may cause or contribute to a violation of water quality is prohibited.

B. Numeric Effluent Limitations

The *owner or operator* of facilities listed in an industrial category subject to one or more of the *effluent limitations guidelines* identified in Appendix D, must meet the numeric effluent limits specified in the referenced Sector in Part VII.

C. Water Quality Based Effluent Limitations

1. Maintaining Water Quality Standards

a. The *Department* expects that compliance with the other conditions of this permit will control *discharges* necessary to meet applicable water quality standards. It shall be a violation of the *Environmental Conservation Law (ECL)* for any *discharge* authorized by this general permit to either cause or contribute to a violation of water quality standards as contained in 6 NYCRR Parts 700-705.

b. If there is evidence indicating that the *stormwater discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part V of this permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an *individual SPDES permit*. Failure to complete the required corrective action is a violation of this permit.

c. In all cases, any *discharge* which contains a visible sheen, foam, or odor, or may cause or contribute to a violation of water quality is prohibited.

2. Impaired Waters

a. *Discharges* to an *impaired waterbody* are not eligible for coverage under this permit if the cause of impairment is a *pollutant* of concern included in the *benchmark*s and/or numeric *effluent limitations* to which the facility is subject unless the facility:

(1) Prevents all exposure to *stormwater* of the *pollutant(s)* for which the waterbody is impaired; or

(2) Documents that the *pollutant* for which the waterbody is impaired is not present on-site; or

(3) Provides additional information in the SWPPP to *minimize* the *pollutant* of concern causing the impairment as specified in Part III.D.2.

b. If conditions at the facility conform with Part II.C.2.a(1) or (2) all analysis and documentation that supports eligibility must be maintained with the SWPPP.

D. Best Management Practices Selection and Design Considerations

The *owner or operator* must consider the following when selecting and designing *BMPs*:

a. How to prevent *stormwater* from interacting with and contacting *pollutants* and *pollutant* sources;

b. The use of *BMPs* in series or combination;

c. Assessment of the type of *pollutant*, the quantity and nature of the *pollutant(s)*, and their potential to impact the water quality of receiving waters;

d. Opportunities to combine the dual purposes of water quality protection and local flood control benefits, including physical impacts of high flows on streams (e.g., bank erosion, impairment of aquatic habitat, etc.);

e. Opportunities to offset the impact of *impervious areas* of the facility on groundwater recharge and base flows in local streams, taking into account the potential for groundwater contamination (i.e., *hotspots*);

f. Opportunities to attenuate flow using open vegetated swales and natural depressions;

g. Conservation and/or restoration of the riparian buffers of streams and rivers; and,

h. The use of treatment interceptors (e.g., swirl separators and sand filters).

Part III – *Stormwater* Pollution Prevention Plans

The SWPPP documents the practices and procedures to ensure compliance with the conditions of this permit, including the selection, design, installation and maintenance of *control measures* selected to meet *effluent limitations* in Parts II and VII.

The *owner or operator* is responsible for the implementation of the SWPPP.

Note: The SWPPP requirements of this general permit may be fulfilled by incorporating by reference other plans or documents such as an Erosion and Sediment Control (ESC) plan, a Mined Land Use Plan, a Spill Prevention Control and Countermeasure (SPCC) plan developed for the facility or *BMP* programs otherwise required for the facility provided that the incorporated plan(s) meet or exceed the SWPPP content requirements of Part III.A and the applicable activity-specific requirements in Part VII. All plans incorporated by reference into the SWPPP become enforceable under this permit; however, this enforcement is limited only to those aspects of these other plans that are specifically referenced to provide information or practices required for the SWPPP.

A. Contents of the SWPPP

All SWPPPs shall include, at a minimum:

1. *Pollution Prevention Team*

Identify the individuals (by name or title) and their role, in assisting the *owner or operator* in developing, implementing, maintaining and revising the facility's SWPPP.

2. *General Site Description*

A written description of:

a. Industrial activities occurring in each drainage area.

b. The name of the nearest receiving water(s), including intermittent streams and wetlands (mapped and federally regulated wetlands) that may receive *discharges* from the facility.

c. If *stormwater* is *discharge*d to an *MS4,* the SWPPP must identify the *MS4* operator and the receiving water to which the *MS4 discharges*.

d. The flow path of *stormwater* within the facility, and the general path of *stormwater* flows between the facility and the nearest surface waterbody(ies) and/or location(s) where *stormwater* enters an *MS4,* if applicable.

e. The run-on from adjacent properties, if present. The *owner or operator* may include an evaluation of how the quantity or quality of the *stormwater* running onto the facility impacts the facility's *stormwater discharges*.

f. Any *discharges* that are currently covered by another *SPDES* permit at the facility (e.g., process wastewater, sanitary wastewater, non-contact cooling water, etc.)

g. Size of the property in acres.

h. Provide an estimate of the percent imperviousness of the site using the following formula:

$$\frac{(\text{Area of Roofs + Area of Paved and Other Impervious Surfaces}) \times 100}{\text{Total Area of Facility}}$$

i. Locations of sensitive areas (e.g. *impaired waters*; listed threatened & endangered species or their critical habitat; etc.)

3. *Potential Pollutant Sources*

The SWPPP shall identify each area at the facility where industrial materials or activities are exposed to *stormwater* or from which authorized non-*stormwater discharges* originate, including any potential *pollutant* sources for which the facility has reporting requirements under the Emergency Planning and Community Right-To-Know Act (EPCRA), Section 313.

a. Industrial materials or activities include: industrial machinery; raw materials; intermediate products; byproducts; final products or waste products; and, material handling activities which includes storage, loading and unloading, transportation or conveyance of any raw material, intermediate product, final product or waste product.

b. For each separate area identified, the description must include:

(1) <u>Activities -</u> A list of the activities occurring in the area (e.g., material storage, equipment fueling and cleaning, cutting steel beams, etc.); and

(2) <u>*Pollutants*</u> - A list of the associated *pollutant(s)* or *pollutant* parameter(s) (e.g., crankcase oil, iron, biochemical oxygen demand, pH, etc.) for each activity. The *pollutant* list must include all *significant materials* that have been handled, treated, stored or disposed in a manner to allow exposure to *stormwater* for a period of three years before being covered under this permit.

(3) <u>Potential for presence in *stormwater*</u> - For each area of the facility that generates *stormwater discharges associated with industrial activity* a prediction of the direction of flow, and the likelihood of the *industrial*

activity to contaminate the *stormwater discharge*. Factors to consider include the toxicity of chemicals; quantity of chemicals used, produced or *discharge*d; the likelihood of contact with *stormwater*; and history of *reportable* leaks or spills of toxic or hazardous *pollutants*.

4. Spills and Releases

a. The SWPPP must clearly identify areas where potential spills or releases can contribute to *pollutants* in *stormwater discharges* and their accompanying drainage points.

b. For areas that are exposed to precipitation or that otherwise drain to a *stormwater* conveyance to be covered under this permit, the SWPPP must include a list of *reportable* spills or releases[2] of petroleum and hazardous substances or other *pollutants*, including unauthorized *non-stormwater discharges,* that may adversely affect water quality that occurred during the three-year period prior to the date of the submission of a NOI. The list must be updated when *reportable* spills or releases occur.

c. Following any spill or release, the *owner or operator* must evaluate the adequacy of the BMPs identified in the facility's SWPPP. If the BMPs are inadequate, the SWPPP must be updated to identify new BMPs that will prevent reoccurrence and improve the emergency response to such releases.

d. Document when training occurs on the procedures for stopping, containing, and cleaning up leaks, spills, and other releases.

e. Define and document the appropriate facility personnel, emergency response agencies, and regulatory agencies to be notified when a leak, spill, or other release occurs.

5. General Location Map

A general location map (e.g., USGS quadrangle or other map) with enough detail to identify the location of the facility and the receiving waters and locations where *stormwater* enters an *MS4*, if applicable, within one mile of the facility.

6. Site Map

A site map identifying the following:

a. Property boundaries and size in acres;

b. Location and extent of significant structures (including materials shelters), and impervious surfaces;

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[2] This may also include releases of petroleum or hazardous substances that are not in excess of reporting quantities but which may still cause or contribute to significant water quality impairment. For example, the reportable quantity for ammonia is listed to be 100 pounds and releases well below this threshold will cause water quality impairment and must be addressed.

c. Location of each *outfall* labeled with the *outfall* identification, including *outfalls* with *discharges* authorized under other *SPDES* permits;

d. The approximate outline of the drainage area to each *outfall;*

e. Locations of haul and access roads;

f. Rail cars and tracks;

g. Arrows showing direction of *stormwater* flow;

h. Location of all receiving waters in the immediate vicinity of the facility, indicating if any of the waters are impaired and, if so, whether the waters have *TMDLs* established for them;

i. Location of *MS4s* and where the *stormwater discharges* to them;

j. Location of all *stormwater* conveyances including ditches, pipes, and swales;

k. Locations where *stormwater* flows have significant potential to cause erosion;

l. Location and source of run-on from adjacent property containing significant quantities of *pollutants* and/or volume of concern to the facility;

m. Locations of the following areas where such areas are exposed to precipitation or *stormwater* run-on:

  - Fueling stations;
  - Vehicle and equipment maintenance and/or cleaning areas;
  - Loading/unloading areas;
  - Locations used for the treatment, storage or disposal of wastes;
  - Liquid storage tanks;
  - Processing and storage areas;
  - Locations where significant materials, fuel or chemicals are stored and transferred;
  - Locations where vehicles and/or machinery are stored when not in use
  - Transfer areas for substances in bulk;
  - Locations of potential *pollutant* sources identified under Part III.A.3;
  - Location and description of non-*stormwater discharges* listed in Part I.B.2;
  - Locations where major spills or leaks identified under Part III.A.4 have occurred;
  - Locations of all *stormwater* monitoring points;

- Locations of all existing structural *BMP*s.

7. *Stormwater Controls*

The SWPPP must document in writing the location and type of *BMPs* installed and implemented at the facility to achieve the non-numeric effluent limits in Part II.A and where applicable in Part VII, and the sector specific numeric *effluent limitations* in Part VII. The SWPPP shall describe how each *BMP* is being implemented for all the potential *pollutant* sources identified in Part III.A.3.

If the *owner or operator* determines that any of the BMPs described in Part II.A, or any sector-specific BMPs in Part VII, are not appropriate for the facility, a written explanation of why they are not appropriate shall be included in the SWPPP. If new or innovative BMPs not listed in this permit are being used, descriptions of them shall be included in this section of the SWPPP.

a. **Good Housekeeping** - The SWPPP must describe all good housekeeping practices that are being implemented by the *owner or operator* including those described in Part II.A.2 to *minimize pollutant discharges* from all exposed areas that are potential sources of *pollutants*.

b. **Facility inspections** - The SWPPP must describe procedures for scheduling, completing and recording results of routine and comprehensive site inspections at frequencies meeting or exceeding those specified in Part IV of this permit.

c. **Maintenance and Repair**

(1) The SWPPP must describe a preventative maintenance program that includes timely inspection, maintenance and repairs of all industrial equipment and systems.

(2) The SWPPP must describe a preventative maintenance program that includes timely inspection, maintenance and repairs of structural and non-structural BMPs.

(3) The SWPPP must describe inspection and maintenance procedures for baghouses to prevent the escape of dust from the system and the immediate removal of accumulated dust at the base of the exterior baghouse.

(4) The SWPPP must include procedures for catch basin cleaning.

d. **Spill Prevention and Response Procedures**

(1) The SWPPP must describe the procedures that will be followed for cleaning up spills or leaks. The procedures and necessary spill response equipment must be made available to those employees who may cause or detect a spill or leak.

(2) The SWPPP must describe procedures for notification of the appropriate facility personnel, emergency response agencies, and regulatory agencies when a leak, spill, or other release occurs. If possible, one of these individuals should be a member of the *stormwater* pollution prevention team (see Part III.A.1).

e. **Employee Training and Education -** The SWPPP must describe the *stormwater* training program required for individuals conducting *industrial activity* at the facility. The description must include:

(1) The specific training given (see Part II.A.8.d)

(2) The target audience (e.g. employees in positions responsible for specific tasks, club members performing engine repair, etc.).

(3) Identify periodic dates for such training (e.g., annually, every six months during the months of July and January). An annual signed and dated employee training log must be kept in the SWPPP.

f. **Document Non-*Stormwater Discharges* -** Non-*stormwater discharges* listed in Part I.B.2 must have the following information documented:

(1) ***Discharge* Certification** - The SWPPP must include a certification that all *discharges* have been tested or evaluated for the presence of non-*stormwater discharges*. A copy of the certification must be included in the SWPPP at the facility. The certification must include:

(a) The date of any testing and/or evaluation;

(b) Identification of potential significant sources of non-*stormwater discharges* at the site;

(c) A description of the results of any test and/or evaluation for the presence of non-*stormwater discharges*;

(d) A description of the evaluation criteria or testing method used; and

(e) A list of the *outfalls* or on-site drainage points that were directly observed during the test.

(2) **Detail Non-*Stormwater Discharges*** - The sources of non-*stormwater discharges* listed in Part I.B.2 are authorized *discharges* under this permit provided the *owner or operator* includes the following information in the SWPPP:

(a) Identification of each authorized non-*stormwater* source (flows from emergency/unplanned firefighting activities do not need to be identified);

(b) The location where the non-*stormwater discharge* is likely to occur;

(c) Descriptions of appropriate BMPs for each source; and

(d) If mist blown from cooling towers is included as one of the authorized non-*stormwater discharges* from the facility, the *owner or operator* must specifically evaluate the potential for the *discharges* to be contaminated by chemicals used in the cooling tower and must select and implement BMPs to control such *discharges* so that the levels of cooling tower chemicals in the *discharges* would not cause or contribute to a violation of an applicable water quality standard.

g. The SWPPP must describe *BMPs* selected to eliminate *discharges* of solid materials, including waste, garbage and floating debris, to *surface waters of the State*, except as authorized by a permit issued under section 404 of the CWA.

h. The SWPPP must describe *BMPs* selected to *minimize* off-site vehicle tracking of raw, final, or waste materials or sediments, and the generation of dust. Tracking or blowing of raw, final, or waste materials from areas of *no exposure* to exposed areas must be *minimized*.

i. The SWPPP must describe BMPs selected to stabilize exposed areas and contain runoff using structural and/or non-structural *control measure*s to *minimize* onsite erosion and sedimentation, and the resulting *discharge* of *pollutants*.

(1) The SWPPP shall identify areas at the facility which, due to topography, land disturbance (e.g., construction) or other factors, have potential for significant soil erosion.

(2) The SWPPP must identify structural, vegetative, and/or stabilization *BMPs* that will be implemented to limit erosion.

(3) Velocity dissipation devices (or equivalent measures) must be placed at *discharge* locations and along the length of any *outfall* channel if they are necessary to provide a non-erosive flow velocity from the structure to a water course.

(4) The SWPPP must contain adequate details to demonstrate that controls conform to the <u>New York Standards and Specifications for</u>

Erosion and Sediment Control (2016), or equivalent. This document is available at: http://www.dec.ny.gov

j. The SWPPP shall describe the traditional *stormwater* management practices (permanent structural *BMPs)* that currently exist or that are planned for the facility. These types of *BMPs* are typically used to divert, infiltrate, reuse, or otherwise reduce *pollutants* in *stormwater discharges* from the site. Examples of *BMP*s that could be used include but are not limited to: *stormwater* detention structures (including wet ponds); green infrastructure practices; *stormwater* retention structures; flow attenuation by use of open vegetated swales and natural depressions; and onsite infiltration of runoff.

The SWPPP shall provide that all *stormwater* management practices that the *owner or operator* determines to be reasonable and appropriate, or are required by a *State* or local authority, shall be implemented and maintained. Factors for the *owner or operator* to consider when selecting appropriate *BMPs* should include:

(1) The industrial materials and activities that are exposed to *stormwater*, and the associated *pollutant* generating potential of those materials and activities; and

(2) The beneficial and potential detrimental effects on surface water quality, ground water quality, receiving water base flow (dry weather stream flow), and physical integrity of receiving waters. Structural measures shall be placed on upland soils, avoiding wetlands and floodplains, if possible. Structural *BMPs* may require a separate permit under section 404 of the CWA before installation begins.

k. The SWPPP must document that all storage piles of salt used for deicing or other commercial or industrial purposes are enclosed or covered to prevent exposure to precipitation, except during active operations to add or remove materials from the pile.

For a salt storage facility, the SWPPP must document all good housekeeping measures in place to assure that salt spilled during transfer and spilled or tracked along haul and access roads is removed and returned to the covered storage pile.

l. The SWPPP must document the location and type of BMPs installed and implemented at the facility to achieve the non-numeric effluent limits stipulated in Part II.A and any relevant sector-specific section(s) of Part VII of this permit.

m. The SWPPP must document the location and type of BMPs installed and implemented at the facility to achieve and address any applicable effluent limitations based in the activity-specific section(s) of Part VII, which are summarized in the table in Appendix D of this permit.

8. *Monitoring and Sampling Data*

The SWPPP must include:

a. A summary of existing *stormwater discharge* sampling data taken at the facility;

b. Chain of Custody Records for samples collected and transported to an approved laboratory;

c. Laboratory reports of results of sample analysis;

d. Quarterly Visual Monitoring Reports;

e. Copies of semi-annual *Discharge Monitoring Reports (DMRs);*

f. Copies of *Annual Certification Reports* (ACR);

g. A summary of all *stormwater* sampling data collected during the term of this permit;

h. Any monitoring waivers that have been claimed.

9. *Copy of Permit Requirements*

The *owner or operator* must maintain a copy of the permit with the SWPPP. The NOI Authorization Letter and all NOIs (including modifications) must be maintained with the SWPPP.

10. *Inspection Schedule & Documentation*

The SWPPP shall contain the schedule for conducting inspections and all documentation resulting from the inspection.

11. *Corrective Action Documentation*

The SWPPP shall contain all corrective action documentation as detailed in Part V.C.

B. SWPPP Preparer

1. The Owner or Operator shall have a *qualified person* prepare the SWPPP. . This plan does not necessarily have to be developed or certified by a licensed Professional Engineer; however all components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of a professional engineer licensed to practice in the State of New York.

2. Erosion and Sediment Control plans needed to stabilize exposed areas and control runoff per Part II.A.5 or to meet sector specific requirements shall be prepared by, a *qualified person* who is knowledgeable in the principles and practices of erosion and sediment control.

3. The design of post-construction *stormwater* management controls as defined in the SPDES General Permit for *Stormwater Discharges* from *Construction Activity (GP-0-15-002),* needed to manage runoff per Part II.A.6 or meet sector specific requirements shall be prepared by a *qualified professional.*

C. Signature and *Stormwater* Pollution Prevention Plan Availability

1. Signature/Location - The SWPPP shall be signed in accordance with Appendix H.8 and retained on-site at the facility in accordance with Parts III.A.9 and VI.C. For inactive facilities, the SWPPP may be kept at the nearest office of the *owner or operator*. Failure to keep a copy of the SWPPP as specified above is a violation of the permit.

2. Availability
   a. The *owner or operator* must make a copy of the SWPPP available to the *Department* for review at the time of an on-site inspection.

   b. The *owner or operator* must furnish a copy of the SWPPP within five (5) business days of a Department request in accordance with Appendix H.6.

   c. The *owner or operator* must make a copy of the SWPPP available to the public within fourteen (14) days of receipt of a written request. Copying of documents will be done at the requester's expense. (Note: A facility may withhold justifiable portions of the SWPPP from public review that contain trade secrets, confidential commercial information or critical infrastructure information in accordance with 6 NYCRR 616.7 and 750-1.22).

D. Special SWPPP Requirements

The following additional requirements are applicable for each special circumstance:

1. *Stormwater discharges* into or through *MS4*s.

   a. Facilities covered by this permit must comply with applicable requirements in municipal *stormwater* management programs developed under the *SPDES* permit issued for the *discharge* from the *MS4* that receives the facility's *discharge*, provided that the *owner or operator* has been notified of such conditions.

   b. *Owners or operators* that *discharge* through an *MS4*, or a municipal system designated by the *Department* shall make their SWPPP available to the municipal operator of the *MS4* upon request.

2. *Stormwater discharges* associated with *industrial activity* to *impaired waterbodies*.

   Facilities that are discharging to an *impaired waterbody* and the cause of the impairment is a *pollutant* of concern included in the *benchmarks* and/or numeric effluent limitations (see Appendix G) to which the facility is subject must include the following in their SWPPP:

   a. Identification of *Impaired Waterbody* – Identify any *impaired waterbody* that may receive *stormwater discharges associated with industrial activity* from the facility and the cause of the waterbody's impairment.

   b. *Pollutant(s)* of Concern – A list of *pollutant(s)* or *pollutant parameter(s)* that have been handled, treated, stored or disposed of in a manner that would create the reasonable potential for the *pollutant* of concern causing the impairment to be *discharge*d.

   c. Potential for Presence in *Stormwater* – Identify each area of the facility that generates *stormwater discharges associated with industrial activity* with a reasonable potential to *discharge* the *pollutant(s)* of concern. Factors to consider include the likelihood of the *industrial activity* producing the *pollutant(s)* of concern to have contact with *stormwater* and a history of *reportable* leaks or spills that could result in the *pollutant(s)* of concern being *discharged* to the *impaired waterbody*.

   d. *Stormwater* Controls – The SWPPP shall include a description of the type and location of existing and planned *BMP*s selected for each of the areas where the *pollutant(s)* of concern are exposed to *stormwater*. *BMP*s shall be selected to *minimize* the *pollutant(s)* of concern from being *discharged* to the *impaired waterbody* and should take into consideration all *stormwater* controls listed in Part III.A.7. The SWPPP shall describe how each *BMP* will be implemented for all the areas where the *pollutant(s)* of concern will be exposed to *stormwater*.

E. Keeping SWPPPs Current

The *owner or operator* shall amend the SWPPP whenever:

1. There is a change in design, construction, operation, or maintenance at the facility which may have an effect on the potential for the *discharge* of *pollutants* from the facility which has not otherwise been addressed in the SWPPP; or

2. It is found to be ineffective in eliminating or significantly minimizing *pollutants* from sources identified under Part III.A.3 or is otherwise not achieving the goals or requirements of this permit. The SWPPP shall be modified, and additional monitoring and analysis shall be completed as follows:

a. SWPPP Modifications

(1) Maps or description of industrial activities – If the SWPPP has been found to be inaccurate or incomplete, modifications must be completed to correct the deficiencies identified.

(2) *Stormwater* controls - The modification must identify the corrective actions needed and include a schedule for the implementation with a final date no later than 12 weeks unless the *Department* approves additional time in writing.

(3) Additional inspections monitoring and/or analysis - If the results of inspections, monitoring and/or analysis reveal a violation of this permit, a failure to maintain eligibility for coverage under this permit or a failure to comply with the *benchmarks* or other action levels in this permit, additional inspections, monitoring and/or laboratory analysis of *stormwater* samples may be required. Such requirements are set forth in the applicable Parts.

Part IV – Inspections and Monitoring

A. Comprehensive Site Compliance Inspection & Evaluation

The *owner or operator* shall conduct a comprehensive site compliance inspection at least once per year. The inspections must be done by *a qualified person* who may be either a facility employee or outside consultant hired by the facility. The inspector must be familiar with the *industrial activity*, the *BMPs*, the SWPPP, and must possess the skills to assess conditions at the facility that could impact *stormwater* quality and assess the effectiveness of the *BMPs* that have been chosen to control the quality of the *stormwater discharges*. If more frequent inspections are conducted, the SWPPP must specify the frequency of inspections.

1. Scope of the Compliance Inspection & Evaluation

a. Inspections must include all areas where industrial materials or activities are exposed to *stormwater*, as identified in Part III.A.3, and areas where unauthorized discharges spills and leaks have occurred within the past three years. At a minimum the inspection shall identify or include:

(1) Industrial materials, residue or trash on the ground that could contaminate or be washed away in *stormwater*;

(2) Leaks or spills from industrial equipment, drums, barrels, tanks or similar containers;

(3) Examination of all *outfall* locations, to determine the presence of unauthorized non-*stormwater discharges* or authorized non-*stormwater discharges* that are not certified in accordance with Part III.A.7(f)(1);

(4) Off-site tracking of industrial materials or sediment where vehicles enter or exit the site;

(5) Tracking of material away from the area where it originates including from areas of *no exposure* to exposed areas;

(6) Evidence of, or the potential for, *pollutants* entering or discharging from the drainage system;

(7) Inspection of areas found to be the source of *pollutants* observed during visual and analytical monitoring done during the year;

(8) *Stormwater* BMPs identified in the SWPPP must be observed to ensure that they are operating correctly.

b. If the Comprehensive Site Compliance Inspection indicates the presence of *stormwater* pollution (e.g., color, odor, floating solids, settled solids, suspended solids, foam, oil sheen, or other indicators), the *owner or operator* must, implement corrective actions in Part V.

2. *Compliance Inspection & Evaluation report*

a. A compliance inspection & evaluation report must be made and retained as part of the SWPPP for a period of at least five (5) years from the date of the report. At a minimum, the report must include:

(1) The scope of the inspection (Part IV.A.1),

(2) The name(s) of the person(s) conducting the inspection,

(3) The date(s) of the inspection,

(4) Weather information at the time of the inspection,

(5) Major observations relating to the implementation of the SWPPP, including:

(a) The location(s) of *discharges* of *pollutants* from the site;

(b) The location(s) of previously unidentified *discharges* of *pollutants* from the site;

(c) Any evidence of, or the potential for, pollutants entering the drainage system;

(d) The source of any discharges and actions taken to address newly identified authorized non-stormwater discharges or elimination of non-authorized discharges;

(e) Location(s) of BMPs that need to be maintained;

(f) Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;

(g) Location(s) where additional BMPs are needed that did not exist at the time of inspection;

(h) Any incidents of noncompliance. Where an inspection does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the SWPPP and this permit;

(i) Observations regarding the physical condition of and around all outfalls, including any flow dissipation devices; and evidence of pollutants in discharges and/or the receiving water; and,

(j) The required corrective actions to be implemented in accordance with Part V.

b. Credit as a Routine Facility Inspection - Where compliance inspection schedules overlap with routine inspections required under Part IV.B, the comprehensive site compliance inspection may be used as one of the routine inspections.

B. Routine Inspections of BMPs

1. In addition to or as part of the comprehensive site inspection, *a qualified person* must perform routine inspections which include all areas of the facility where industrial materials or activities are exposed to precipitation or *stormwater runoff*. The inspection frequency shall be on a quarterly basis or as specified in the facility's applicable industrial sector in Part VII.

2. The routine inspection must evaluate the performance of *stormwater* BMPs described in the SWPPP.

3. The routine inspection shall be documented and shall be kept with the SWPPP.

4. Any deficiencies in the implementation and/or adequacy of the BMPs must be documented. The required corrective actions must be implemented in accordance with Part V.

C. Annual Dry Weather Flow Inspection

In addition to or as part of the Comprehensive Site Compliance Inspection (Part IV.A), a qualified person must perform an annual dry weather flow inspection and update the non-stormwater discharge certifications (Part III.A.7.f (1)). The requirements and procedures for the annual dry weather flow inspection are applicable to all facilities covered under this permit, regardless of the facility's sector of industrial activity.

1. The *owner or operator* must perform and document at least one dry weather flow inspection each year after at least three (3) consecutive days of no precipitation. The annual dry weather flow inspection shall be conducted to determine the presence of non-stormwater *discharges* to the stormwater drainage system.

2. The annual dry weather flow inspection shall be documented in an inspection report which must include the *outfall* locations, the inspection date and time, inspector name, description of *discharges* identified, the source of any

discharges and actions taken to address any newly identified allowable non-stormwater *discharges* or elimination of non-authorized *discharges*.

3. If a non-stormwater discharge not previously certified in accordance with Part III.A.7.f (1) is discovered the *owner or operator* must implement corrective actions in Part V.B.

4. The dry weather flow inspection report and updated non-stormwater discharge documentation required by Part III.A.7.f (1) must be retained on-site with the SWPPP.

D. Collection and analysis of samples

Samples must be collected as follows:

1. When to Sample

A sample must be taken of the *stormwater discharge* resulting from a *qualifying storm event* with at least 0.1 inch of precipitation (defined as a *measurable storm event*), providing the interval from the preceding measurable storm is at least 72 hours. Each outfall must be sampled except for any outfall for which the facility has claimed a representative outfall waiver in accordance with Part IV.G.3. In the case of snowmelt, samples must be taken during a period with a *discharge* from the site.

The sample must be taken during the first 30 minutes (or as soon as practical, but not to exceed one hour) of the *discharge* at the *outfall*. If the sampled *discharge* mixes with non-*stormwater* water, the *owner or operator* must attempt to sample the *stormwater discharge* prior to mixing.

2. Sample Analysis

a. Monitoring and analysis must be conducted according to test procedures approved under 40 CFR Part 136, or equivalent, unless other test procedures have been specified in this permit.

b. Any laboratory test or sample analysis required by this permit for which the *State* Commissioner of Health issues certificates of approval pursuant to section 502 of the Public Health Law shall be conducted by a laboratory that has been issued a certificate of approval (ELAP certified).

c. The laboratory sample analysis reports must be kept with the SWPPP.

3. Storm event data

The storm event must be documented using the Storm Event Data Form provided by the *Department*. The Storm Event Data Form must be kept with the SWPPP.

4. *Secondary Containment Screening and Sampling*

Prior to each *discharge*[3] from a secondary containment system the *stormwater* must be screened for contamination. (Note: All *stormwater* must be inspected for visible evidence of contamination.) Additional screening methods shall be developed by the *owner or operator* as part of the overall BMP Plan (e.g., the use of volatile gas meters to detect the presence of gross levels of gasoline or volatile organic compounds). If the screening indicates contamination, the *owner or operator* must collect and analyze a representative sample[4] of the *stormwater*. If the sample contains no *pollutants*, the *stormwater* may be *discharge*d. Otherwise it must either be disposed of in an onsite or off-site wastewater treatment plant designed to treat and permitted to *discharge* such wastewater. The first discharge following any cleaned up spill or leak must be sampled regardless of the screening results.

E. Quarterly Visual Monitoring

The requirements and procedures for quarterly visual monitoring are applicable to all facilities covered under this permit, regardless of the facility's *industrial activity*

1. The monitoring must be made at least once in each of the following quarters:

   - January 1st through March 31st,
   - April 1st through June 30th,
   - July 1st through September 30th, and
   - October 1st through December 31st

2. All samples must be collected from *discharges* resulting from a *qualifying storm event*, in accordance with Part IV.D.1.

3. The *owner or operator* must perform and document quarterly visual monitoring of a *stormwater discharge* associated with *industrial activity* from each *outfall* on the *Department* provided form and included with the SWPPP unless:

   a. A waiver is submitted in accordance with Part IV.G, or

   b. There is no *discharge* from a *qualifying storm event* during a monitoring period. If no *qualifying storm event* resulted in runoff from the facility during a monitoring quarter, documentation must be included with the

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3 Note: Discharge includes stormwater discharges and snow and ice removal. If applicable, a representative sample of snow and/or ice should be collected and allowed to melt prior to assessment.

4 If the stored substance is gasoline or aviation fuel then sample for oil & grease, benzene, ethylbenzene, naphthalene, toluene and total xylenes (EPA method 602). If the stored substance is kerosene, diesel fuel, fuel oil, or lubricating oil then sample for oil & grease and polynuclear aromatic hydrocarbons (EPA method 610). In all cases an estimated discharge volume and pH monitoring is required.

SWPPP. If a visual examination was performed and the storm event was later determined not to be a measurable storm event, the visual examination must be included with the SWPPP.

4. When the *outfall discharges* directly to the *surface waters of the State*, the *discharge* must be inspected to see whether *BMPs* are effective in preventing significant impacts to receiving waters.

5. Laboratory sample analysis is not necessary to fulfill the visual monitoring requirements.

6. If the visual monitoring indicates the presence of *stormwater* pollution (e.g., color, clarity, odor, floating solids, settled solids, suspended solids, foam, oil sheen, or other indicators), the *owner or operator* must implement corrective actions in Part V.

F. Monitoring Requirements

The monitoring requirements that apply to a facility depends on the types of industrial activities generating *stormwater* runoff. The *owner or operator* must review this Part and Part VII as well as Appendices C, D, E and G of this permit to determine which monitoring requirements apply to each individual *outfall*.

- At facilities where more than one *industrial activity* occurs, monitoring requirements apply for all parameters specific to those industrial activities.

- Where more than one numeric limitation for a specific parameter applies to a *discharge*, compliance with the more restrictive limitation is required.

- Where monitoring requirements for a monitoring period overlap (e.g., need to monitor TSS twice/year for numeric effluent limitation monitoring and also twice/year for *benchmark monitoring*), a single sample will satisfy both monitoring requirements.

1. Types of Pollutant Monitoring

a. *Benchmark Monitoring* is intended to provide a guideline for the *owner or operator* to determine the overall effectiveness of the SWPPP in controlling the *discharge* of *pollutants* to receiving waters. The requirements for *benchmark monitoring* apply to *discharges* associated with specific industrial activities identified in Part VII (summarized in Appendix C).

b. Numeric *Effluent Limitation* Monitoring – Activity specific effluent limitations specified in Part VII (summarized in Appendix D).

c. *Discharges* to Impaired Waterbodies – If a facility *discharges* to an *impaired waterbody* and the cause of impairment is a *pollutant* of concern included in the benchmarks and/or numeric effluent limitations to which the facility is subject to in Part VII, the facility is required to conduct the additional sampling requirements detailed in Part IV.F.2 for that particular *pollutant*(s) only. The compliance monitoring for *discharges* to impaired waterbodies is in addition to any applicable sector specific *Benchmark Monitoring* in Part IV.F.1.a and Numeric Effluent Limit Monitoring in Part IV.F.1.b. A summary of the applicable benchmarks and/or numeric effluent limits associated with the *pollutant* of concern to an *impaired waterbody* and their applicable sector is located in Appendix G.

d. Coal Pile Runoff Monitoring - Facilities with *discharges* of *stormwater* from coal storage piles must comply with the limitations and monitoring requirements of Table IV.3 for all *discharges* containing the coal pile runoff, regardless of the facility's sector of *industrial activity*.

e. Secondary Containment at Storage and Transfer Areas - Unless the *discharge* from any containment system outlet is permitted by an *individual SPDES permit* as an *outfall* with explicit effluent and monitoring requirements, the *owner or operator* shall monitor the outlet as follows:

(1) Storage Area Secondary Containment Systems - The volume of each *discharge* from each outlet must be monitored. A representative sample shall be collected of the first *discharge* following any cleaned up spill or leak. The sample must be analyzed for pH, the substance(s) stored within the containment area and any other *pollutants* the *owner or operator* knows or has reason to believe are present.

(2) Transfer Area Secondary Containment Systems - The first *discharge* following any spill or leak must be sampled for flow, pH, the substance(s) transferred in that area and any other *pollutants* the *owner or operator* knows or has reason to believe are present.

2. Frequency and Timing of Monitoring

The monitoring requirements for each type of monitoring are provided in Table IV.1 below:

Table IV.1 Monitoring Requirements			
Type of Monitoring	**Applicability**	**Frequency**	**Reported to the *Department***
Quarterly Visual Monitoring	All Facilities	Quarterly	No
Benchmark Monitoring, Numeric *Effluent Limitation* Monitoring, Coal Pile Runoff	Sector Specific	Semi-Annual	Yes
Secondary Containment at Storage and Transfer Areas	Sector Specific	As needed	No
Discharges to Impaired Waterbodies	Waterbody Specific	Quarterly	Yes

The monitoring periods for required monitoring are provided in the Table IV.2 below:

Table IV.2 Monitoring Periods	
Monitoring Frequency	**Monitoring Periods**
Semi-Annual	Period 1 - January 1st through June 30th
	Period 2 - July 1st through December 31st
Quarterly	Quarter 1 – January 1st through March 31st
	Quarter 2 – April 1st through June 30th
	Quarter 3 – July 1st through September 30th
	Quarter 4 – October 1st through December 31st

a. If a facility's permit coverage was effective less than two months from the end of a monitoring period, monitoring begins with the next monitoring period.

b. If a facility is inactive for an entire monitoring period, it may claim a waiver in accordance with Part IV.G.

3. *Monitoring Requirements*

a. The *owner or operator* must perform and document monitoring of *stormwater discharges* associated with *industrial activity* from each *outfall* during the monitoring periods listed in Table IV.2 unless:

(1) A waiver applicable to the specific type of monitoring is submitted in accordance with Part IV.G, or

(2) There is no *discharge* from a *qualifying storm event* during a monitoring period. If no *qualifying storm event* resulted in runoff from the facility during a monitoring period, documentation must be included with the SWPPP.

If a monitoring sample is collected during a storm event that is later determined not to be a qualifying storm event, the results should be included with the SWPPP.

b. Collection and analysis of samples must be done in accordance with Part IV.D.

c. Evaluation of Results of Analysis - The *owner or operator* must refer to the tables found in the individual sectors in Part VII for *benchmark monitoring cut-off concentrations* and numeric effluent limitations.

(1) An exceedance of a Benchmark cut-off concentration is not a permit violation. The exceedance(s) requires the *owner or operator* to evaluate potential sources of *stormwater* contaminants at the facility and perform corrective actions in accordance with Part V.

(2) An exceedance of a Numeric *Effluent Limitation* is a permit violation. If there is an exceedance of one or more parameters the *owner or operator* must perform corrective actions in accordance with Part V.

d. Recording and Reporting Results

(1) Results of Benchmark and Numeric Effluent Limitation monitoring, (including coal pile runoff monitoring), must be reported to the *Department* using a *Discharge Monitoring Report (DMR)* and included with the SWPPP.

(2) Results of monitoring of *discharges* from secondary containment systems must be included with the SWPPP, but are not reported to the *Department*.

e. For monitoring of Coal Pile Runoff, the *owner or operator* must refer to Table IV.3 for numeric effluent limitations.

Table IV.3			
Numeric Limitations for Coal Pile Runoff			
Parameter	**Limit**	**Monitoring Frequency**	**Sample Type**
Total Suspended Solids (TSS)	50 mg/l, daily max	Semi-Annual	Grab
pH	6.0 - 9.0 min. and max	Semi-Annual	Grab

(1) The coal pile runoff must not be diluted with *stormwater* or other flows in order to meet this limitation.

(2) If a facility is designed, constructed and operated to treat the volume of coal pile runoff that is associated with a 10-year, 24-hour rainfall event, any untreated overflow of coal pile runoff from the treatment unit is not subject to the 50 mg/L limitation for total suspended solids.

G. Monitoring Waivers

Unless stated otherwise, the following waivers may be applied to any monitoring required under this permit.

1. Adverse Climatic Conditions Waiver - Adverse weather conditions are those that are dangerous or create inaccessibility for personnel. This waiver may be claimed if the only qualifying storm event(s) in a monitoring period created dangerous conditions for personnel, created conditions which made the sample location inaccessible or made collection of a sample impossible. Examples of these conditions include but are not limited to local flooding, high winds and electrical storms. This waiver may not be claimed to indicate that samples were not collected due to inconvenient timing of storms or other failures to collect *stormwater* samples.

   If the Adverse Climatic Conditions Waiver is claimed, an Adverse Climatic Conditions Waiver Form must be signed and submitted to the *Department* with any associated *ACR* or *DMR* in accordance with Appendix H.8 and included with the SWPPP.

2. Inactive and unstaffed sites - An annual Comprehensive Site Inspection (Part IV.A) can be waived at a facility that is inactive and unstaffed for the entire monitoring period if no industrial materials or activities are exposed to *stormwater*. Facilities covered under Sector J are not required to meet the requirement that no materials are exposed to *stormwater*; however adequate *stormwater* controls must be in place to prevent migration of contaminated *stormwater* to surface water. To claim this waiver, the *owner or operator* must:

a. Maintain a certification with the SWPPP stating the dates the site is inactive and unstaffed;

b. Perform and document a Comprehensive Site Inspection prior to shut down. The inspection report must be included in the SWPPP. The certification must include the results of this inspection; and,

c. Complete an Inactive or Unstaffed Waiver Form. When this waiver is being claimed, the waiver form must be signed and submitted with each ACR or DMR and be included with the SWPPP.

3. <u>Representative *outfalls*</u> - If a facility has two or more *outfalls* that have substantially identical *discharges*, the *owner or operator* may sample the *discharge* of one of the *outfalls* and report that the analytical data also applies to the substantially identical *outfall(s)*. Whether or not *discharges* are substantially identical is determined by the similarity of the industrial activities and exposed materials occurring within the drainage area of each *outfall*.

   a. The *owner or operator* must collect a sample from the anticipated "worst case" *outfall*. This is determined by looking at the following indicators:

      (1) Size of drainage area;

      (2) Level of *industrial activity*;

      (3) Amount of exposed industrial materials.

   b. A representative *outfall* waiver may not be claimed at *outfalls* with *discharges* associated with different industrial activities. This representative *outfall* waiver applies to quarterly visual monitoring and *benchmark monitoring*. It cannot be claimed for compliance monitoring for *discharges* subject to *effluent limitation guidelines or to discharges* to *impaired waters*.

   c. When this waiver is being claimed, the *owner or operator* must submit a completed Representative Outfall Waiver Form with the NOI and keep it with the SWPPP.

   d. If there is an event that triggers corrective actions at an *outfall* that represents other substantially identical *outfalls*:

      (1) corrective actions must be completed for all *outfalls* covered by the waiver;

(2) The representative outfall waiver is suspended and quarterly visual monitoring and benchmark monitoring of the substantially identical outfalls shall commence immediately; and,

(3) Unless otherwise notified by the Department, the representative outfall waiver again applies when:

(a) The results of two consecutive monitoring periods reported to the Department show that all outfall have had no exceedances of benchmark monitoring cut-off concentrations for all parameters; and,

(b) The owner or operator submits a new Representative Outfall Waiver Form to the Department.

Part V - Corrective Actions

Failure to document and take the necessary corrective actions are violations of the permit. Continued exceedance of benchmark cut-off concentrations and/or numeric effluent limitations may identify facilities that would be more appropriately covered under an *individual SPDES permit*. If there is an exceedance of either a benchmark or numeric effluent limit at an outfall where a representative outfall waiver has been claimed, the waiver no longer applies and corrective actions must be performed on all outfalls covered by the waiver (Part IV.G.3.d).

A. For *Stormwater Discharges*

When the visual examination indicates the presence of pollution or when the benchmark or numeric effluent limit sample results indicate exceedances of the *pollutants*, the *owner or operator* must:

1. Inspect the facility for potential sources of *stormwater* contamination and/or causes of the exceedance to numeric limits;

2. Implement additional non-structural and/or structural BMPs to address any sources of contamination that are identified to prevent recurrence within the following timeframes:

    a. The implementation must be completed before the next anticipated storm event, if practicable, but not more than 12 weeks after discovery.

    b. If implementation will take longer than 12 weeks, the *owner or operator* must submit a proposed schedule for completion of the project and obtain a written approval from the *Regional Water Engineer (Appendix F)*

3. Revise the facility's SWPPP in accordance with Part III.E; and,

4. Continue efforts to implement additional BMPs at the facility if corrective actions do not result in achieving *benchmark monitoring cut-off concentrations* and/or numeric effluent limitations.

B. For Non-*Stormwater Discharges*

1. If a non-*stormwater discharge* is discovered the *owner or operator* must:

    a. Identify its source and determine whether it is an authorized *discharge*.
        (1) Upon determination that the *discharge* is not covered under this permit or another SPDES permit, the *owner or operator* shall notify the Regional Water Engineer (Appendix F), of the unauthorized *discharge* and begin immediate actions to eliminate the *discharge*. These actions must be documented in the SWPPP.

b. Upon determination that the *discharge* is an authorized non-*stormwater discharge* identified in Part I.B.2 that were not previously certified in accordance with Part III.A.7.f (1), the *owner or operator* shall update the discharge certification and keep with the SWPPP.

C. Corrective Action Documentation

Owners or operators must document the existence of any of the conditions listed in Parts V.A or V.B within 24 hours of becoming aware of such condition. Unless required by Part VI.A.2.b or as requested by the Department, the corrective action documentation is not required to be submitted and should be kept with the facility's SWPPP. Include the following information in your documentation:

a. A description of the condition triggering the need for corrective actions. For any spills or leaks, include the following information: a description of the incident including material, date/time, amount, location, and reason for spill, and any leaks, spills or other releases that resulted in discharges of pollutants to waters of the state, through stormwater or otherwise;

b. Date the condition was identified;

c. The date when each corrective action was initiated and completed (or is expected to be completed);

d. A description of the corrective actions to minimize or prevent the discharge of pollutants. For any spills or leaks, include response actions, the date/time clean-up completed, notifications made, and staff involved. Also include any control measures taken to prevent the reoccurrence of such releases (see Part II.A.4); and

e. A statement, signed and certified in accordance with Appendix H.8.

Part VI – Reporting and Retention of Records

A. Reporting to the *Department*

1. Annual Certification Report (ACR)

a. An *owner or operator* of a facility must submit an ACR, which is signed in accordance with Appendix H.8, to the *Department.*

(1) Prior to December 20, 2020, the *owner or operator* may elect to submit the ACR by mailing a paper form to the address listed in Part VI.A.4 or by using the *Department*'s online ACR.

(2) Beginning December 21, 2020 and in accordance with the EPA's *NPDES* Electronic Reporting Rule, the *owner or operator* must submit the ACR electronically using the *Department*'s online ACR. Both versions of the ACR are located on the *Department*'s website (http://www.dec.ny.gov/).

b. The ACR is the primary mechanism for reporting compliance with permit conditions to the *Department*. Every facility covered by this general permit must complete and submit an ACR form in accordance with the deadlines below:

(1) Owners or operators must complete and submit an ACR covering January 1 to December 31. This ACR must be received by the Department on an annual basis by January 28 of the following calendar year except:

(a) For facilities whose initial permit coverage is effective prior to October 1 of a calendar year, the initial ACR will cover the effective coverage date to December 31. This initial ACR must be received by the Department by January 28 of the following calendar year. Subsequent ACRs must be submitted in accordance with Part VI.A.1.b.(1).

(b) For facilities whose initial permit coverage is effective after October 1 of a calendar year, the initial ACR will cover January 1 to December 31 of the following calendar year. This initial ACR must be received by the Department by January 28 of the next year. Subsequent ACRs must be submitted in accordance with Part VI.A.1.b.(1).

2. Discharge Monitoring Report (DMR)

a. The owner or operator with Benchmark and/or Numeric Effluent Limitation monitoring requirements shall electronically submit the results of the analysis using EPA's electronic DMR reporting system. All DMRs must be received by the Department 28 days after the end of the monitoring period. Monitoring periods can be found in Table IV.1.

b. Using forms provided by the Department, the owner or operator must report the following information when there is an exceedance of a numeric effluent limit (non-compliance event) or exceedance of a benchmark cutoff concentration of the impairing POC for discharges to impaired waterbodies:

(1) Description of the exceedance and its cause

(2) Corrective actions taken to address the exceedance

(3) Preventative (long term) corrective actions taken including any SWPPP modifications to prevent a future exceedance.

(4) Corrective actions taken for all outfalls claiming the representative outfall waiver.

3. *Additional reporting*

a. In addition to filing the ACRs and DMRs with the Department, and upon request of the MS4 Operator, owners or operators with at least one stormwater discharge associated with industrial activity through the MS4, must submit signed copies of ACRs and DMRs for those outfalls to the MS4 Operator.

b. Any spill of a hazardous substance must be reported in accordance with 6 NYCRR 597.4. Any spill of Petroleum must be reported in accordance with 6 NYCRR 613.6 or 17 NYCRR 32.3. Notification must be reported to the NYSDEC Spills hotline (1-800-457-7362) within two hours after discovery. Additional notifications may be required for Federal level notification through the National Response Center (NRC) at 1-800-424-8802. Where a release of Hazardous Substances or Petroleum enters an *MS4,* the *owner or operator* shall also notify the *owner* of the *MS4* within 2 hours after discovery.

4. *Mailing Address*

Paper submissions of reports or waivers allowed by this permit or regulation must be submitted to:

Stormwater Compliance Coordinator
NYSDEC, Bureau of Water Compliance
625 Broadway
Albany, New York 12233-3506

B. Monitoring Reporting Submission Deadlines

Every facility covered by this general permit must complete and submit all applicable monitoring reports by the submission deadlines listed in the table below.

Table VI.1
Monitoring/Report Submission Deadlines

Monitoring type	Submission Deadline
Visual Monitoring	Retain documentation on-site with SWPPP.
Comprehensive Site Compliance Inspection	Retain documentation on-site with SWPPP.
Annual Certification Report	Report must be received in the *Department*'s Central Office no later than January 28 of the year following the reporting period. (See Part VI.A.1)
Benchmark Monitoring, Coal Pile Run-off, Numeric *Effluent Limitation* Monitoring	<u>Period 1 -</u> *DMR* must be received electronically using EPA's electronic reporting system no later than July 28 following the end of reporting Period 1 - January 1 to June 30.
	<u>Period 2 -</u> *DMR* must be received electronically using EPA's electronic reporting system no later than January 28 following the end of reporting Period 2 - July 1 to December 31.
Monitoring for Bulk Storage and Loading/Unloading Areas	Retain documentation on-site with SWPPP.
Discharge from Secondary Containment	Retain logbook of *discharges*, including the screening method, results of screening; date, time and volume of each *discharge*; and the personnel supervising each *discharge*.
Monitoring for *Discharges* to Impaired Waterbodies	*DMR* must be received electronically using EPA's electronic reporting system no later than 28 days following the end of the reporting period. See Tables IV.1 and IV.2
Non-Compliance Event Form for Exceedances of Numeric Effluent Limits	Results of the exceedance(s) and corrective action(s) taken must be reported on the Non-Compliance Event Form provided by the Department with the submission of the DMR which reports the exceedance. (Part VI.A.2.b)
Corrective Action Documentation for facilities that do not discharge to an impaired waterbody	Retain documentation on-site with SWPPP. (Part V.C)
Corrective Action Form for facilities that have an exceedance of a Benchmark cut-off concentration to an impaired waterbody	Results of the exceedance(s) and corrective action(s) taken must be reported on the Correcctive Action Form provided by the Department with the submission of the DMR which reports the exceedance. (Part VI.A.2.b)

C. Retention of Records

All records required by this permit must be retained to meet the timeframes specified below:

1. Administrative Records

The *owner or operator* must retain a copy of the NOI, NOT, Acknowledgment Letters and the SWPPP, for a period of at least five (5) years from the date that the *Department* receives a complete NOT submitted in accordance with Part I.E of this permit.

2. Monitoring Activities

The *owner or operator* shall retain records of all monitoring information for a period of at least 5 years from the date of the sample, measurement, report or application. This period may be extended by written request of the *Department*, provided that the extension is necessary to implement the provisions of this Part or *ECL* and that the reason or reasons for the extension are provided in the request.

a. The monitoring information shall include:
   (1) Records of all data used to complete the application for the permit;
   (2) Copies of all reports required by this permit.

b. Data to include with the records of monitoring information:
   (1) The date, exact place, and time of sampling or measurements;
   (2) The individual(s) who performed the sampling or measurements;
   (3) The date(s) analyses were performed;
   (4) The individual(s) who performed the analyses;
   (5) The analytical techniques or methods used;
   (6) The results of such analyses; and
   (7) Quality assurance/quality control documentation.

c. When records are stored electronically, the records must be preserved in a manner that reasonably assures their integrity and are acceptable to the *Department*. Such records must also be in a format which is accessible to the *Department*.

d. The *owner or operator* shall make available to the *Department* for inspection and copying or furnish to the *Department* within 25 business days of receipt of a *Department* request for such information, any information retained in accordance with Part VI.C.2.a and b.

Part VII – Sector Specific Permit Requirements

The *owner or operator* must comply with the additional requirements of Part VII that apply to the specific *industrial activity* located at the *owner or operator's* facility. These requirements are in addition to the general requirements specified in the previous sections of this permit. The industry specific requirements are broken down into sections referred to as industrial sectors A through AC.

If the facility has more than one *industrial activity* meeting the description(s) of more than one sector occurring on-site, those industrial activities are considered to be *co-located*. *Stormwater discharges* from *co-located industrial activities* are authorized by this permit, provided that the *owner or operator* complies with any and all of the requirements applicable to each *industrial activity* at the facility. The monitoring and SWPPP terms and conditions of this permit are additive for *industrial activities* being conducted at a facility.

Examples of common *co-located industrial activities* include, but are not limited to:

- Timber Products (Sector A) and vehicle maintenance (Sector P)
- Auto salvage (Sector M) and auto recycling (Sector N)
- Mineral mining (Sector J) and maintenance of vehicles and equipment (Sector P)
- Mineral mining (Sector J) and asphalt manufacturing (Sector D)
- Mineral mining (Sector J) and concrete manufacturing (Sector E)
- Transfer stations accepting recyclables (Sector N) and maintenance of vehicles used in local trucking without storage (Sector P)
- Manufacturers of food and kindred products (Sector U) and maintenance of vehicles used in local or long distance trucking (Sector P)

Sector S – Air Transportation

Applicability	The requirements listed under this section apply to *stormwater discharges associated with industrial activity* from air transportation facilities including • air transportation (scheduled and non-scheduled); • air courier services; • airports; • flying fields (except those maintained by aviation clubs); • air terminal services including air traffic control (except government); • aircraft storage at airports; • aircraft upholstery repair; • airfreight handling at airports; • airport hangar rental; • airport leasing, if operating airport; • airport terminal services; • hangar operation; • airport, aircraft service and maintenance including aircraft cleaning and janitorial service; • aircraft servicing /repairing (except on a factory basis); • vehicle maintenace shops; • material handling facilities; • equipment clearing operations; and • airport/aircraft deicing and anti-icing. [Note: For the purpose of this section, the term "deicing" is defined as the process to remove frost, snow, or ice and "anti-icing" is the process which prevents the accumulation of frost, snow, or ice.] Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or deicing/anti-icing operations are addressed under this section.
Prohibitions Non -*Stormwater discharges*	In addition to the general non-*stormwater* prohibition in Paragraph I.D.1, the following *discharges* not covered by this permit include, but are not limited to: • aircraft, ground vehicle, runway and equipment washwaters, and • dry weather *discharges* of deicing/anti-icing chemicals. These *discharges* must be covered by a separate *SPDES* permit.

SWPPP Requirements in addition to Part III	
General	Air transportation facilities often have more than one operator who could *discharge stormwater* associated with *industrial activity*. For the purposes of this permit Owners or Operators include the airport authority and airport tenants., tenants Tenants of the airport facility include airline passenger or cargo companies, fixed based *owners or operators* and other parties who have contracts with the airport authority to conduct business operations on airport property and whose operations result in *stormwater discharges* associated with *industrial activity*. SWPPPs developed for areas of the facility occupied by tenants of the airport shall be integrated with the comprehensive SWPPP for the entire airport. As applicable, the comprehensive SWPPP must clearly specify the MSGP requirements to be complied with by the: • Airport authority for itself; • Airport authority on behalf of its tenants; • Tenants for themselves For each activity that an *owner or operator* conducts on behalf of another *owner or operator*, the SWPPP must describe a process for reporting results to the latter operator and for ensuring appropriate follow-up by all affected operators.
Site Map	The site map shall identify where any of the following activities may be exposed to precipitation/surface runoff: • Aircraft and runway deicing/anti-icing operations; • Fueling stations; • Aircraft, ground vehicle and equipment maintenance/cleaning areas; • Storage areas for aircraft, ground vehicles and equipment awaiting maintenance.
Summary of Potential *Pollutant* Sources	A narrative description of the potential *pollutant* sources from the following activities: • aircraft, runway, ground vehicle and equipment maintenance and cleaning; • aircraft and runway deicing/anti-icing operations (including apron and centralized aircraft deicing/anti-icing stations, runways, taxiways and ramps). Facilities that conduct deicing/anti-icing operations shall maintain a record of the types (including the Material Safety Data Sheets (MSDS)) and monthly quantities of deicing/anti-icing chemicals used, either as measured amounts, or in the absence of metering, as estimated amounts. This includes all deicing/anti-icing chemicals, not just glycols and urea (e.g., potassium acetate). Tenants and fixed-base operators who conduct deicing/anti-icing operations shall provide the above information to the airport authority for inclusion in the *stormwater* pollution prevention plan for the entire facility.

Additional Non-Numeric Effluent Limits	
Good Housekeeping Measures	
Aircraft, ground vehicle and equipment maintenance areas	The SWPPP must describe and provide for implementation of measures that prevent or *minimize* the contamination of *stormwater* runoff from all areas used for aircraft, ground vehicle and equipment maintenance (including the maintenance conducted on the terminal apron and in dedicated hangars). The SWPPP must document consideration of the following measures (or their equivalents):: • Performing maintenance activities indoors; • Maintaining an organized inventory of materials used in the maintenance areas • Draining all parts of fluids prior to disposal • Preventing the practice of hosing down the apron or hangar floor • Using dry cleanup methods • Collecting the *stormwater* runoff from the maintenance area • Providing treatment or recycling
Aircraft, ground vehicle and equipment cleaning areas	The SWPPP shall include provisions that ensure that cleaning of equipment is conducted in designated areas only and clearly identify these areas on the ground and delineate them on the site map. The plan must describe measures that will be implemented to prevent or *minimize* the contamination of the *stormwater* runoff from cleaning areas.
Aircraft, ground vehicle and equipment storage areas	The storage of aircraft, ground vehicles and equipment awaiting maintenance must be confined to designated areas (delineated on the site map). The SWPPP shall document consideration of the following *BMPs* (or their equivalents): • Indoor storage of aircraft and ground vehicles • Use of drip pans for the collection of fluid leaks • Perimeter drains, dikes or berms surrounding storage areas.
Material storage areas	The SWPPP must describe and provide for implementation of measures that prevent or *minimize* contamination of precipitation/runoff from storage areas. Storage vessels of all materials (e.g., used oils, hydraulic fluids, spent solvents, and waste aircraft fuel) must be maintained in good condition, so as to prevent or *minimize* contamination of *stormwater*, and plainly labeled (e.g., "used oil," "Contaminated Jet A," etc.). The SWPPP shall document consideration of the following *BMPs* (or their equivalents): • Indoor storage of materials • Centralized storage areas for waste materials • Installation of berms/dikes around storage areas.

Airport Fuel System and Fueling Areas	The SWPPP must describe and provide for implementation of measures that prevent or *minimize* the *discharge* of fuels to the storm sewer/surface waters resulting from fuel servicing activities or other operations conducted in support of the airport fuel system. The SWPPP shall document considerations of the following *BMPs* (or their equivalents): • Implementing spill and overflow practices (e.g., placing absorptive materials beneath aircraft during fueling operations) • Using dry cleanup methods • Collecting the *stormwater* runoff
Source Reductions	
Owners or operators who conduct deicing/anti-icing operations shall consider alternatives to the use of urea and glycol-based deicing/anti-icing chemicals to reduce the aggregate amount of deicing/anti-icing chemicals used and/or lessen the environmental impact. Chemical options to replace ethylene glycol, propylene glycol and urea include: potassium acetate; magnesium acetate; calcium acetate; and anhydrous sodium acetate.	
Runway Deicing Operations	*Owners or operators* shall evaluate present application rates to ensure against excessive over application by analyzing application rates and adjusting as necessary, consistent with considerations of flight safety. The SWPPP shall document considerations of the following *BMPs* (or their equivalents): • Metered application of chemicals; • Prewetting dry chemical constituents prior to application; • Installation of runway ice detection systems; • Implementing anti-icing operations as a preventive measure against ice buildup; • Product substitution; • Heating sand
Aircraft deicing/anti icing operations	*Owners or operators* shall determine whether excessive application of deicing/anti-icing chemicals occurs, and adjust as necessary, consistent with considerations of flight safety. This evaluation should be carried out by the personnel most familiar with the particular aircraft and flight operations in question (versus an outside entity such as the airport authority). The use of alternative deicing/anti-icing agents, as well as containment measures for all applied chemicals, shall be considered. The SWPPP shall document considerations of the following *BMPs* (or their equivalents) for reducing deicing fluid: • Forced-air deicing systems • Computer-controlled fixed-gantry systems • Infrared technology • Hot water • Varying glycol content to air temperature • Enclosed-basket deicing trucks

	• Mechanical methods • Solar radiation • Hangar storage • Aircraft covers • Thermal blankets for MD-80s and DC-9s • Ice-detection systems • Airport traffic flow strategies • Departure slot allocation systems
Management of runoff	Where deicing/anti-icing operations occur, *owners or operators* shall describe and implement a program to control or manage contaminated runoff to *minimize* the amount of *pollutants* being *discharge*d from the site. The SWPPP shall document consideration of the following *BMPs* (or their equivalents): • Establish a dedicated deicing facility with a runoff collection/recovery system; • Use vacuum/collection trucks; • Store contaminated *stormwater*/deicing fluids in tanks and releaseing controlled amounts to a publicly owned treatment works in accordance with pretreatment program requirements • Collect contaminated runoff in a wet pond for biochemical decomposition (be aware of attracting wildlife that may prove hazardous to flight operations) • Direct runoff into vegetative swales or other infiltration measures. • Recover deicing/anti-icing materials when these materials are applied during nonprecipitation events (e.g., covering storm sewer inlets, using booms, installing absorptive interceptors in the drains, etc.) to prevent these materials from later becoming a source of *stormwater* contamination. • Recycle used deicing fluid whenever possible
Inspections	The inspection frequency shall be specified in the SWPPP. At a minimum, inspections shall be conducted once per month during deicing/anti-icing season (e.g., October through April for most airports). If deicing occurs before or after this period, the inspections shall be expanded to include all months during which deicing chemicals may be used. If significantly or deleteriously large quantities of deicing chemicals are being spilled or *discharge*d, or if water quality impacts have been reported, the inspection frequency shall be increased to weekly until such time as the chemical spills/*discharges* or impacts are reduced to acceptable levels.

Comprehensive site compliance inspection

The annual site compliance evaluations shall be conducted by qualified facility personnel during periods of actual deicing operations, if possible. If not practicable during active deicing or if the weather is too inclement, the evaluations shall be conducted when deicing operations are likely to occur and the materials and equipment for deicing are in place.

Numeric Effluent Limitations

Airfield Pavement Deicing
For both existing and new "primary airports" (as defined at 40 CFR 449.2) with 1,000 or more annual non-propeller aircraft departures that *discharge stormwater* from airfield pavement deicing activities, there shall be no *discharge* of airfield pavement deicers containing urea. To comply with this limitation, such airports must do one of the following: (1) certify annually on the annual report that you do not use pavement deicers containing urea, or (2) meet the effluent limitation in Table VII.S-1.

Aircraft Deicing
Airports that are both "primary airports" (as defined at 40 CFR 449.2) and new sources ("new airports") with 1,000 or more annual non-propeller aircraft departures must meet the applicable requirements for aircraft deicing at 40 CFR 449.11(a). *Discharges* of the collected aircraft deicing fluid directly to waters of the U.S. are not eligible for coverage under this permit.

Monitoring, Reporting and Recordkeeping. For new and existing airports subject to the effluent limitations above, you must comply with the applicable monitoring, reporting and recordkeeping requirements outlined in 40 CFR 449.20.

Table VII-S-1.
Sector S - Numeric Effluent Limitations

Industrial Activity	Parameter	Effluent Limit
Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures.	Ammonia as Nitrogen	14.7 mg/L daily maximum

Benchmarks

Airports that use more than 100,000 gallons of glycol-based deicing/anti-icing chemicals and/or 100 tons or more of urea on an average annual basis shall sample their *stormwater discharges* for the parameters listed in Table VII-S-12. Only those *outfalls* from the airport facility that collect runoff from areas where deicing/anti-icing activities occur must be monitored (SIC 4512-4581).

Table VII-S-2
Sector S - *Benchmark Monitoring* Requirement

Pollutants **of Concern**	***Benchmark Monitoring*** **Cut-off Concentration**
Biochemical Oxygen Demand (BOD5)	30 mg/L
Chemical Oxygen Demand (COD)	120 mg/L
Total Nitrogen (TN)*	6 mg/L
pH	within the range 6.0 to 9.0 s.u.

* Total Nitrogen is calculated as the sum of ammonia, nitrate-nitrite and organic nitrogen

Appendix A – Definitions and Acronyms

Acronyms

ACR – Annual Certification Report
BOD5 – Biochemical Oxygen Demand (5-day test)
BMP – Best Management Practice
BAT – Best Available Technology Economically Achievable
BPT - Best Practicable Technology
CBS - Chemical Bulk Storage
CFR – Code of Federal Regulations
COD – Chemical Oxygen Demand
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DMR – Discharge Monitoring Report
ECL - Environmental Conservation Law
ELG – Effluent Limitations Guidelines
EPA – U. S. Environmental Protection Agency
EPCRA – Emergency Planning and Community Right-to-know Act
MDL - Method Detection Limit
MGD – Million Gallons per Day
MS4 – Municipal Separate Storm Sewer System
MSGP – Multi-Sector General Permit
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
NRC – National Response Center
NTU – Nephelometric Turbidity Unit
PBS - Petroleum Bulk Storage
PQL - Practical Quantitation Limit
RCRA – Resource Conservation and Recovery Act
RQ – Reportable Quantity
SIC – Standard Industrial Classification
SPCC – Spill Prevention, Control, and Countermeasure
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
TSS – Total Suspended Solids
USGS – United States Geological Survey

Definitions

Note: Additional definitions are provided within the Part VII industrial sectors for definitions that are specific for those industries.

Annual Certification Report (ACR) - is the primary mechanism for reporting to the *Department*. Every facility covered by this general permit must complete and submit an *ACR* form in accordance with the submission deadlines in Part VI.B -Table VI.1.

Alternative General Permit - is a general permit different from the MSGP that covers some or all of the authorized discharges.

Best Management Practices (BMPs) - means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the *State*. *BMP*s also include treatment requirements (if determined necessary by the *owner or operator*), operating procedures, and practices to control plant site runoff, spillage and leaks, sludge or waste disposal, or drainage from raw material storage.

Benchmark Monitoring – means sampling and analyses of *stormwater discharges* for parameters specified in Part VII for specific sectors.

Benchmark Monitoring Cut-off Concentrations – means *pollutant* levels that are intended to provide a guideline for the *owner or operator* to determine the overall effectiveness of the SWPPP in controlling the *discharge* of *pollutants* to receiving waters. The *benchmark* concentrations do not constitute direct *effluent limitations*. Therefore, a *benchmark* exceedance is not a permit violation in and of itself. It does, however, signal the need for the *owner or operator* to evaluate potential sources of *stormwater* contaminants at the facility.

Best Practicable Control Technology Currently Available (BPT) – means the first level of technology-based standards established by the CWA to control *pollutants discharge*d to waters of the U.S. BPT effluent limitations guidelines are generally based on the average of the best existing performance by plants within an industrial category or subcategory.

Co-located Industrial Activities - occurs when a facility has industrial activities included in more than one industrial sector. *Stormwater discharges* from co-located activities must comply with requirements for all relevant sectors.

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)"* also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal*.* Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction SWPPP – as defined per the NYSDEC SPDES General Permit for *Stormwater* Discharges from Construction Activity, GP-0-15-002.

Control Measure - refers to any BMP *stormwater* control or other method (including *non-numeric effluent limitations*) used to prevent or reduce the *discharge* of *pollutants* to *waters of the United States*.

Corrective Action - any action taken, or required to be taken, to (1) repair, modify, or replace any control measure used at the site; (2) clean up and dispose of spills, releases, or other deposits found on the site; and (3) remedy a permit violation.

Department - means the New York State *Department* of Environmental Conservation as well as meaning the *Department*'s designated agent.

Discharge(s) - means any addition of any *pollutant* to *waters of the State* through an outlet or *point source*.

Discharge Authorized by a *SPDES* Permit - means *discharges* of wastewater or *stormwater* from sources listed in the permit, that do not violate *ECL* Section 17-0501, that are through *outfalls* listed in the permit, and that are:

1. *discharges* within permit limitations of *pollutants* limited in the *SPDES* permit;

2. *discharges* within permit limitations of *pollutants* limited by an indicator limit in the *SPDES* permit;

3. *discharges* of *pollutants* subject to action level requirements in the *SPDES* permit;

4. *discharges* of *pollutants* not explicitly listed in the *SPDES* permit, but reported in the *SPDES* permit application record as detected in the *discharge* or as something the *permittee* knows or has reason to believe to be present in the *discharge*, provided the special conditions section of the applicable *SPDES* permit does not otherwise forbid such a *discharge* and provided that such *discharge* does not exceed, by an amount in excess of normal effluent variability, the level of *discharge* that may reasonably be expected for that *pollutant* from information provided in the *SPDES* permit application record;

5. *discharges* of *pollutants* not required to be reported on the appropriate and current New York State *SPDES* permit application; provided the special conditions section of the permit does not otherwise forbid such a *discharge*. The *Department* may, in accordance with law and regulation, modify the permit to include limits for any *pollutant* even if that *pollutant* is not required to be reported on the *SPDES* permit application; or

6. Non-stormwater *discharges* listed in Part 750-1.2(a)(29)(vi), with the following exception:

    - Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned.

Discharge Monitoring Report (DMR) - means a report submitted by the *owner or operator* to the *Department* summarizing the effluent monitoring results obtained by the *owner or operator* over periods of time as specified in the *SPDES* permit.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the *Environmental Conservation Law*.

Effluent Limitation - means any restriction on quantities, quality, rates and concentrations of chemical, physical, biological, and other constituents of effluents that are *discharge*d into waters of the *State*.

Effluent Limitation Guideline (ELG) - means toxic or pretreatment *effluent limitations* contained in 40 CFR Parts 405 to 471 (see 6 NYCRR 750-1.24 of this Part).

General *SPDES* permit - means a *SPDES* permit issued pursuant to 6 NYCRR Part 750-1.21 authorizing a category of *discharges*.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

Groundwater - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

High Volume Hydraulic Fracturing – means the stimulation of a well using 300,000 gallons or more of water as the primary carrier fluid or base fluid in the hydraulic fracturing fluid for well completion.

Hotspot – Area where land use or activities generate highly contaminated runoff, with concentrations of *pollutants* in excess of those typically found in stormwater.

Impaired Water (or "Impaired Waterbody" or "Impaired Waterbodies") - A water is impaired if it is determined that it does not meet applicable water quality standards, which are adopted for each water class to protect the best uses designated for that class. Impaired waters are those waters 1) identified on the 2016 New York State Section 303(d) List of *Impaired/TMDL* Waters, or 2) designated as an Integrated Reporting Category (IRC) 4a or 4b waters. An IRC 4a water is an impaired water for which a TMDL to address the impairing *pollutant*/cause has been established. An IRC 4b water is an impaired water where a TMDL is not necessary because other required control measures are expected to result in restoration in a reasonable period of time.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds

Individual *SPDES* Permit - means a *SPDES* "permit" issued to a single facility in one location in accordance with this Part (as distinguished from a general *SPDES* permit).

Industrial Activity - the 11 categories of industrial activities included in the definition of "*stormwater discharges* associated with *industrial activity*."

Industrial *Stormwater* - *stormwater* runoff associated with the definition of "*stormwater discharges* associated with *industrial activity*."

Industrial Waste - means any liquid, gaseous, solid or waste substance or a combination thereof resulting from any process of industry, manufacturing, trade, or business or from the development or recovery of any natural resources, which may cause or might reasonably be expected to cause pollution of the *waters of the State* in contravention of the standards adopted as provided herein.

Measurable Storm Event - a storm event with at least 0.1 inch of precipitation that produces runoff.

Method Detection Limit - means the level at which the analytical procedure referenced is capable of determining with a 99 percent probability that the substance is present. The precision at this level is plus or minus 100 percent.

Minimize – means reduce and/or eliminate to the extent achievable using *control measures* (including *BMPs*) that are technologically available and economically practicable and achievable in the light of best industry practice.

Municipality - means any county, town, city, village, district corporation, special improvement district, sewer authority or agency thereof.

Municipal Separate Storm Sewer System (MS4)- a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

1. Owned or operated by a *State*, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to *State* law) having jurisdiction over disposal of sewage, *industrial wastes*, *stormwater*, or other wastes, including special districts under *State* law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that *discharges* to *waters of the United States*;

2. Designed or used for collecting or conveying *stormwater*;

3. Which is not a combined sewer; and

4. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National *Pollutant* Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and *stormwater* permits under the Federal Water Pollution Control Act (Clean Water Act).

No exposure - all industrial materials or activities are protected by a storm-resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff.

Outfall - means the terminus of a sewer system, or the point of emergence of any waterborne sewage, *industrial waste* or other wastes or the effluent therefrom, into the waters of the *State*.

Owner or Operator - means the *owner or operator* of any facility or activity subject to regulation under 6 NYCRR Part 750. In accordance with 6 NYCRR Part 750-1.6(a), when a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit

Person or Persons - means any individual, public or private corporation, political subdivision, government agency, *municipality*, partnership, association, firm, trust, estate or any other legal entity whatsoever.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be *discharge*d.

Pollutant(s) - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast *discharge*d into water; which may cause or might reasonably be expected to cause pollution of the *waters of the State* in contravention of the standards or guidance values adopted as provided in Parts 700 et seq of this Title.

Primary Industrial Activity - The operation that generates the most revenue or employs the most personnel is the operation in which the facility is primarily engaged. In situations where the vast majority of on-site activity falls within one SIC code, that activity may be the *primary industrial activity*. The primary industrial determination is based on the value of receipts or revenues or, if such information is not available for a particular facility, the number of employees or production rate for each process may be compared.

Qualified Person - A qualified person may be either a facility employee or hired consultant who is familiar with the day-to-day operations associated with their assigned responsibilities at the facility. The qualified person possesses the knowledge and skills to assess conditions, operations and activities at the facility that could impact stormwater quality and can evaluate the effectiveness of control measures being implemented as part of the requirements of the permit. The owner/operator may designate more than one individual as the qualified person.

If the control measures include Erosion and Sediment controls, then the person selected to inspect the erosion & sediment controls must be knowledgeable in the principles and practices of erosion and sediment control and must receive four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the qualified person shall receive four (4) hours of training, every three (3) years.

Note: Inspections of any post-construction *stormwater* management practices that include structural components, such as a dam for an impoundment, shall be performed by a Qualified Professional.

Qualified Professional - means a person that is knowledgeable in the principles and practices of *stormwater* management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other *Department* endorsed individual(s). Individuals preparing SWPPPs that require the post-construction *stormwater* management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics in order to prepare a SWPPP that conforms to the *Department*'s technical standard. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article

145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Qualifying Storm Event – a storm event with at least 0.1 inch of precipitation (defined as a "measurable" event), providing the interval from the preceding measurable storm is at least 72 hours. The 72-hour storm interval is waived if the preceding measurable storm did not result in a *stormwater discharge* (e.g., a storm events in excess of 0.1 inches may not result in a *stormwater discharge* at some facilities), or if the *owner or operator* is able to document that less than a 72 hour interval is representative for local storm events during the sampling period.

Reportable Quantity Release - a release of a hazardous substance at or above the established legal threshold that requires emergency notification. Refer to 40 CFR Parts110, 177, and 302 for complete definitions and reportable quantities for which notification is required.

Runoff Coefficient - the fraction of total rainfall that will appear at the conveyance as runoff.

Run-on - sources of stormwater that drain from land located upslope or upstream from, and adjacent to, the facility.

Significant Materials - includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with *stormwater discharges*.

State - means the State of New York.

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the *ECL* and this Part for issuance of permits authorizing *discharges* to the waters of the *State*.

Stormwater - means that portion of precipitation that, once having fallen to the ground, is in excess of the evaporative or infiltrative capacity of soils, or the retentive capacity of surface features, which flows or will flow off the land by surface runoff to waters of the *State*.

Stormwater Discharges Associated with Industrial Activity - the *discharge* from any conveyance that is used for collecting and conveying *stormwater* and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include *discharges* from facilities or activities excluded from the *NPDES* program under Part 122. For the categories of industries identified in this section, the term includes, but is not limited to, *stormwater discharges* from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at 40 CFR Part 401 of this chapter); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and areas where *industrial activity* has taken place in the past and *significant materials* remain and are exposed to *stormwater*. For the purposes of this paragraph, material handling activities include storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with *stormwater* drained from the above described areas. Industrial facilities include those that are federally, *State*, or municipally owned or operated that meet the description of the facilities listed in Appendix D of this permit. The term also includes those facilities designated under the provisions of 40 CFR 122.26(a)(1)(v).

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the *State* of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the *State* or within its jurisdiction. Waters of the *State* are further defined in 6 NYCRR Parts 800 to 941.

Technical Standards – means the New York State *Stormwater* Management Design Manual (2015) and New York State Standards and Specifications for Erosion and Sediment Control (2016).

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single *pollutant* from all contributing point and nonpoint sources. It is a calculation of the maximum amount of a *pollutant* that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the *pollutant*'s sources. A TMDL stipulates waste load allocations (WLAs) for *point source discharges*, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS).

Waters of the United States - means:

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;

2. All interstate waters, including interstate "wetlands";

7. All other waters, such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce, including any such waters:

   a. Which are or could be used by interstate or foreign travelers for recreational or other purposes;

   b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

   c. Which are or could be used for industrial purposes by industries in interstate commerce;

   d. All impoundments of waters otherwise defined as *waters of the United States* under this definition;

   e. Tributaries of waters identified in paragraphs (1) through (4) of this definition;

   f. The territorial sea; and

   g. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs 1 through 6 of this definition.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

Appendix B - Sectors of Industrial Activity Covered by this Permit

SECTORS OF INDUSTRIAL ACTIVITY COVERED BY THIS PERMIT	
Activities Consistent with Descriptions and SIC Code or Activity Code	**Activity Represented**
Sector A: Timber Products	
2411	Log Storage and Handling (Wet deck storage areas are only authorized if no chemical additives are used in the spray water or applied to the logs).
2421	General Sawmills and Planning Mills
2426	Hardwood Dimension and Flooring Mills
2429	Special Product Sawmills, Not Elsewhere Classified
2431-2439 (except 2434 - see Sector W)	Millwork, Veneer, Plywood, and Structural Wood
2441, 2448, 2449	Wood Containers
2451, 2452	Wood Buildings and Mobile Homes
2491	Wood Preserving
2493	Reconstituted Wood Products
2499	Wood Products, Not Elsewhere Classified
Sector B: Paper and Allied Products	
2611	Pulp Mills
2621	Paper Mill
2631	Paperboard Mills
2652-2657	Paperboard Containers and Boxes
2671-2679	Converted Paper and Paperboard Products, Except Containers and Boxes
Sector C: Chemical and Allied Products	
2812-2819	Industrial Inorganic Chemicals
2821-2824	Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic and Other Manmade Fibers Except Glass
2833-2836	Medicinal Chemicals and Botanical Products; Pharmaceutical Preparations; In Vitro and In Vivo Diagnostic Substances; Biological Products, Except Diagnostic Substances
2841-2844	Soaps, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations
2851	Paints, Varnishes, Lacquers, Enamels, and Allied Products
2861-2869	Industrial Organic Chemicals
2873-2879	Agricultural Chemicals
2891-2899	Miscellaneous Chemical Products
2911	Petroleum Refineries
3952 (limited to list)	Inks and Paints, Including China Painting Enamels, India Ink, Drawing Ink, Platinum Paints for Burnt Wood or Leather Work, Paints for China Painting, Artist's Paints and Artist's Watercolors

SECTORS OF INDUSTRIAL ACTIVITY COVERED BY THIS PERMIT (Continued)	
Activities Consistent with Descriptions and SIC Code or Activity Code	**Activity Represented**
Sector D: Asphalt Paving and Roofing Materials and Lubricants	
2951, 2952	Asphalt Paving and Roofing Materials
2992, 2999	Miscellaneous Products of Petroleum and Coal
Sector E: Glass Clay, Cement, Concrete, and Gypsum Products	
3211	Flat Glass
3221, 3229	Glass and Glassware, Pressed or Blown
3231	Glass Products Made of Purchased Glass
3241	Hydraulic Cement
3251-3259	Structural Clay Products
3261-3269	Pottery and Related Products
3271-3275	Concrete, Gypsum and Plaster Products
3281	Cut Stone and Stone Products
3291-3299	Abrasive, Asbestos, and Miscellaneous Non-metallic Mineral Products
Sector F: Primary Metals	
3312-3317	Steel Works, Blast Furnaces, and Rolling and Finishing Mills
3321-3325	Iron and Steel Foundries
3331-3339	Primary Smelting and Refining of Nonferrous Metals
3341	Secondary Smelting and Refining of Nonferrous Metals
3351-3357	Rolling, Drawing, and Extruding of Nonferrous Metals
3363-3369	Nonferrous Foundries (Castings)
3398, 3399	Miscellaneous Primary Metal Products
Sector G: Metal Mining (Ore Mining and Dressing)	
1011	Iron Ores
1021	Copper Ores
1031	Lead and Zinc Ores
1041, 1044	Gold and Silver Ores
1061	Ferroalloy Ores, Except Vanadium
1081	Metal Mining Services
1094, 1099	Miscellaneous Metal Ores
Sector H: [Reserved]	
Sector I: Oil and Gas Extraction and Refining	
1311	Crude Petroleum and Natural Gas
1321	Natural Gas Liquids
1381-1389	Oil and Gas Field Services

SECTORS OF INDUSTRIAL ACTIVITY COVERED BY THIS PERMIT (Continued)	
Activities Consistent with Descriptions and SIC Code or Activity Code	**Activity Represented**
Sector J: Mineral Mining and Dressing	
1411	Dimension Stone
1422-1429	Crushed and Broken Stone, Including Rip Rap
1442, 1446	Sand and Gravel
1455, 1459	Clay, Ceramic, and Refractory Materials
1474-1479	Chemical and Fertilizer Mineral Mining
1481	Nonmetallic Minerals Services, Except Fuels
1499	Miscellaneous Nonmetallic Minerals, Except Fuels
Sector K: Hazardous Waste Treatment, Storage, or Disposal Facilities	
HZ	Hazardous Waste Treatment Storage or Disposal
Sector L: Landfills and Land Application Sites	
LF	Landfills, Land Application Sites, and Non-Compliant Landfills
Sector M: Automobile Salvage Yards	
5015	Automobile Salvage Yards
Sector N: Scrap Recycling Facilities	
5093	Scrap Recycling Facilities, Including Transfer Stations Accepting Household Recyclables
4499 (limited to list)	Dismantling Ships, Marine Salvaging, and Marine Wrecking - Ships For Scrap
Sector O: Steam Electric Generating Facilities	
SE	Steam Electric Generating Facilities
Sector P: Land Transportation and/or Warehousing	
4011, 4013	Railroad Transportation
4111-4173	Local and Highway Passenger Transportation
4212-4231	Motor Freight Transportation and/or Warehousing
4311	United States Postal Service
5171	Petroleum Bulk Stations and Terminals
Sector Q: Water Transportation	
4412-4499(except 4499 facilities as specified in Sector N)	Water Transportation, Marinas, Yacht Clubs
Sector R: Ship and Boat Building or Repairing Yards	
3731, 3732	Ship and Boat Building or Repairing Yards
Sector S: Air Transportation	
4512-4581	Air Transportation Facilities

SECTORS OF INDUSTRIAL ACTIVITY COVERED BY THIS PERMIT (Continued)	
Activities Consistent with Descriptions and SIC Code or Activity Code	**Activity Represented**
Sector T: Treatment Works	
TW	Treatment Works
Sector U: Food and Kindred Products	
2011-2015	Meat Products
2021-2026	Dairy Products
2032-2038	Canned, Frozen and Preserved Fruits, Vegetables & Food Specialties
2041-2048	Grain Mill Products
2051-2053	Bakery Products
2061-2068	Sugar and Confectionery Products
2074-2079	Fats and Oils
2082-2087	Beverages
2091-2099	Miscellaneous Food Preparations and Kindred Products
2111-2141	Tobacco Products
Sector V: Textile Mills, Apparel, and Other Fabric Product Manufacturing, Leather and Leather Products	
2211-2299	Textile Mill Products
2311-2399	Apparel and Other Finished Products Made From Fabrics and Similar Materials
3131-3199 (3111 - see Sector Z)	Leather and Leather Products, except Leather Tanning and Finishing
Sector W: Furniture and Fixtures	
2434	Wood Kitchen Cabinets
2511-2599	Furniture and Fixtures
Sector X: Printing and Publishing	
2711-2796	Printing, Publishing, and Allied Industries
Sector Y: Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries	
3011	Tires and Inner Tubes
3021	Rubber and Plastics Footwear
3052, 3053	Gaskets, Packing, and Sealing Devices and Rubber and Plastics Hose and Belting
3061, 3069	Fabricated Rubber Products, Not Elsewhere Classified
3081-3089	Miscellaneous Plastics Products
3931	Musical Instruments
3942-3949	Dolls, Toys, Games and Sporting and Athletic Goods
3951-3955 (except 3952 facilities specified in Sector C)	Pens, Pencils, and Other Artists' Materials
3961, 3965	Costume Jewelry, Costume Novelties, Buttons, and Miscellaneous Notions, Except Precious Metal. Miscellaneous Manufacturing Industries.
3991-3999	Miscellaneous Manufacturing Industries.

SECTORS OF INDUSTRIAL ACTIVITY COVERED BY THIS PERMIT (Continued)	
Activities Consistent with Descriptions and SIC Code or Activity Code	**Activity Represented**
Sector Z: Leather Tanning and Finishing	
3111	Leather Tanning, Currying and Finishing
Sector AA: Fabricated Metal Products	
3411–3499	Fabricated Metal Products, Except Machinery and Transportation Equipment
3911–3915	Jewelry, Silverware, and Plated Ware
Sector AB: Transportation Equipment, Industrial or Commercial Machinery	
3511-3599 (except 3571-3579 - see Sector AC)	Industrial and Commercial Machinery (Except Computer and Office Equipment).
3711-3799 (except 3731, 3732 - see Sector R)	Transportation Equipment (Except Ship and Boat Building and Repairing)
Sector AC: Electronic, Electrical, Photographic, and Optical Goods	
3571-3579	Computer and Office Equipment
3612-3699	Electronic, Electrical Equipment and Components, Except Computer Equipment
3812-3873	Measuring, Analyzing and Controlling Instrument; Photographic and Optical Goods

Appendix C - Sectors Subject to Benchmark Monitoring Requirements

INDUSTRIAL SECTORS SUBJECT TO BENCHMARK MONITORING		
Industry Sector [1]	**Industry Sub-sector**	**Benchmark Monitoring Parameters**
A	General Sawmills and Planing Mills	TSS, COD, Zinc, TN, Phosphorus
	Wood Preserving Facilities	Arsenic, Chromium, Copper
	Log Storage and Handling	TSS
	Hardwood Dimension and Flooring Mills	TSS, COD
B	Paperboard Mills	COD
C	Industrial Inorganic Chemicals	Aluminum, Iron, TN
	Plastics, Synthetic Resins, etc	Zinc
	Soaps, Detergents, Cosmetics, Perfumes	TN, Zinc
	Agricultural Chemicals	TN, Iron, Lead, Zinc, Phosphorus
	Petroleum Refining	Oil & Grease, Lead, Zinc, BTEX
D	Asphalt Paving and Roofing Materials	TSS
E	Clay Products	Aluminum
	Concrete Products	TSS, pH, Iron
F	Steel Works, Blast Furnaces, and Rolling .... and Finishing Mills	Aluminum, Zinc
	Iron and Steel Foundries	Aluminum, TSS, Copper, Iron, Zinc
	Nonferrous Rolling, Drawing & Extruding	Copper, Zinc
	Nonferrous Foundries (Castings)	Copper, Zinc
G [2]	Ore Mining and Dressing	TSS, COD, pH, turbidity, metals
H	[Reserved]	
I	Oil and Gas Extraction	TSS, Chlorides, pH, [4]
J	Sand and Gravel Mining	TSS, TN, Iron, Zinc, Phosphorus
	Dimension and Crushed Stone and Non- metallic Minerals (except fuels)	TSS
K	Hazardous Waste Treatment, Storage or ..... Disposal	TSS, COD, TN, Arsenic, Cadmium, Cyanide, Lead, Magnesium, Mercury, Selenium, Silver

1 - Table does not include parameters for compliance monitoring under *effluent limitations guidelines*.
2 - See Sector G (Part VII.G) for additional monitoring *discharges* from waste rock and overburden piles from active ore mining or dressing facilities which includes TSS, COD, turbidity, pH, hardness, and metals.
3 - Monitoring requirement for airports with deicing activities utilizing more than 100 tons of urea or more than 100,000 gallons of glycol per year.
4 - BTEX is Benzene, Ethylbenze, Toluene and Xylene.

INDUSTRIAL SECTORS SUBJECT TO BENCHMARK MONITORING (Continued)		
Industry Sector [1]	**Industry Sub-sector**	**Benchmark Monitoring Parameters**
L	Landfills, Land Application Sites, and Open.. Dumps	Iron, TSS, TN, Phosphorus
	Landfills, Land Application Sites and Open .. Dumps, Except Municipal Solid Waste Landfill Sites Closed in accordance with 40 CFR 258.60	Iron, TSS
M	Automobile Salvage Yards	TSS, Oil & Grease, Aluminum, Iron, Lead, BTEX [4]
N	Scrap Recycling/Waste Recycling Facilities .. and Facilities Engaged in Ship Dismantling, Marine Salvaging & Marine Wrecking for Scrap	TSS, COD, Oil & Grease, Aluminum, Cadmium, Copper, Chromium, Iron, Lead, Zinc
	Scrap & Waste Recycling Facilities which .... include *Stormwater Discharges* from Shredder Fluff Storage Areas	TSS, COD, Oil & Grease, Aluminum, Cadmium, Copper, Chromium, Iron, Lead, Zinc, Mercury, PCBs, BTEX [4]
O	Steam Electric Generating Facilities	Iron, Oil & Grease, PCBs
P	Land Transportation and/or Warehousing, including Transfer Stations with vehicle maintenance facilities	Oil & Grease, COD, BTEX [4]
Q	Water Transportation Facilities	Aluminum, Iron, Zinc, Lead
S	Airports with deicing activities [3]	COD, BOD, TN, pH
T	Treatment Works	COD
U	Grain Mill Products	TSS, TN, Phosphorus
	Fats and Oils Products	BOD, COD, TSS, TN, Phosphorus
Y	Rubber Products	Zinc
Z	Leather Tanning and Finishing	TN, Chromium
AA	Fabricated Metal Products Except Coating	TN, Aluminum, Iron, Zinc
	Fabricated Metal Coating and Engraving	TN, Zinc
AC	Electronic, Electrical Equipment and Components, Photographic & Optical Goods	TSS, Copper, Lead

1 - Table does not include parameters for compliance monitoring under *effluent limitations guidelines*.
2 - See Sector G (Part VII.G) for additional monitoring *discharges* from waste rock and overburden piles from active ore mining or dressing facilities which includes TSS, COD, turbidity, pH, hardness, and metals.
3 - Monitoring requirement for airports with deicing activities utilizing more than 100 tons of urea or more than 100,000 gallons of glycol per year.
4 - BTEX is Benzene, Ethylbenze, Toluene and Xylene.

Appendix D - Compliance Monitoring Requirements - Industrial Activities Subject to Effluent Limitation Guidelines

Effluent limitation guidelines applicable to *discharges* that may be eligible for permit coverage	
Effluent Limitation Guideline	**Sectors With Affected Facilities**
Discharges resulting from spray down or intentional wetting of logs at wet deck storage areas (40 CFR Part 429, Subpart I (2002) (established January 26, 1981))	A
Contaminated runoff from phosphate fertilizer manufacturing facilities (40 CFR Part 418 Subpart A (2002) (established April 8, 1974))	C
Runoff from asphalt emulsion facilities (40 CFR Part 443 Subpart A (2002) (established July 24, 1975))	D
Runoff from material storage piles at cement manufacturing facilities (40 CFR Part 411 Subpart C (2002) (established February 23, 1977))	E
Mine dewatering *discharges* at crushed stone mines (40 CFR Part 436, Subpart B)	J
Mine dewatering *discharges* at construction sand and gravel mines (40 CFR Part 436, Subpart C)	J
Mine dewatering *discharges* at industrial sand mines (40 CFR Part 436, Subpart D)	J
Runoff from landfills, (40 CFR Part 445, Subpart A and B (2002) (established February 2, 2000))	K & L
Coal pile runoff at steam electric generating facilities (40 CFR Part 423 (2002) (established November 19, 1982))	O
Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures (40 CFR Part 449, (established May 16, 2012))	S

Appendix E - Additional Information for New *Discharges*

Any facility with new *stormwater discharges associated with industrial activity* which require any other *Uniform Procedures Act* (http://www.dec.ny.gov/permits/6081.html) permit(s) (*Environmental Conservation Law*, 6 NYCRR Part 621) are not initially eligible for coverage under this general permit. The *discharger* must first complete a Short Environmental Assessment Form which can be found in Appendix B of 6 NYCRR Part 617.20 or on the web at http://www.dec.ny.gov/regs/6191.html, and submit it to the appropriate NYSDEC Regional Permit Administrator. Upon a review of the Short Environmental Assessment Form and the information specified below, the *Department* may authorize the applicant to submit a Notice of Intent (NOI) to obtain coverage under this general permit or, alternatively, require an application for an *individual SPDES permit*.

Additional Information

1. A site map showing topography (or indicating the outline of drainage areas served by the *outfall(s)* for which *discharge* authorization and permit coverage is being sought if a topographic map is unavailable) of the facility including: each of its drainage and *discharge* structures; the drainage area of each *stormwater outfall*; paved areas and buildings within the drainage area of each *stormwater outfall*; areas used for outdoor storage or disposal of *significant materials*; structural *control measure*(s) to reduce *pollutants* in *stormwater* runoff; material loading and access areas; areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each hazardous waste treatment, storage or disposal facility (including each area not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); wells where fluids from the facility are injected underground; and springs, and surface and/or *groundwater* bodies which will receive *stormwater discharges* from the facility.

2. An estimate of the area of impervious surfaces (including paved areas and building roofs) and the total area drained by each *outfall* and a narrative description of the following: *significant materials* that, in the three years prior to the submittal of this information, have been treated, stored or disposed of in a manner which will allow exposure to *stormwater*; methods of treatment, storage or disposal of such materials; materials management practices employed to *minimize* contact of these materials with *stormwater* runoff; materials loading and access areas; the location, manner and frequency of application of pesticides, herbicides, soil conditioners and fertilizers; the location and description of structural and non-structural *control measures* being used to reduce *pollutants* in *stormwater* runoff; and a description of the *stormwater* treatment, including the ultimate disposal of any solid or fluid wastes other than by *discharge*.

3. A certification that all *outfalls* that could contain *stormwater discharges associated with industrial activity* have been tested or evaluated for the presence of non-*stormwater discharges* which are not covered by an existing *SPDES* permit; tests for such non-*stormwater discharges* may include smoke tests, fluorometric, analysis of accurate schematics, as well as other appropriate tests. The certification shall include a description of the method used, the date of any testing, and the on-site drainage points that were directly observed during a test.

4. Existing information regarding reportable leaks or spills of toxic or hazardous *pollutants* at the facility that have occurred within the three years prior to the submittal of this information.

5. Estimates for the following parameters for all *outfalls*:

   - Any *pollutant* limited in an effluent limitations guideline for which the facility is subject;
   - Any *pollutant* listed in the facility's existing *SPDES* permit, if any;
   - Oil and grease, pH, BOD5, COD, TSS, total phosphorus, Ammonia, Total Kjeldahl nitrogen, and nitrate plus nitrite nitrogen;
   - Any information on the *discharge* required under paragraph §122.21(g)(7)(iii) and (iv) of 40 CFR Part 122; and
   - The flow rate and total amount of *discharge* for *stormwater* event(s) and the method of estimation.

6. Other information as the *Department* may reasonably require to determine whether coverage under this general permit or, alternatively, under an individual permit is required.

Appendix F - List of DEC Regional Offices

List of NYS DEC Regional Offices			
Region	**Counties Covered**	**DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators**	**DIVISION OF WATER (DOW) Water (SPDES) Program Regional Water Engineer**
1	Nassau and Suffolk	SUNY @ Stony Brook 50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0365	SUNY @ Stony Brook 50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Ave., Suite 1W Whiteplains, NY 10603-2860 Tel. (914) 428-2505
4	Albany, Columbia , Delaware , Greene , Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 NYS Route 86 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-0220 Tel. (518) 623-1200
6	Herkimer, Jefferson, Lewis, Oneida and St. Lawrence	State Office Building 317 Washington Street Watertown, NY 13601-3787 Tel. (315) 785-2245	State Office Building 207 Genesee Street Utica, NY 13501-2885 Tel. (315) 793-2554
7	Broome , Cayuga , Chenango, Cortland, Madison, Onondaga, Oswego, Tioga and Tompkins	615 Erie Blvd. West Syracuse, NY 13204-2400 Tel. (315) 426-7438	615 Erie Blvd. West Syracuse, NY 13204-2400 Tel. (315) 426-7500
8	Chemung, Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne and Yates	6274 East Avon-Lima Road Avon, NY 14414-9519 Tel. (585) 226-2466	6274 East Avon-Lima Rd. Avon, NY 14414-9519 Tel. (585) 226-2466
9	Allegany, Cattaraugus, Chautauqua, Erie, Niagara and Wyoming	270 Michigan Avenue Buffalo, NY 14203-2999 Tel. (716) 851-7165	270 Michigan Ave. Buffalo, NY 14203-2999 Tel. (716) 851-7070

Appendix G – Pollutant(s) of Concern for Impaired Waterbodies Reference Table

Pollutant(s) of Concern for Impaired Waterbodies Reference Table		
Pollutant of Concern Causing Impairment	**Applicable Benchmark or Numeric Effluent Limit**	**Sector**
Acid/Base (pH)	pH	A, D, E, G, I, J, K, L, S
Algal/Plant Growth	Total Nitrogen (TN)	A, C, J, K, L, S, U, Z, AA
	Total Phosphorous (TP)	C, J, L, U
	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC
Ammonia	Total Nitrogen (TN)	A, C, J, K, L, S, U, Z, AA
	Ammonia	K, L, S
Biological Impacts	Aluminum	C, E, F, M, N, Q, AA
	Arsenic	A, G, K
	Cadmium	G, K, N
	Beryllium	G
	Chromium	A, K, N, Z
	Copper	A, F, G, N, AC
	Cyanide	K
	Iron	C, E, F, G, J, L, M, N, O, Q, AA
	Lead	C, G, K, M, N, Q, AC
	Magnesium	K
	Manganese	G
	Mercury	G, K, N
	Nickel	G
	Selenium	G, K
	Silver	G, K
	Zinc	A, C, F, G, J, K, L, N, Q, Y, AA
	Chlorides	I
	Total Nitrogen (TN)	A, C, J, K, L, S, U, Z, AA
	Total Phosphorous (TP)	C, J, L, U
	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC

Pollutant(s) of Concern for Impaired Waterbodies Reference Table (Continued)		
Pollutant of Concern Causing Impairment	**Applicable Benchmark or Effluent Limit**	**Sector**
Cadmium	Cadmium	G, K, N
Chlorides/Salts	Chlorides	I
Floatables	Oil & Grease	C, D, M, N, O, P
Mercury	Mercury	G, K, N
Harmful Algal Blooms	Total Nitrogen (TN)	A, C, J, K, L, S, U, Z, AA
	Total Phosphorous (TP)	C, J, L, U
	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC
Low D.O./ Oxygen Demand	Biochemical Oxygen Demand (BOD)	K, L, S, U
	Chemical Oxygen Demand (COD)	A, B, G, K, N, P, S, T, U
	Total Nitrogen (TN)	A, C, J, K, L, S, U, Z, AA
	Total Phosphorous (TP)	C, J, L, U
Nitrogen	Total Nitrogen (TN)	A, C, J, K, L, S, U, Z, AA
Nutrients	Total Nitrogen (TN)	A, C, J, K, L, S, U, Z, AA
	Total Phosphorous (TP)	C, J, L, U
	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC
PCBs	PCBs	N, O
Phosphorus	Total Phosphorous (TP)	C, J, L, U
	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC
Oil & Grease	Oil & Grease	C, D, M, N, O, P
Silt/Sediment	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC
Turbidity	Total Suspended Solids (TSS)	A, D, E, F, G, I, J, K, L, M, N, U, AC

Appendix H – Standard Permit Conditions

1. Duty to Comply

The *owner or operator* must comply with all terms and conditions of the permit. Any permit noncompliance constitutes a violation of the *Environmental Conservation Law* and is grounds for enforcement action, ineligibility for this SPDES general permit, or denial of a permit renewal.

An owner/operator's filing of a request for a transfer or termination, or notification of planned changes or anticipated non-compliance does not limit, diminish or stay compliance with any terms of this general permit.

2. Continuation of the Expired General Permit

In the event a new general permit is not issued prior to the expiration of this general permit and this general permit is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, then the *owner or operator* with coverage under this general permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit until such time that a new general permit is issued. This general permit expires 5 years from the effective date.

3. Enforcement

Failure of the *owner or operator* to strictly adhere to any of the SPDES general permit requirements contained herein shall constitute a violation of this SPDES general permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this SPDES general permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

4. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

5. Duty to Mitigate

The *owner or operator* shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

6. Duty to Provide Information

The *owner or operator* shall furnish to the *Department*, within five (5) business days of a *Department* request for such information, any information requested to determine compliance with this SPDES general permit, or to determine whether cause exists for denying coverage in accordance with Appendix H.13 of this general permit. The *owner or operator* shall also furnish upon request, copies of records required by this permit.

7. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts or submitted incorrect information in the NOI or in any report to the *Department*, they shall promptly submit corrected facts or information.

8. Signatory Requirements

a. All forms (NOI and NOT), shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(a) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(b) the manager of one or more manufacturing, production or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements, and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. For a partnership by a general partner

c. For a sole proprietorship by the proprietor,

d. For a municipality: State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. Regional Administrators of EPA).

e. Duly Authorized Representatives
All reports and documentation required by the permit and other information requested by the *Department* shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above and submitted to the *Department*.

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of

manager, *owner or operator*, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

f. Changes to authorization
If an authorization under Appendix H.8.a is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements above must be submitted to the *Department* prior to or together with any reports, information, or applications to be signed by an authorized representative.

g. Certification
Any person signing documents under this section shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that *qualified personnel* properly gathered and evaluated the information submitted. Based on my inquiry of the *person* or *persons* who manage the system, or those *person* directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

9. Penalties for Falsification of Documentation/Penalties related to Monitoring Devices

In accordance with 6 NYCRR 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

10. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the *owner or operator* from any responsibilities, liabilities, or penalties to which the *owner or operator* is or may be subject under section 311 of the CWA or section 102 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA").

11. Property Rights

The issuance of this permit does not convey any property rights in either real property or personal property, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, *State* or local laws or regulations; nor does it obviate the necessity of obtaining the assent of any other jurisdiction as required by law for the authorized *discharge*. Owners or Operators must obtain any applicable conveyances, easements, licenses and/or access to real property prior to commencing *discharges* authorized by this SPDES general permit.

12. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be impaired or affected thereby.

13. Requiring an Individual Permit or an Alternative General Permit

The *Department* may require any person authorized by this general permit to apply for and/or obtain either an *individual SPDES permit* or an alternative *SPDES* general permit in accordance with 6 NYCRR Part 750-1.21(e).

a. The *Department* may require any *owner or operator* authorized by this permit to apply for and/or obtain either an *individual SPDES permit* or another SPDES general permit. When the *Department* requires any *discharge*r authorized by a general permit to apply for an *individual SPDES permit*, it shall notify the *discharge*r in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the *owner or operator* to file the application for an *individual SPDES permit*, and a deadline, not sooner than 180 days from *owner or operator* receipt of the notification letter, whereby the authorization to *discharge* under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The *Department* may grant additional time upon demonstration, to the satisfaction of the *Department*, that additional time to apply for an alternative authorization is necessary or where the *Department* has not provided a permit determination in accordance with Part 621 of this Title.

b. When an *individual SPDES permit* is issued to a *discharge*r authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for *outfalls* authorized under the *individual SPDES permit* is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

14. State/Environmental Laws

a. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the *owner or operator* from any responsibilities, liabilities, or penalties established pursuant to any applicable *State* law or regulation under authority preserved by section 510 of the Clean Water Act.

b. No condition of this permit shall release the *owner or operator* from any responsibility or requirements under other environmental statutes or regulations.

c. Nothing in this SPDES general permit relieves the Owner or Operator from the requirement to obtain any other permits required by law.

d. Coverage under this SPDES permit does not supersede, revoke or rescind an order on consent or modification of the order or any of the terms, conditions or requirements contained in such order or modification unless specifically intended by the order or a newly issued order.

15. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of *stormwater* pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems installed by an *owner or operator* only when necessary to achieve compliance with the conditions of the permit.

16. Inspection and Entry

The *owner or operator* shall allow an authorized representative of either the *Department* or EPA or, in the case of a facility which *discharges* through a *municipal separate storm sewer system*, an authorized representative of the municipal operator of the separate storm sewer receiving the *discharge*, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the *owner or operator*s premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

b. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit, including required to be maintained for the purposes of operation and maintenance:

c. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practice or operations regulated or required under the permit; and

d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized the CWA or the ECL, any substance or parameters at any location.

17. Definitions

Definitions are included in Appendix A of this permit. Additional definitions are provided within the Part VII industrial sectors for terms that are specific to those industries.

18. Reopener Clause

a. If there is evidence indicating potential or realized impacts on water quality due to any *stormwater discharge associated with industrial activity* covered by this permit, the *owner or operator* of such *discharge* may be required to obtain an individual permit or an alternative general permit in accordance with Appendix H.13 of this permit or the permit may be modified to include different limitations and/or requirements.

b. Permit modification, suspension, or revocation will be conducted according to 6 NYCRR Part 621 and 6 NYCRR 750-1.18 and 750-1.20.

APPENDIX D

Fire Code Citations

New York State Fire Code, 2015 Edition

Chapter 20 – Aviation Facilities

Section 2006.11 – Fuel Spill Prevention and Procedures

2006.11 Fuel spill prevention and procedures.

Fuel spill prevention and the procedures for handling spills shall comply with Sections 2006.11.1 through 2006.11.7.

2006.11.1 Fuel-service equipment maintenance.

Aircraft fuel-servicing equipment shall be maintained and kept free from leaks. Fuel-servicing equipment that malfunctions or leaks shall not be continued in service.

2006.11.2 Transporting fuel nozzles.

Fuel nozzles shall be carried utilizing appropriate handles. Dragging fuel nozzles along the ground shall be prohibited.

2006.11.3 Drum fueling.

Fueling from drums or other containers having a capacity greater than 5 gallons (19 L) shall be accomplished with the use of an *approved* pump.

2006.11.4 Fuel spill procedures.

The fueling-system operator shall establish procedures to follow in the event of a fuel spill. These procedures shall be comprehensive and shall provide for all of the following:

1. Upon observation of a fuel spill, the aircraft-fueling operator shall immediately stop the delivery of fuel by releasing hand pressure from the fuel flow-control valve.
2. Failure of the fuel control valve to stop the continued spillage of fuel shall be cause for the activation of the appropriate emergency fuel shutoff device.
3. A supervisor for the fueling-system operator shall respond to the fuel spill area immediately.

2006.11.5 Notification of the fire department.

The fire department shall be notified of any fuel spill that is considered a hazard to people or property or which meets one or more of the following criteria:

1. Any dimension of the spill is greater than 10 feet (3048 mm).
2. The spill area is greater than 50 square feet (4.65 m^2).
3. The fuel flow is continuous in nature.

2006.11.6 Investigation required.

An investigation shall be conducted by the fueling-system operator of all spills requiring notification of the fire department. The investigation shall provide conclusive proof of the cause and verification of the appropriate use of emergency procedures. Where it is determined that corrective measures are necessary to prevent future incidents of the same nature, they shall be implemented immediately.

2006.11.7 Multiple fuel delivery vehicles.

Simultaneous delivery of fuel from more than one aircraft-fueling vehicle to a single aircraft-fueling manifold is prohibited unless proper backflow prevention devices are installed to prevent fuel flow into the tank vehicles.

National Fire Protection Association 407 – Standard for Aircraft Fuel Servicing, 2012 Edition

Chapter 5.2 – Prevention and Control of Spills

Appendix A.5.2 – Spill Response

Chapter 5.2 – Prevention and Control of Spills

5.2 Prevention and Control of Spills.

5.2.1 Fuel servicing equipment shall comply with the requirements of this standard and shall be maintained in safe operating condition. Leaking or malfunctioning equipment shall be removed from service.

5.2.2 Following fueling of an aircraft, all hoses shall be removed, including those from hydrant systems. All hoses shall also be properly stowed.

5.2.3 Fuel nozzles shall not be dragged along the ground.

5.2.4 Approved pumps, either hand operated or power operated, shall be used where aircraft are fueled from drums. Pouring or gravity flow shall not be permitted from a container with a capacity of more than 5 gallons.

5.2.5 Where a spill is observed, the fuel servicing shall be stopped immediately by release of the deadman controls.

5.2.5.1 In the event that a spill continues, the equipment emergency fuel shutoff shall be actuated.

5.2.5.2 In the event that a spill continues from a hydrant system, the system emergency fuel shutoff shall be actuated.

5.2.5.3 The supervisor shall be notified immediately.

5.2.5.4 Cleaning operations shall be performed by personnel trained per Section 5.1.1 (Only personnel trained in the safe operation of the equipment and fuels they use, the operation of emergency controls, and the procedures to be followed in an emergency shall be permitted to handle fuel).

5.2.5.5 Operation shall not be resumed until the spill has been cleared and conditions are determined to be safe.

5.2.6 The airport fire crew shall be notified if a spill covers over 10 feet in any direction or is over 50 square feet in area, continues to flow, or is otherwise a hazard to persons or property. The spill shall be investigated to determine the cause, to determine whether emergency procedures were properly carried out, and to determine the necessary corrective measures.

Appendix A.5.2 – Spill Response

A.5.2 The following actions are appropriate in the event of a fuel spill, although each spill should be treated as an individual case due to such variables as the size of the spill, type of flammable or combustible liquid involved, wind and weather conditions, equipment arrangement, aircraft occupancy, emergency equipment, and personnel available:

(1) The flow of fuel should be stopped, if possible. If the fuel is discovered leaking or spilling from fuel servicing equipment or hoses, the emergency fuel shutoff should be operated at once. If the fuel is discovered leaking or spilling from the aircraft at the filler opening, vent line, or tank seams during fueling operations, fueling should be stopped immediately. Evacuation of the aircraft should be ordered when necessary. The aircraft then should be thoroughly checked for damage or entrance of flammable liquid or vapors into any concealed wing or fuselage area, and corrective action should be taken as necessary before it is returned to normal operational service.

(2) The airport fire crew should be notified if the spill presents a fire hazard. The only routine exceptions are for small spills. Supervisory personnel should be notified to ensure that operations in progress can be continued safely or halted until the emergency is past and that corrective measures can be taken to prevent recurrence of a similar accident.

(3) It could be necessary to evacuate the aircraft if the spill poses a serious fire exposure to the aircraft or its occupants. Walking through the liquid area of the fuel spill should not be permitted. Persons who have been sprayed with fuel or had their clothing soaked with fuel should go to a place of refuge, remove their clothing, and wash. Individuals whose clothing has been ignited should be wrapped in blankets, coats, or other items or should be told to or forced to roll on the ground.

(4) Mobile fueling equipment and all other mobile equipment should be withdrawn from the area or left as is until the spilled fuel is removed or made safe. No fixed rule can be made as fire safety varies with circumstances. Shutting down equipment or moving vehicles can provide a source of ignition if no fire immediately results from the spillage.

(5) Aircraft, automotive, or spark-producing equipment in the area should not be started before the spilled fuel is removed or made safe. If a vehicle or cart engine is running at the time of the spill, it normally is good practice to drive the vehicle away from the hazard area unless the hazard to personnel is judged too severe. Fuel servicing vehicles or carts in operation at the time of the spill should not be moved until a check is made to verify that any fuel hose that could have been in use or connected between the vehicle and the aircraft is safely stowed.

(6) If any aircraft engine is operating at the time of the spill, it normally is good practice to move the aircraft away from the hazard area unless air currents set up by operating power plants would aggravate the extent or the nature of the existing vapor hazard.

(7) If circumstances dictate that operating internal combustion engine equipment within a spill area that has not ignited should be shut down, engine speeds should be reduced to idle prior to cutting ignition in order to prevent backfire.

(8) The volatility of the fuel can be a major factor in the initial severity of the hazard created by a spill. Gasoline and other low flash point fuels at normal temperatures and pressures produce vapors that are capable of forming ignitible mixtures with the air near the surface of the liquid, whereas this condition does not normally exist with kerosene fuels (JET A or JET A-1) except where ambient temperatures are 38°C (100°F) or above or where the liquid has been heated to a similar temperature.

(9) Spills of gasoline and low flash point turbine fuels (JET B) greater than 3 m (10 ft) in any dimension and covering an area of over 5 m2 (50 ft2) or that are of an ongoing nature should be blanketed or covered with foam. The nature of the ground surface and the existing exposure conditions dictate the exact method to be followed. Such fuels should not be washed down sewers or drains. The decision to use a sewer or drain should be made only by the chief of the airport fire brigade or the fire department. If fuels do enter sewers, either intentionally or unintentionally, large volumes of water should be introduced to flush such sewers or drains as quickly as possible to dilute the flammable liquid content of the sewer or drain to the maximum possible extent. Normal operations involving ignition sources (including aircraft and vehicle operations) should be prohibited on surface areas adjacent to open drains or manholes from which flammable vapors could issue due to the introduction of liquids into the sewer system until it can be established that no flammable vapor–air mixture is present in the proximity. (NOTE: NFPA415 provides further information on aircraft fueling ramp drainage designs to control the flow of fuel that could be spilled on a ramp and to minimize the resulting possible danger.)

(10) Spills of kerosene grades of aviation fuels (JETA or JETA-1) greater than 3 m (10 ft) in any dimension and covering an area of over 5 m2 (50 ft2) or that are of an ongoing nature and that have not ignited should be blanketed or covered with foam if there is danger of ignition. If there is no danger of ignition, an absorbent compound or an emulsiontype cleaner can be used to clean the area. Kerosene does not evaporate readily at normal temperatures and should be cleaned up. Smaller spills can be cleaned up using an approved, mineral-type, oil absorbent.

(11) Aircraft on which fuel has been spilled should be inspected thoroughly to ensure that no fuel or fuel vapors have accumulated in flap well areas or internal wing sections not designed for fuel tankage. Any cargo, baggage, express, mail sacks, or similar items that have been wetted by fuel should be decontaminated before being placed aboard any aircraft.

<u>EXHIBIT 3</u>

2022 PVE Soil Investigation Report for the Proposed North Sky Harbour Hangar

December 1, 2022

Clark Patterson Lee
ATTN: Timothy Moot
Via Email: TMoot@CPLteam.com

Re: **PFAS Soil Investigation**; Hudson Valley Regional Airport, 263 New Hackensack Road, Wappingers Falls, Dutchess County, New York 12590
Tax Parcel ID #135689-6259-03-225301-0000
PVE File #20220641

Dear Mr. Moot:

Partridge Venture Engineering, PC, dba PVE Engineering (PVE) has completed the Per- and Polyfluoroalkyl Substances (PFAS) Soil Investigation in accordance with our approved scope of work, dated September 6, 2022; revised October 5, 2022, for the above referenced property (Figures 1 & 2). Our objective was to evaluate the presence of PFAS in soil at the subject property from past site operations in advance of design and construction of a new hangar building. Below is a summary of field activities, analytical data and recommendations.

1.0 FIELD ACTIVITIES

Prior to initiation of field activities, the Client requested that several of the proposed locations be eliminated from the proposed scope of work.

1.1 Geophysical Survey and Private Utility Mark Out

A geophysical services contractor was retained to conduct a mark-out to screen the proposed boring locations for utilities or anomalies which may obstruct drilling activities. Field activities were completed on November 8, 2022; sample locations were adjusted accordingly.

1.2 Soil Borings and Sample Collection

PVE completed a total of thirty-one (31) soil borings between the dates of November 14-16, 2022 (Figure 3). Ssoil borings were installed using a track-mounted Geoprobe™ 54DT drill rig equipped with 4-foot long, 2 ¼-inch diameter stainless steel core barrel (macro-cores) fitted with PVC liners. Soil borings were advanced using a direct-push drilling method to a maximum depth of 8-feet below ground surface (bgs); twenty (20) soil borings to 4-feet and the remaining eleven (11) to 8-feet.

The project technician kept a detailed log of each core including lithology, grain size, stratigraphic changes, color, moisture content and the occurrence of refusal. PVE personnel collected one (1) to two (2) soil samples from each of the soil borings for a total of forty-two (42) soil samples. Soil samples were submitted to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory for analysis of the following:

- PFAS Compounds (NY 21 List) via United States Environmental Protection Agency (USEPA) Method 537.1M.

Soil borings are summarized below:

Boring SB-1 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay and fine sand, some silt, and some gravel. Groundwater was not encountered at time of drilling (ATD). One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-2 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay and fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-3 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay and fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-4 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown fine sand, some dark brown clay, and some gravel. Groundwater was not encountered at time of drilling (ATD). One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-5 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown fine sand, some dark brown clay, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-6 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay and fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-7 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown fine sand, dark brown clay, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-8 was advanced via Geoprobe™ to 8 feet bgs. Soil consisted of topsoil, dark brown fine sand, dark brown clay, some silt, and some gravel. Groundwater was not encountered ATD. Composite soil samples were collected for laboratory analysis from the 0-4 feet interval and the 4-8 feet interval, respectively.

Boring SB-9 was advanced via Geoprobe™ to 8 feet bgs. Soil consisted of topsoil, dark/light brown clay and fine sand, some silt, and some gravel. Groundwater was not encountered ATD. Composite soil samples were collected for laboratory analysis from the 0-4 feet interval and the 4-8 feet interval, respectively.

Boring SB-10 was advanced via Geoprobe™ to 8 feet bgs. Soil consisted of topsoil, light brown clay, some fine sand, some silt, and some gravel. Groundwater was not encountered ATD. Composite soil samples were collected for laboratory analysis from the 0-4 feet interval and the 4-8 feet interval, respectively.

Boring SB-11 was advanced via Geoprobe™ to 8 feet bgs. Soil consisted of topsoil, light brown/gray clay, some fine sand, some silt, and some gravel. Groundwater was not encountered ATD. Composite soil samples were collected for laboratory analysis from the 0-4 feet interval and the 4-8 feet interval, respectively.

Boring SB-12 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, some fine/light brown sand, some light brown clay, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-13 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-14 was advanced via Geoprobe™ to 8 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. Composite soil samples were collected for laboratory analysis from the 0-4 feet interval and the 4-8 feet interval, respectively.

Boring SB-15 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-16 was advanced via Geoprobe™ to 8 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. Composite soil samples were collected for laboratory analysis from the 0-4 feet interval and the 4-8 feet interval, respectively.

Boring SB-17 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-18 was advanced via Geoprobe™ to 8 feet bgs. Soil consisted of topsoil, dark/light brown clay, fine sand, silt, and some gravel. Groundwater was not encountered ATD. Composite soil samples were collected for laboratory analysis from the 0-4 feet interval and the 4-8 feet interval, respectively.

Boring SB-19 was advanced via Geoprobe™ to 8 feet bgs. Soil consisted of topsoil, dark brown/gray clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. Composite soil samples were collected for laboratory analysis from the 0-4 feet interval and the 4-8 feet interval, respectively.

Boring SB-20 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-21 was advanced via Geoprobe™ to 8 feet bgs. Soil consisted of topsoil, dark brown/gray clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. Composite soil samples were collected for laboratory analysis from the 0-4 feet interval and the 4-8 feet interval, respectively.

Boring SB-22 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown fine/medium sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-23 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-24 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-25 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-26 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-27 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-28 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

Boring SB-29 was advanced via Geoprobe™ to 8 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs and one (1) from 4-8 feet bgs for laboratory analysis.

Boring SB-30 was advanced via Geoprobe™ to 8 feet bgs. Soil consisted of topsoil, dark brown/gray clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. Composite soil samples were collected for laboratory analysis from the 0-4 feet interval and the 4-8 feet interval, respectively.

Boring SB-31 was advanced via Geoprobe™ to 4 feet bgs. Soil consisted of topsoil, dark brown clay, fine sand, some silt, and some gravel. Groundwater was not encountered ATD. One (1) composite soil sample was collected from 0-4 feet bgs for laboratory analysis.

2.0 RESULTS

Soil sample results are summarized in Table 1. Analytical reports are attached.

2.1 Soil Samples

Analytical results from soil samples are summarized in Table 1 and compared to Unrestricted Use Soil Cleanup Objectives (UUSCOs) and Commercial Soil Cleanup Objectives (CSCOs) as defined in 6NYCRR Part 375. Analytical reports are attached. See Figure 3 for soil boring sampling locations.

PFAS compounds were detected in three (3) of the forty-two (42) soil samples collected. No PFAS compounds were detected at concentrations exceeding UUSCOs nor CSCOs.

3.0 DISCUSSION and CONCLUSIONS

3.1 Soil

1. Thirty-one (31) soil borings were installed throughout the subject property; twenty (20) locations were drilled to a depth of 4-feet and eleven (11) locations were drilled to a depth of 8-feet below grade. One soil sample was collected from each 4-foot interval, a total of forty-two (42) samples, for laboratory analysis.

2. PFAS compounds were detected in three (3) of the forty-two (42) soil samples collected. No PFAS compounds were detected in any of the soil samples at concentrations exceeding UUSCOs nor CSCOs. Site operations do not appear to have impacted soil quality in the location of the proposed hangar. No further action is recommended regarding this matter, at this time.

If you have any questions, please do not hesitate to contact us.

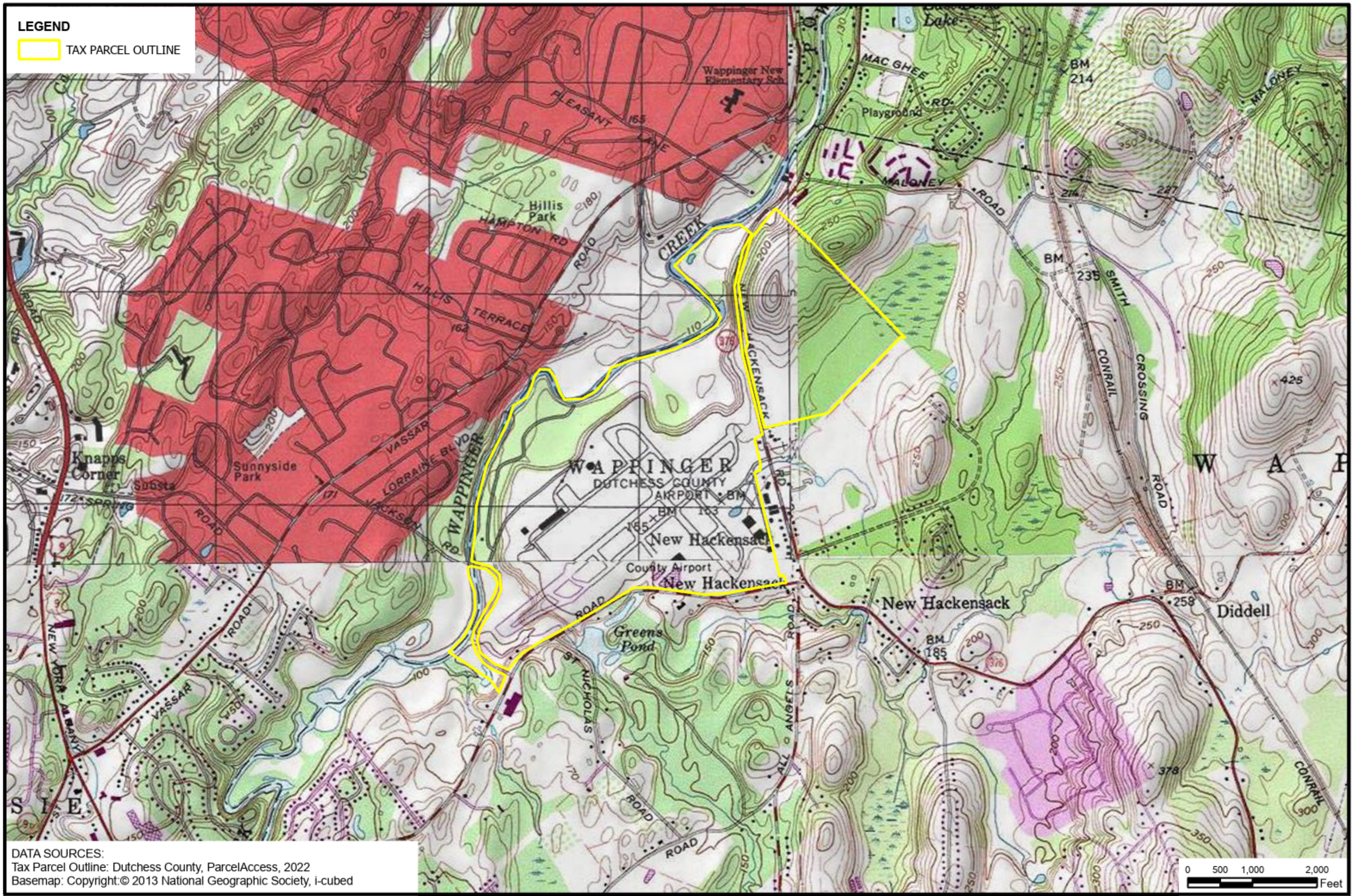
Sincerely,

PVE Engineering

Conor B. Tarbell, QEP
Senior Project Manager

CBT/TGT
Attachments

FIGURES



DATA SOURCES:
Tax Parcel Outline: Dutchess County, ParcelAccess, 2022
Basemap: Copyright:© 2013 National Geographic Society, i-cubed

PVE
48 Springside Avenue
Poughkeepsie, NY 12603
Office: 845.454.2544
Fax: 845.454.2655

SITE LOCATION MAP

DUTCHESS COUNTY AIRPORT
263 NEW HACKENSACK ROAD
WAPPINGERS FALLS, NEW YORK

PROJECT NO. 20220641	FIGURE 1
	DATE: 11/17/2022
N	SCALE: AS INDICATED
	PROJECTION: STATE PLANE NAD83 NY EAST
	ALL LOCATIONS APPROXIMATE

DATA SOURCES:
Tax Parcel Outline: Dutchess County, ParcelAccess, 2022
Basemap: New York State, Maxar, New York State, Maxar, Microsoft

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SELECTED SITE FEATURES

DUTCHESS COUNTY AIRPORT
263 NEW HACKENSACK ROAD
WAPPINGERS FALLS, NEW YORK

LEGEND
TAX PARCEL OUTLINE

PROJECT NO. 20220641

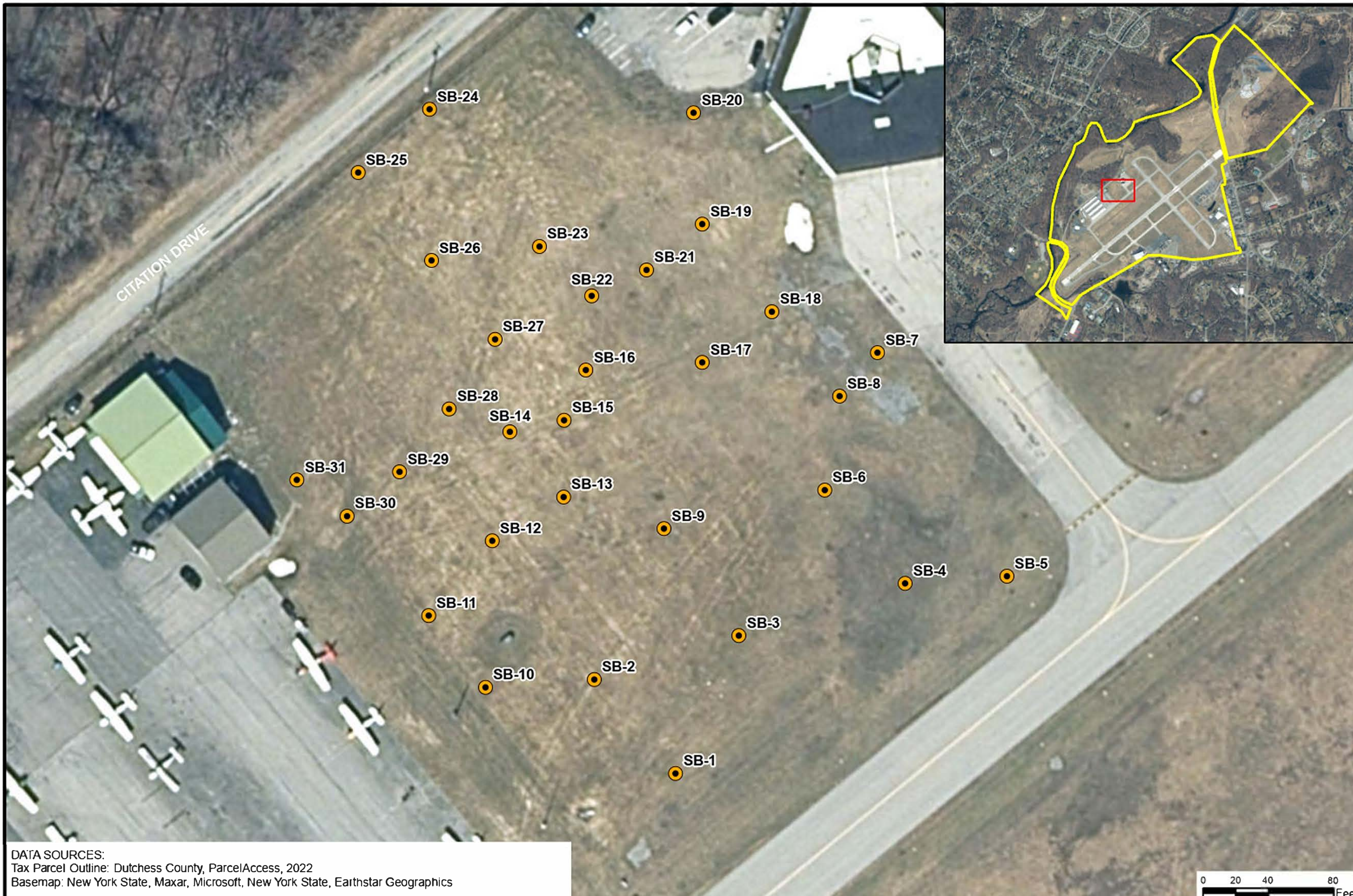
FIGURE 2

DATE: 11/17/2022

SCALE: AS INDICATED

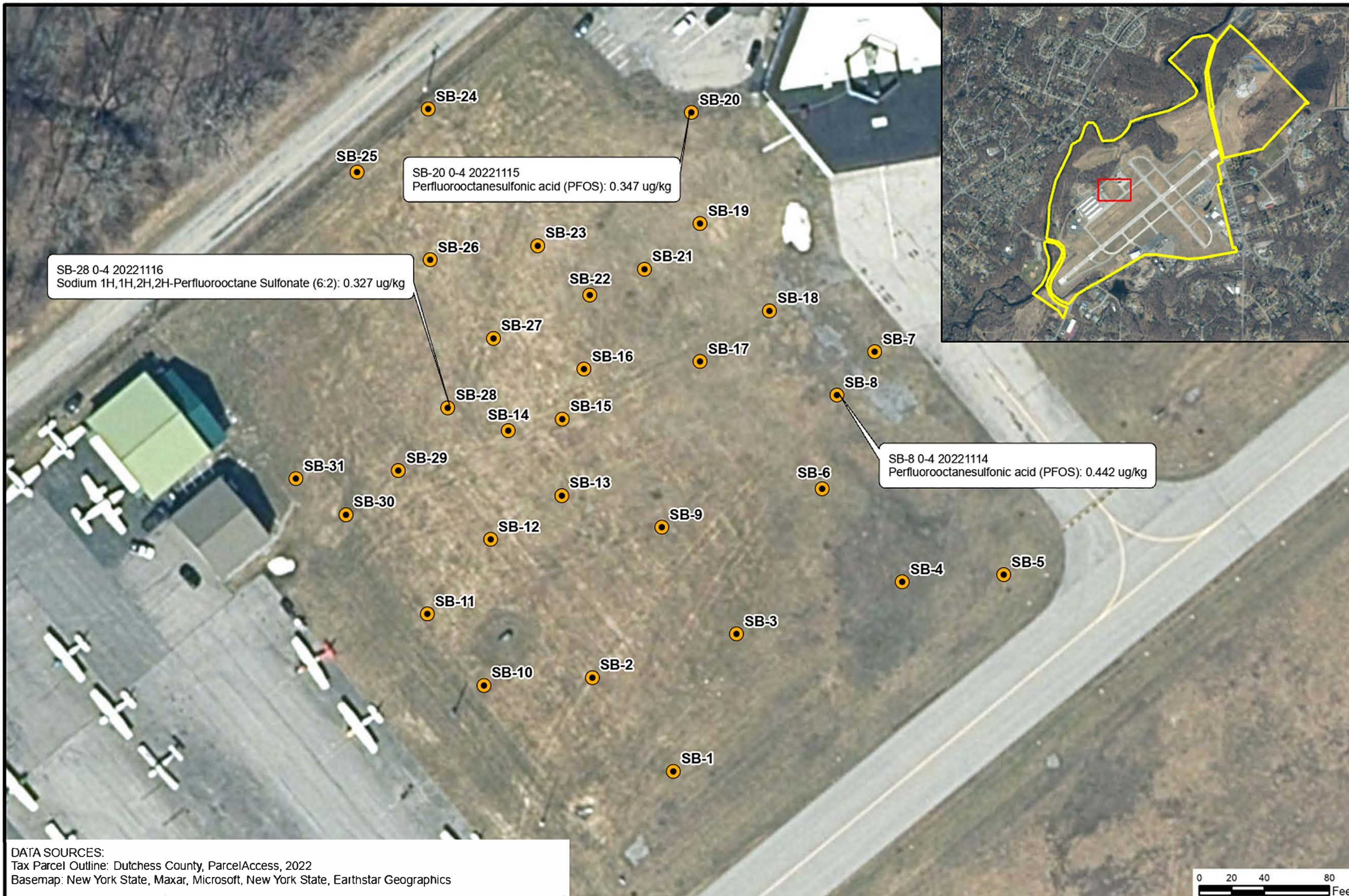
PROJECTION: STATE PLANE NAD83 NY EAST

ALL LOCATIONS APPROXIMATE



DATA SOURCES:
Tax Parcel Outline: Dutchess County, ParcelAccess, 2022
Basemap: New York State, Maxar, Microsoft, New York State, Earthstar Geographics

PVE 48 Springside Avenue Poughkeepsie, NY 12603 Office: 845.454.2544 Fax: 845.454.2655	**BORING LOCATIONS** *DUTCHESS COUNTY AIRPORT* *263 NEW HACKENSACK ROAD* *WAPPINGERS FALLS, NEW YORK*	LEGEND SOIL BORING TAX PARCEL OUTLINE	PROJECT NO. 20220641 N	**FIGURE 3** DATE: 11/17/2022 SCALE: AS INDICATED PROJECTION: STATE PLANE NAD83 NY EAST ALL LOCATIONS APPROXIMATE



DATA SOURCES:
Tax Parcel Outline: Dutchess County, ParcelAccess, 2022
Basemap: New York State, Maxar, Microsoft, New York State, Earthstar Geographics

PVE 48 Springside Avenue Poughkeepsie, NY 12603 Office: 845.454.2544 Fax: 845.454.2655	**BORING LOCATIONS WITH PFAS DETECTED** *DUTCHESS COUNTY AIRPORT* *263 NEW HACKENSACK ROAD WAPPINGERS FALLS, NEW YORK*	**LEGEND** SOIL BORING TAX PARCEL OUTLINE	**PROJECT NO.** **20220641**	**FIGURE 4** **DATE:** 11/17/2022 **SCALE:** AS INDICATED **PROJECTION:** STATE PLANE NAD83 NY EAST **ALL LOCATIONS APPROXIMATE**

TABLES

Table 1 - PFAS Compounds in Soil Samples
Compared to UUSCOs and CSCOs per 6 NYCRR Part 375
Hudson Valley Regional Airport
PVE File #20220641

					Date Sampled	11/14/2022			11/14/2022			11/14/2022			11/14/2022			11/14/2022			11/14/2022			11/14/2022			11/14/2022		
					Location	SB-1			SB-2			SB-3			SB-4			SB-5			SB-6			SB-7			SB-8		
					Sample ID	SB-1 0-4 20221114			SB-2 0-4 20221114			SB-3 0-4 20221114			SB-4 0-4 20221114			SB-5 0-4 20221114			SB-6 0-4 20221114			SB-7 0-4 20221114			SB-8 0-4 20221114		
Method	Analyte	CAS RN	UUSCOs	CSCOs	Unit	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q
E537	2-(N-methyl perfluorooctanesulfonamido) acetic acid	2355-31-9	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	N-Ethyl-N-((heptadecafluorooctyl)sulphonyl) glycine	2991-50-6	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorobutanesulfonic acid (PFBS)	375-73-5	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorobutanoic Acid	375-22-4	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorodecane Sulfonic Acid	335-77-3	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorodecanoic acid (PFDA)	335-76-2	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorododecanoic acid (PFDoA)	307-55-1	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluoroheptane Sulfonate (PFHPS)	375-92-8	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluoroheptanoic acid (PFHpA)	375-85-9	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorohexanoic acid (PFHxA)	307-24-4	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorononanoic acid (PFNA)	375-95-1	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorooctane Sulfonamide (FOSA)	754-91-6	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.88	440	ug/kg	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	0.442	ug/kg	
E537	Perfluorooctanoic acid (PFOA)	335-67-1	0.66	500	ug/kg	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluoropentanoic Acid (PFPeA)	2706-90-3	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorotetradecanoic acid (PFTA)	376-06-7	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluorotridecanoic Acid (PFTriA)	72629-94-8	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	39108-34-4	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	27619-97-2	NE	NE		ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.28	ug/kg	U	ND< 0.258	ug/kg	U	ND< 0.268	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.252	ug/kg	U

Notes:
Standards are for respective Soil Cleanup Objectives per NYSDEC Part 375 Unrestricted Use
Soil Cleanup Objectives (UUSCOs), and Commercial Soil Cleanup Objectives (CSCOs);
Yellow shading designates those compounds detected at concerntrations exceeding UUSCOs;
Orange shading designates those compounds detected at concentrations exceeding CSCOs;
NE = No standard established; &
ND and U = Not detected at method detection limit for sample.

Table 1 - PFAS Compounds in Soil Samples
Compared to UUSCOs and CSCOs per 6 NYCRR Part 375
Hudson Valley Regional Airport
PVE File #20220641

					Date Sampled	11/14/2022			11/14/2022			11/14/2022			11/14/2022			11/14/2022			11/14/2022			11/14/2022			11/14/2022		
					Location	SB-8			SB-9			SB-9			SB-10			SB-10			SB-11			SB-11			SB-12		
					Sample ID	SB-8 4-8 20221114			SB-9 0-4 20221114			SB-9 4-8 20221114			SB-10 0-4 20221114			SB-10 4-8 20221114			SB-11 0-4 20221114			SB-11 4-8 20221114			SB-12 0-4 20221114		
Method	Analyte	CAS RN	UUSCOs	CSCOs	Unit	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q
E537	2-(N-methyl perfluorooctanesulfonamido) acetic acid	2355-31-9	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	N-Ethyl-N-((heptadecafluorooctyl)sulphonyl) glycine	2991-50-6	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorobutanesulfonic acid (PFBS)	375-73-5	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorobutanoic Acid	375-22-4	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorodecane Sulfonic Acid	335-77-3	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorodecanoic acid (PFDA)	335-76-2	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorododecanoic acid (PFDoA)	307-55-1	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluoroheptane Sulfonate (PFHPS)	375-92-8	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluoroheptanoic acid (PFHpA)	375-85-9	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorohexanoic acid (PFHxA)	307-24-4	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorononanoic acid (PFNA)	375-95-1	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorooctane Sulfonamide (FOSA)	754-91-6	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.88	440	ug/kg	ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorooctanoic acid (PFOA)	335-67-1	0.66	500	ug/kg	ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluoropentanoic Acid (PFPeA)	2706-90-3	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorotetradecanoic acid (PFTA)	376-06-7	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluorotridecanoic Acid (PFTriA)	72629-94-8	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	39108-34-4	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	27619-97-2	NE	NE		ND< 0.262	ug/kg	U	ND< 0.262	ug/kg	U	ND< 0.272	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.275	ug/kg	U	ND< 0.279	ug/kg	U	ND< 0.253	ug/kg	U

Notes:
Standards are for respective Soil Cleanup Objectives per NYSDEC Part 375 Unrestricted Use
Soil Cleanup Objectives (UUSCOs), and Commercial Soil Cleanup Objectives (CSCOs);
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Orange shading designates those compounds detected at concentrations exceeding CSCOs;
NE = No standard established; &
ND and U = Not detected at method detection limit for sample.

Table 1 - PFAS Compounds in Soil Samples
Compared to UUSCOs and CSCOs per 6 NYCRR Part 375
Hudson Valley Regional Airport
PVE File #20220641

					Date Sampled	11/15/2022			11/15/2022			11/15/2022			11/15/2022			11/15/2022			11/15/2022			11/15/2022			11/15/2022		
					Location	SB-13			SB-14			SB-14			SB-15			SB-16			SB-16			SB-17			SB-18		
					Sample ID	SB-13 0-4 20221115			SB-14 0-4 20221115			SB-14 4-8 20221115			SB-15 0-4 20221115			SB-16 0-4 20221115			SB-16 4-8 20221115			SB-17 0-4 20221115			SB-18 0-4 20221115		
Method	Analyte	CAS RN	UUSCOs	CSCOs	Unit	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q
E537	2-(N-methyl perfluorooctanesulfonamido) acetic acid	2355-31-9	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	N-Ethyl-N-((heptadecafluorooctyl)sulphonyl) glycine	2991-50-6	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorobutanesulfonic acid (PFBS)	375-73-5	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorobutanoic Acid	375-22-4	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorodecane Sulfonic Acid	335-77-3	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorodecanoic acid (PFDA)	335-76-2	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorododecanoic acid (PFDoA)	307-55-1	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluoroheptane Sulfonate (PFHPS)	375-92-8	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluoroheptanoic acid (PFHpA)	375-85-9	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorohexanoic acid (PFHxA)	307-24-4	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorononanoic acid (PFNA)	375-95-1	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorooctane Sulfonamide (FOSA)	754-91-6	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.88	440	ug/kg	ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorooctanoic acid (PFOA)	335-67-1	0.66	500	ug/kg	ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluoropentanoic Acid (PFPeA)	2706-90-3	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorotetradecanoic acid (PFTA)	376-06-7	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluorotridecanoic Acid (PFTriA)	72629-94-8	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	39108-34-4	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	27619-97-2	NE	NE		ND< 0.262	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.289	ug/kg	U	ND< 0.281	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.268	ug/kg	U

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Compared to UUSCOs and CSCOs per 6 NYCRR Part 375
Hudson Valley Regional Airport
PVE File #20220641

					Date Sampled	11/15/2022			11/15/2022			11/15/2022			11/15/2022			11/15/2022			11/15/2022			11/15/2022			11/15/2022		
					Location	SB-18			SB-19			SB-19			SB-20			SB-21			SB-21			SB-22			SB-23		
					Sample ID	SB-18 4-8 20221115			SB-19 0-4 20221115			SB-19 4-8 20221115			SB-20 0-4 20221115			SB-21 0-4 20221115			SB-21 4-8 20221115			SB-22 0-4 20221115			SB-23 0-4 20221115		
Method	Analyte	CAS RN	UUSCOs	CSCOs	Unit	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q
E537	2-(N-methyl perfluorooctanesulfonamido) acetic acid	2355-31-9	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	N-Ethyl-N-((heptadecafluorooctyl)sulphonyl) glycine	2991-50-6	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorobutanesulfonic acid (PFBS)	375-73-5	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorobutanoic Acid	375-22-4	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorodecane Sulfonic Acid	335-77-3	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorodecanoic acid (PFDA)	335-76-2	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorododecanoic acid (PFDoA)	307-55-1	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluoroheptane Sulfonate (PFHPS)	375-92-8	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluoroheptanoic acid (PFHpA)	375-85-9	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorohexanoic acid (PFHxA)	307-24-4	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorononanoic acid (PFNA)	375-95-1	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorooctane Sulfonamide (FOSA)	754-91-6	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.88	440	ug/kg	ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	0.347	ug/kg		ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorooctanoic acid (PFOA)	335-67-1	0.66	500	ug/kg	ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluoropentanoic Acid (PFPeA)	2706-90-3	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorotetradecanoic acid (PFTA)	376-06-7	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluorotridecanoic Acid (PFTriA)	72629-94-8	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	39108-34-4	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	27619-97-2	NE	NE		ND< 0.296	ug/kg	U	ND< 0.261	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.274	ug/kg	U	ND< 0.269	ug/kg	U	ND< 0.266	ug/kg	U	ND< 0.256	ug/kg	U	ND< 0.258	ug/kg	U

Notes:

Standards are for respective Soil Cleanup Objectives per NYSDEC Part 375 Unrestricted Use
Soil Cleanup Objectives (UUSCOs), and Commercial Soil Cleanup Objectives (CSCOs);
Yellow shading designates those compounds detected at concerntrations exceeding UUSCOs;
Orange shading designates those compounds detected at concentrations exceeding CSCOs;
NE = No standard established; &
ND and U = Not detected at method detection limit for sample.

Table 1 - PFAS Compounds in Soil Samples
Compared to UUSCOs and CSCOs per 6 NYCRR Part 375
Hudson Valley Regional Airport
PVE File #20220641

					Date Sampled	11/15/2022			11/15/2022			11/15/2022			11/16/2022			11/16/2022			11/16/2022			11/16/2022			11/16/2022		
					Location	SB-24			SB-25			SB-26			SB-27			SB-28			SB-29			SB-29			SB-30		
					Sample ID	SB-24 0-4 20221115			SB-25 0-4 20221115			SB-26 0-4 20221115			SB-27 0-4 20221116			SB-28 0-4 20221116			SB-29 0-4 20221116			SB-29 4-8 20221116			SB-30 0-4 20221116		
Method	Analyte	CAS RN	UUSCOs	CSCOs	Unit	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q	Result	Unit	Q
E537	2-(N-methyl perfluorooctanesulfonamido) acetic acid	2355-31-9	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	N-Ethyl-N-((heptadecafluorooctyl)sulphonyl) glycine	2991-50-6	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorobutanesulfonic acid (PFBS)	375-73-5	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorobutanoic Acid	375-22-4	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorodecane Sulfonic Acid	335-77-3	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorodecanoic acid (PFDA)	335-76-2	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorododecanoic acid (PFDoA)	307-55-1	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluoroheptane Sulfonate (PFHPS)	375-92-8	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluoroheptanoic acid (PFHpA)	375-85-9	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorohexanoic acid (PFHxA)	307-24-4	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorononanoic acid (PFNA)	375-95-1	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorooctane Sulfonamide (FOSA)	754-91-6	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.88	440	ug/kg	ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorooctanoic acid (PFOA)	335-67-1	0.66	500	ug/kg	ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluoropentanoic Acid (PFPeA)	2706-90-3	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorotetradecanoic acid (PFTA)	376-06-7	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluorotridecanoic Acid (PFTriA)	72629-94-8	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	39108-34-4	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	ND< 0.278	ug/kg	U	ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	27619-97-2	NE	NE		ND< 0.265	ug/kg	U	ND< 0.284	ug/kg	U	ND< 0.26	ug/kg	U	ND< 0.282	ug/kg	U	0.327	ug/kg		ND< 0.283	ug/kg	U	ND< 0.288	ug/kg	U	ND< 0.259	ug/kg	U

Notes:
Standards are for respective Soil Cleanup Objectives per NYSDEC Part 375 Unrestricted Use
Soil Cleanup Objectives (UUSCOs), and Commercial Soil Cleanup Objectives (CSCOs);
Yellow shading designates those compounds detected at concerntrations exceeding UUSCOs;
Orange shading designates those compounds detected at concentrations exceeding CSCOs;
NE = No standard established; &
ND and U = Not detected at method detection limit for sample.

Table 1 - PFAS Compounds in Soil Samples
Compared to UUSCOs and CSCOs per 6 NYCRR Part 375
Hudson Valley Regional Airport
PVE File #20220641

					Date Sampled	11/16/2022			11/16/2022		
					Location	SB-30			SB-31		
					Sample ID	SB-30 4-8 20221116			SB-31 0-4 20221116		
Method	Analyte	CAS RN	UUSCOs	CSCOs	Unit	Result	Unit	Q	Result	Unit	Q
E537	2-(N-methyl perfluorooctanesulfonamido) acetic acid	2355-31-9	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	N-Ethyl-N-((heptadecafluorooctyl)sulphonyl) glycine	2991-50-6	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorobutanesulfonic acid (PFBS)	375-73-5	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorobutanoic Acid	375-22-4	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorodecane Sulfonic Acid	335-77-3	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorodecanoic acid (PFDA)	335-76-2	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorododecanoic acid (PFDoA)	307-55-1	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluoroheptane Sulfonate (PFHPS)	375-92-8	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluoroheptanoic acid (PFHpA)	375-85-9	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorohexanoic acid (PFHxA)	307-24-4	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorononanoic acid (PFNA)	375-95-1	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorooctane Sulfonamide (FOSA)	754-91-6	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.88	440	ug/kg	ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorooctanoic acid (PFOA)	335-67-1	0.66	500	ug/kg	ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluoropentanoic Acid (PFPeA)	2706-90-3	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorotetradecanoic acid (PFTA)	376-06-7	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluorotridecanoic Acid (PFTriA)	72629-94-8	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	39108-34-4	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U
E537	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	27619-97-2	NE	NE		ND< 0.273	ug/kg	U	ND< 0.279	ug/kg	U

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SOIL BORING LOGS

BORING NUMBER SB-1

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

CLIENT	Clark Patterson Lee	**PROJECT NAME**	Hudson Valley Regional Airport
PROJECT NUMBER	20220641	**PROJECT LOCATION**	263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED	11/14/22 **COMPLETED** 11/14/22	**GROUND ELEVATION**	**HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR	PVE Engineering	**GROUND WATER LEVELS:**	
DRILLING METHOD	Direct Push via GeoProbe 54DT	**AT TIME OF DRILLING**	---
LOGGED BY	Trevor Treglia **CHECKED BY** SMA	**AT END OF DRILLING**	---
NOTES	Weather: 55°, Cloudy	**AFTER DRILLING**	---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				Topsoil
			0.5	(CL) Dark brown clay, dark brown fine sand, some silt, some gravel
1				
2	GB 0-4	CL		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/14/22 **COMPLETED** 11/14/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Cloudy
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1				(CL) Dark brown clay, dark brown fine sand, some silt, some gravel
2	GB 0-4			
3		CL		
4			4.0	

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-3

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/14/22 **COMPLETED** 11/14/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Cloudy
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				Topsoil
			0.5	(CL) Dark brown clay, dark brown fine sand, some silt, some gravel
1				
2	GB 0-4	CL		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-4

CLIENT Clark Patterson Lee

PROJECT NAME Hudson Valley Regional Airport

PROJECT NUMBER 20220641

PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY

DATE STARTED 11/14/22 **COMPLETED** 11/14/22

GROUND ELEVATION **HOLE SIZE** 2.25 inches

DRILLING CONTRACTOR PVE Engineering

GROUND WATER LEVELS:

DRILLING METHOD Direct Push via GeoProbe 54DT

AT TIME OF DRILLING ---

LOGGED BY Trevor Treglia **CHECKED BY** SMA

AT END OF DRILLING ---

NOTES Weather: 55°, Cloudy

AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				Topsoil
			0.5	(SP) Dark brown fine sand, some dark brown clay, some gravel
1				
2	GB 0-4	SP		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

BORING NUMBER SB-5

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

CLIENT	Clark Patterson Lee	**PROJECT NAME**	Hudson Valley Regional Airport
PROJECT NUMBER	20220641	**PROJECT LOCATION**	263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED	11/14/22 **COMPLETED** 11/14/22	**GROUND ELEVATION**	**HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR	PVE Engineering	**GROUND WATER LEVELS:**	
DRILLING METHOD	Direct Push via GeoProbe 54DT	**AT TIME OF DRILLING**	---
LOGGED BY	Trevor Treglia **CHECKED BY** SMA	**AT END OF DRILLING**	---
NOTES	Weather: 55°, Cloudy	**AFTER DRILLING**	---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1				(SP) Dark brown fine sand, some dark brown clay, some gravel
2	GB 0-4			
		SP		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-6

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/14/22 **COMPLETED** 11/14/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Cloudy
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1				(CL) Dark brown clay, dark brown fine sand, some silt, some gravel
2	GB 0-4	CL		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 11/29/22 12:00 - Z:\20220641 - HV REGIONAL AIRPORT, WAPPINGERS FALLS, NY\SOIL BORING LOGS\20220641.GPJ

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-7

CLIENT	Clark Patterson Lee	**PROJECT NAME**	Hudson Valley Regional Airport
PROJECT NUMBER	20220641	**PROJECT LOCATION**	263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED	11/14/22 **COMPLETED** 11/14/22	**GROUND ELEVATION**	**HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR	PVE Engineering	**GROUND WATER LEVELS:**	
DRILLING METHOD	Direct Push via GeoProbe 54DT	**AT TIME OF DRILLING**	---
LOGGED BY	Trevor Treglia **CHECKED BY** SMA	**AT END OF DRILLING**	---
NOTES	Weather: 55°, Cloudy	**AFTER DRILLING**	---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		MATERIAL DESCRIPTION
0					Topsoil
				0.5	(CL) Dark brown clay, dark brown fine sand, some silt, some gravel
		CL			
1				1.0	(SP) Dark brown fine sand, some dark brown clay, some gravel
2	GB 0-4				
		SP			
3					
4				4.0	

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-8

CLIENT Clark Patterson Lee

PROJECT NAME Hudson Valley Regional Airport

PROJECT NUMBER 20220641

PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY

DATE STARTED 11/14/22 **COMPLETED** 11/14/22

GROUND ELEVATION **HOLE SIZE** 2.25 inches

DRILLING CONTRACTOR PVE Engineering

GROUND WATER LEVELS:

DRILLING METHOD Direct Push via GeoProbe 54DT

AT TIME OF DRILLING ---

LOGGED BY Trevor Treglia **CHECKED BY** SMA

AT END OF DRILLING ---

NOTES Weather: 55°, Cloudy

AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			0.5	Topsoil
2.5	GB 0-4	CL	4.0	(CL) Dark brown clay, dark brown fine sand, some silt, some gravel
5.0 7.5	GB 4-7.9	SP	8.0	(SP) Dark brown fine sand, some dark brown clay, some gravel

Bottom of borehole at 8.0 feet.

BORING NUMBER SB-9

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/14/22 **COMPLETED** 11/14/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Cloudy
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0				Topsoil
	GB 0-4	CL	0.5	(CL) Dark brown clay, dark brown fine sand, some silt, some gravel
2.5				
5.0	GB 4-7.9	CL	5.0	(CL) Light brown clay, some fine sand, some silt
7.5			8.0	

Bottom of borehole at 8.0 feet.

BORING NUMBER SB-10

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/14/22 **COMPLETED** 11/14/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Cloudy
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			0.5	Topsoil
2.5	GB 0-4	CL		(CL) Light brown clay, some fine sand, some silt, some gravel
5.0	GB 4-7.9			
7.5			8.0	

Bottom of borehole at 8.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-11

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/14/22 **COMPLETED** 11/14/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Cloudy
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			0.5	Topsoil
	GB 0-4	CL		(CL) Light brown to gray clay, some fine sand, some silt, some gravel
2.5		CL	4.0	(CL) Gray clay to light brown clay, some fine sand, some silt, some gravel
5.0	GB 4-7.9			
7.5				

Bottom of borehole at 8.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 11/29/22 12:00 - Z:\20220641 - HV REGIONAL AIRPORT, WAPPINGERS FALLS, NY\SOIL BORING LOGS\20220641.GPJ

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-12

CLIENT	Clark Patterson Lee	**PROJECT NAME**	Hudson Valley Regional Airport
PROJECT NUMBER	20220641	**PROJECT LOCATION**	263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED	11/14/22 **COMPLETED** 11/14/22	**GROUND ELEVATION**	**HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR	PVE Engineering	**GROUND WATER LEVELS:**	
DRILLING METHOD	Direct Push via GeoProbe 54DT	**AT TIME OF DRILLING**	---
LOGGED BY	Trevor Treglia **CHECKED BY** SMA	**AT END OF DRILLING**	---
NOTES	Weather: 55°, Cloudy	**AFTER DRILLING**	---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1		CL	3.0	(CL) Dark brown clay, some fine sand, some silt, some gravel
2	GB 0-4			
3		SW	4.0	(SW) Light brown fine sand, some light brown clay, some silt, some gravel
4				

Bottom of borehole at 4.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 11/29/22 12:00 - Z:\20220641 - HV REGIONAL AIRPORT, WAPPINGERS FALLS, NY\SOIL BORING LOGS\20220641.GPJ

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-13

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/15/22 **COMPLETED** 11/15/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Overcast
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1				(CL) Dark brown clay, fine sand, some silt, gravel
2	GB 0-4	CL		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

BORING NUMBER SB-14

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

CLIENT Clark Patterson Lee

PROJECT NAME Hudson Valley Regional Airport

PROJECT NUMBER 20220641

PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY

DATE STARTED 11/15/22 **COMPLETED** 11/15/22

GROUND ELEVATION **HOLE SIZE** 2.25 inches

DRILLING CONTRACTOR PVE Engineering

GROUND WATER LEVELS:

DRILLING METHOD Direct Push via GeoProbe 54DT

AT TIME OF DRILLING ---

LOGGED BY Trevor Treglia **CHECKED BY** SMA

AT END OF DRILLING ---

NOTES Weather: 55°, Overcast

AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0				Topsoil
			0.5	(CL) Dark brown clay, fine sand, some silt, gravel
	GB 0-4			
2.5		CL		
5.0				
	GB 4-7.9		6.0	(CL) Dark brown clay, some fine sand
7.5		CL		
			8.0	

Bottom of borehole at 8.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-15

CLIENT	Clark Patterson Lee	**PROJECT NAME**	Hudson Valley Regional Airport
PROJECT NUMBER	20220641	**PROJECT LOCATION**	263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED	11/15/22 **COMPLETED** 11/15/22	**GROUND ELEVATION**	**HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR	PVE Engineering	**GROUND WATER LEVELS:**	
DRILLING METHOD	Direct Push via GeoProbe 54DT	**AT TIME OF DRILLING**	---
LOGGED BY	Trevor Treglia **CHECKED BY** SMA	**AT END OF DRILLING**	---
NOTES	Weather: 55°, Overcast	**AFTER DRILLING**	---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1				(CL) Dark brown clay, fine sand, some silt, gravel
2	GB 0-4	CL		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

BORING NUMBER SB-16

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/15/22 **COMPLETED** 11/15/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Overcast
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			0.5	Topsoil
	GB 0-4	CL	6.0	(CL) Dark brown clay, fine sand, some silt, gravel
2.5				
5.0	GB 4-7.9	CL	8.0	(CL) Dark brown clay, some fine sand
7.5				

Bottom of borehole at 8.0 feet.

BORING NUMBER SB-17

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/15/22 **COMPLETED** 11/15/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Overcast
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1 2 3 4	GB 0-4	CL	4.0	(CL) Dark brown clay, fine sand, some silt, gravel

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-18

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/15/22 **COMPLETED** 11/15/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Overcast
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			0.5	Topsoil
	GB 0-4	CL	3.0	(CL) Dark brown clay, fine sand, some silt, gravel
2.5				
5.0		CL	6.0	(CL) Light brown clay, some fine sand, some gravel, some silt
7.5	GB 4-7.9	ML	8.0	(ML) Light brown clay, silt

Bottom of borehole at 8.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-19

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/15/22 **COMPLETED** 11/15/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Overcast
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			0.5	Topsoil
2.5	GB 0-4	CL		(CL) Dark brown clay, fine sand, some silt, gravel
5.0	GB 4-7.9	CL	6.0	(CL) Dark brown to gray clay, some fine sand
7.5			8.0	

Bottom of borehole at 8.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 11/29/22 12:00 - Z:\20220641 - HV REGIONAL AIRPORT, WAPPINGERS FALLS, NY\SOIL BORING LOGS\20220641.GPJ

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-20

CLIENT Clark Patterson Lee

PROJECT NAME Hudson Valley Regional Airport

PROJECT NUMBER 20220641

PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY

DATE STARTED 11/15/22 **COMPLETED** 11/15/22

GROUND ELEVATION **HOLE SIZE** 2.25 inches

DRILLING CONTRACTOR PVE Engineering

GROUND WATER LEVELS:

DRILLING METHOD Direct Push via GeoProbe 54DT

AT TIME OF DRILLING ---

LOGGED BY Trevor Treglia **CHECKED BY** SMA

AT END OF DRILLING ---

NOTES Weather: 55°, Overcast

AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		MATERIAL DESCRIPTION
0				0.5	Topsoil
1					(CL) Dark brown clay, fine sand, some silt, gravel
2	GB 0-4				
3		CL			
4				4.0	

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-21

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/15/22 **COMPLETED** 11/15/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Overcast
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			0.5	Topsoil
2.5	GB 0-4	CL	6.0	(CL) Dark brown clay, fine sand, some silt, gravel
5.0				
7.5	GB 4-7.9	CL	8.0	(CL) Dark brown to gray clay, some fine sand

Bottom of borehole at 8.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 11/29/22 12:00 - Z:\20220641 - HV REGIONAL AIRPORT, WAPPINGERS FALLS, NY\SOIL BORING LOGS\20220641.GPJ

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-22

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/15/22 **COMPLETED** 11/15/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Overcast
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				Topsoil
			0.5	(CL) Dark brown clay, fine sand, some silt, gravel
1		CL		
2	GB 0-4		2.0	(SP) Dark brown fine and medium sand
		SP		
3			3.0	(CL) Dark brown clay, fine sand, some silt, gravel
		CL		
4			4.0	Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-23

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/15/22 **COMPLETED** 11/15/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Overcast
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1		CL	4.0	(CL) Dark brown clay, fine sand, some silt, gravel
2	GB 0-4			
3				
4				

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-24

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/15/22 **COMPLETED** 11/15/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Overcast
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1				(CL) Dark brown clay, fine sand, some silt, gravel
2	GB 0-4	CL		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-25

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/15/22 **COMPLETED** 11/15/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 55°, Overcast
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1				(CL) Dark brown clay, fine sand, some silt, gravel
2	GB 0-4	CL		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-26

CLIENT Clark Patterson Lee

PROJECT NAME Hudson Valley Regional Airport

PROJECT NUMBER 20220641

PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY

DATE STARTED 11/15/22 **COMPLETED** 11/15/22

GROUND ELEVATION **HOLE SIZE** 2.25 inches

DRILLING CONTRACTOR PVE Engineering

GROUND WATER LEVELS:

DRILLING METHOD Direct Push via GeoProbe 54DT

AT TIME OF DRILLING ---

LOGGED BY Trevor Treglia **CHECKED BY** SMA

AT END OF DRILLING ---

NOTES Weather: 55°, Overcast

AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				Topsoil
			0.5	(CL) Dark brown clay, fine sand, some silt, gravel
1				
2	GB 0-4	CL		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-27

CLIENT	Clark Patterson Lee	**PROJECT NAME**	Hudson Valley Regional Airport
PROJECT NUMBER	20220641	**PROJECT LOCATION**	263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED	11/16/22 **COMPLETED** 11/16/22	**GROUND ELEVATION**	**HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR	PVE Engineering	**GROUND WATER LEVELS:**	
DRILLING METHOD	Direct Push via GeoProbe 54DT	**AT TIME OF DRILLING**	---
LOGGED BY	Trevor Treglia **CHECKED BY** SMA	**AT END OF DRILLING**	---
NOTES	Weather: 45°, Overcast/Rain	**AFTER DRILLING**	---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				Topsoil
			0.5	(CL) Dark brown clay, fine sand, some silt, gravel
1				
2	GB 0-4	CL		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-28

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/16/22 **COMPLETED** 11/16/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 45°, Overcast/Rain
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1				(CL) Dark brown clay, fine sand, some silt, gravel
2	GB 0-4	CL		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-29

CLIENT Clark Patterson Lee

PROJECT NAME Hudson Valley Regional Airport

PROJECT NUMBER 20220641

PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY

DATE STARTED 11/16/22 **COMPLETED** 11/16/22

GROUND ELEVATION **HOLE SIZE** 2.25 inches

DRILLING CONTRACTOR PVE Engineering

GROUND WATER LEVELS:

DRILLING METHOD Direct Push via GeoProbe 54DT

AT TIME OF DRILLING ---

LOGGED BY Trevor Treglia **CHECKED BY** SMA

AT END OF DRILLING ---

NOTES Weather: 45°, Overcast/Rain

AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			0.5	Topsoil
2.5	GB 0-4	CL		(CL) Dark brown clay, fine sand, some silt, gravel
5.0	GB 4-7.9			
7.5			8.0	

Bottom of borehole at 8.0 feet.

BORING NUMBER SB-30

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/16/22 **COMPLETED** 11/16/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 45°, Overcast/Rain
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			0.5	Topsoil
2.5	GB 0-4	CL	4.0	(CL) Dark brown clay, fine sand, some silt, gravel
5.0		CL	6.0	(CL) Grey clay, fine sand, some silt, gravel
7.5	GB 4-7.9	CL	8.0	(CL) Dark brown clay, fine sand, some silt, gravel

Bottom of borehole at 8.0 feet.

PVE Engineering
48 Springside Avenue
Poughkeepsie, NY
Telephone: 845-454-2544

BORING NUMBER SB-31

CLIENT Clark Patterson Lee
PROJECT NAME Hudson Valley Regional Airport
PROJECT NUMBER 20220641
PROJECT LOCATION 263 New Hackensack Road, Wappingers Falls, NY
DATE STARTED 11/16/22 **COMPLETED** 11/16/22
GROUND ELEVATION **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR PVE Engineering
GROUND WATER LEVELS:
DRILLING METHOD Direct Push via GeoProbe 54DT
AT TIME OF DRILLING ---
LOGGED BY Trevor Treglia **CHECKED BY** SMA
AT END OF DRILLING ---
NOTES Weather: 45°, Overcast/Rain
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			0.5	Topsoil
1				(CL) Dark brown clay, fine sand, some silt, gravel
2	GB 0-4	CL		
3				
4			4.0	

Bottom of borehole at 4.0 feet.

ANALYTICAL REPORTS

Technical Report
Perfluoroalkyl Substances (PFAS)

prepared for:

PVE, LLC.
48 Springside Avenue
Poughkeepsie NY, 12603
Attention: Trevor Treglia

Report Date: 11/22/2022
Client Project ID: 20220641
York Project (SDG) No.: 22K0807

CT Cert. No. PH-0723 New Jersey Cert. No. CT005 and NY037 New York Cert. Nos. 10854 and 12058 PA Cert. No. 68-04440

120 RESEARCH DRIVE STRATFORD, CT 06615 ■ 132-02 89th AVENUE RICHMOND HILL, NY 11418
www.YORKLAB.com (203) 325-1371 FAX (203) 357-0166 ClientServices@yorklab.com

Report Date: 11/22/2022
Client Project ID: 20220641
York Project (SDG) No.: 22K0807

PVE, LLC.
48 Springside Avenue
Poughkeepsie NY, 12603
Attention: Trevor Treglia

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on November 15, 2022 and listed below. The project was identified as your project: **20220641**.

The analyses were conducted utilizing appropriate EPA methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

Please contact Client Services at 203.325.1371 with any questions regarding this report or e-mail clientservices@yorklab.com.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
22K0807-01	EB 20221114	Water	11/14/2022	11/15/2022
22K0807-02	FB 20221114	Water	11/14/2022	11/15/2022
22K0807-03	SB-1 0-4 20221114	Soil	11/14/2022	11/15/2022
22K0807-04	SB-2 0-4 20221114	Soil	11/14/2022	11/15/2022
22K0807-05	SB-3 0-4 20221114	Soil	11/14/2022	11/15/2022
22K0807-06	SB-4 0-4 20221114	Soil	11/14/2022	11/15/2022
22K0807-07	SB-5 0-4 20221114	Soil	11/14/2022	11/15/2022
22K0807-08	SB-6 0-4 20221114	Soil	11/14/2022	11/15/2022
22K0807-09	SB-7 0-4 20221114	Soil	11/14/2022	11/15/2022
22K0807-10	SB-8 0-4 20221114	Soil	11/14/2022	11/15/2022
22K0807-11	SB-8 4-8 20221114	Soil	11/14/2022	11/15/2022
22K0807-12	SB-9 0-4 20221114	Soil	11/14/2022	11/15/2022
22K0807-13	SB-9 4-8 20221114	Soil	11/14/2022	11/15/2022
22K0807-14	SB-10 0-4 20221114	Soil	11/14/2022	11/15/2022
22K0807-15	SB-10 4-8 20221114	Soil	11/14/2022	11/15/2022
22K0807-16	SB-11 0-4 20221114	Soil	11/14/2022	11/15/2022
22K0807-17	SB-11 4-8 20221114	Soil	11/14/2022	11/15/2022
22K0807-18	SB-12 0-4 20221114	Soil	11/14/2022	11/15/2022

General Notes for York Project (SDG) No.: 22K0807

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

Approved By: Cassie L Mosher **Date:** 11/22/2022

Cassie L. Mosher
Laboratory Manager

Sample Information

Client Sample ID: EB 20221114 **York Sample ID:** 22K0807-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Water	November 14, 2022 9:20 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE Ext-PFAS-EPA 537.1M

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
2355-31-9	* N-MeFOSAA	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
2991-50-6	* N-EtFOSAA	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ng/L Certifications:	4.46	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:40	WEL

Sample Information

Client Sample ID: EB 20221114 **York Sample ID:** 22K0807-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Water	November 14, 2022 9:20 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE Ext-PFAS-EPA 537.1M

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate Recoveries	**Result**		**Acceptance Range**					
	Surrogate: M3PFBS	*74.7 %*		*25-150*					
	Surrogate: M5PFHxA	*71.7 %*		*25-150*					
	Surrogate: M4PFHpA	*74.0 %*		*25-150*					
	Surrogate: M3PFHxS	*79.8 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*82.3 %*		*25-150*					
	Surrogate: M6PFDA	*80.7 %*		*25-150*					
	Surrogate: M7PFUdA	*75.8 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*68.3 %*		*25-150*					
	Surrogate: M2PFTeDA	*57.0 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*64.7 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*90.4 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*77.1 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*28.5 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*71.4 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*67.4 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*109 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*94.3 %*		*25-200*					
	Surrogate: M9PFNA	*83.9 %*		*25-150*					

Sample Information

Client Sample ID: FB 20221114 **York Sample ID:** 22K0807-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Water	November 14, 2022 9:45 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE Ext-PFAS-EPA 537.1M

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL

Sample Information

Client Sample ID: FB 20221114 | **York Sample ID:** 22K0807-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Water	November 14, 2022 9:45 am	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE Ext-PFAS-EPA 537.1M

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
2355-31-9	* N-MeFOSAA	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
2991-50-6	* N-EtFOSAA	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ng/L Certifications:	4.46	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ng/L Certifications:	1.79	EPA 537m	11/17/2022 15:26 11/18/2022 22:53	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*78.6 %*	*25-150*
Surrogate: M5PFHxA	*82.4 %*	*25-150*

Sample Information

Client Sample ID: **FB 20221114** | **York Sample ID:** **22K0807-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Water	November 14, 2022 9:45 am	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE Ext-PFAS-EPA 537.1M

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M4PFHpA	*79.5 %*		*25-150*					
	Surrogate: M3PFHxS	*82.8 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*91.0 %*		*25-150*					
	Surrogate: M6PFDA	*86.6 %*		*25-150*					
	Surrogate: M7PFUdA	*75.2 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*75.7 %*		*25-150*					
	Surrogate: M2PFTeDA	*66.4 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*71.5 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*88.9 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*84.7 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*59.8 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*76.3 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*78.5 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*111 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*93.2 %*		*25-200*					
	Surrogate: M9PFNA	*93.1 %*		*25-150*					

Sample Information

Client Sample ID: **SB-1 0-4 20221114** | **York Sample ID:** **22K0807-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 9:50 am	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL

Sample Information

Client Sample ID: **SB-1 0-4 20221114** **York Sample ID:** **22K0807-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 9:50 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
2355-31-9	* N-MeFOSAA	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 16:58	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*90.1 %*	*25-150*
Surrogate: M5PFHxA	*84.0 %*	*25-150*
Surrogate: M4PFHpA	*79.7 %*	*25-150*
Surrogate: M3PFHxS	*89.2 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*81.4 %*	*25-150*

YORK
ANALYTICAL LABORATORIES INC

Sample Information

Client Sample ID: **SB-1 0-4 20221114** | **York Sample ID:** **22K0807-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 9:50 am	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M6PFDA	*62.2 %*		*25-150*					
	Surrogate: M7PFUdA	*50.5 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*48.4 %*		*25-150*					
	Surrogate: M2PFTeDA	*26.1 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*77.9 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*76.1 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*79.6 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*49.2 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*54.7 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*64.3 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*96.4 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*63.1 %*		*25-200*					
	Surrogate: M9PFNA	*69.0 %*		*25-150*					

Total Solids | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**92.3**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:		CTDOH-PH-0723	11/19/2022 18:24	

Sample Information

Client Sample ID: **SB-2 0-4 20221114** | **York Sample ID:** **22K0807-04**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 10:10 am	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry	0.268	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 17:11	

YORK
ANALYTICAL LABORATORIES INC

Sample Information

Client Sample ID: **SB-2 0-4 20221114** **York Sample ID:** **22K0807-04**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 10:10 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
2355-31-9	* N-MeFOSAA	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 17:11	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*97.0 %*	*25-150*
Surrogate: M5PFHxA	*97.2 %*	*25-150*

Sample Information

Client Sample ID: **SB-2 0-4 20221114** | **York Sample ID:** **22K0807-04**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 10:10 am	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M4PFHpA	*88.9 %*		*25-150*					
	Surrogate: M3PFHxS	*120 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*86.1 %*		*25-150*					
	Surrogate: M6PFDA	*63.6 %*		*25-150*					
	Surrogate: M7PFUdA	*58.5 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*60.0 %*		*25-150*					
	Surrogate: M2PFTeDA	*29.9 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*86.6 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*70.4 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*88.4 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*52.1 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*58.1 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*71.4 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*103 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*99.7 %*		*25-200*					
	Surrogate: M9PFNA	*73.3 %*		*25-150*					

Total Solids | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**89.2**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:		CTDOH-PH-0723	11/19/2022 18:24	

Sample Information

Client Sample ID: **SB-3 0-4 20221114** | **York Sample ID:** **22K0807-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 10:20 am	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Information

Client Sample ID: **SB-3 0-4 20221114** **York Sample ID:** **22K0807-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 10:20 am	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
2355-31-9	* N-MeFOSAA	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.280	EPA 537m	11/17/2022 16:06 11/21/2022 17:24	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*89.7 %*	*25-150*

Sample Information

Client Sample ID: **SB-3 0-4 20221114** **York Sample ID:** **22K0807-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 10:20 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*79.1 %*		*25-150*					
	Surrogate: M4PFHpA	*70.5 %*		*25-150*					
	Surrogate: M3PFHxS	*88.7 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*76.8 %*		*25-150*					
	Surrogate: M6PFDA	*54.2 %*		*25-150*					
	Surrogate: M7PFUdA	*51.5 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*49.7 %*		*25-150*					
	Surrogate: M2PFTeDA	*29.4 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*79.0 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*74.5 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*77.6 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*49.8 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*57.8 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*74.8 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*190 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*156 %*		*25-200*					
	Surrogate: M9PFNA	*64.4 %*		*25-150*					

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**87.7**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:	CTDOH-PH-0723		11/19/2022 18:24	

Sample Information

Client Sample ID: **SB-4 0-4 20221114** **York Sample ID:** **22K0807-06**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 10:40 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Information

Client Sample ID: **SB-4 0-4 20221114** | **York Sample ID:** **22K0807-06**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 10:40 am	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.258	EPA 537m	11/17/2022 16:06 11/21/2022 18:16	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*83.2 %*	*25-150*

Sample Information

Client Sample ID: **SB-4 0-4 20221114** | **York Sample ID:** **22K0807-06**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 10:40 am	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*71.7 %*		*25-150*					
	Surrogate: M4PFHpA	*74.3 %*		*25-150*					
	Surrogate: M3PFHxS	*83.9 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*69.6 %*		*25-150*					
	Surrogate: M6PFDA	*51.4 %*		*25-150*					
	Surrogate: M7PFUdA	*47.0 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*44.5 %*		*25-150*					
	Surrogate: M2PFTeDA	*22.4 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*71.4 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*66.8 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*76.5 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*45.8 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*38.9 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*56.5 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*62.3 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*68.8 %*		*25-200*					
	Surrogate: M9PFNA	*66.9 %*		*25-150*					

Total Solids | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**92.7**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:		CTDOH-PH-0723	11/19/2022 18:24	

Sample Information

Client Sample ID: **SB-5 0-4 20221114** | **York Sample ID:** **22K0807-07**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 11:00 am	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Information

Client Sample ID: **SB-5 0-4 20221114** **York Sample ID:** **22K0807-07**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 11:00 am	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.268	EPA 537m	11/17/2022 16:06 11/21/2022 18:29	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*93.5 %*	*25-150*

Sample Information

Client Sample ID: **SB-5 0-4 20221114** | **York Sample ID:** **22K0807-07**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 11:00 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*78.1 %*		*25-150*					
	Surrogate: M4PFHpA	*83.8 %*		*25-150*					
	Surrogate: M3PFHxS	*91.0 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*73.6 %*		*25-150*					
	Surrogate: M6PFDA	*43.3 %*		*25-150*					
	Surrogate: M7PFUdA	*26.6 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*15.1 %*	PFSu-L	*25-150*					
	Surrogate: M2PFTeDA	*9.23 %*	PFSu-L	*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*75.5 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*60.3 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*82.5 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*24.8 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*20.7 %*	PFSu-L	*25-150*					
	Surrogate: d5-N-EtFOSAA	*18.9 %*	PFSu-L	*25-150*					
	Surrogate: M2-6:2 FTS	*64.2 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*42.1 %*		*25-200*					
	Surrogate: M9PFNA	*64.7 %*		*25-150*					

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**91.7**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:		CTDOH-PH-0723	11/19/2022 18:24	

Sample Information

Client Sample ID: **SB-6 0-4 20221114** | **York Sample ID:** **22K0807-08**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 11:15 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Information

Client Sample ID: SB-6 0-4 20221114 **York Sample ID:** 22K0807-08

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 11:15 am	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.274	EPA 537m	11/17/2022 16:06 11/21/2022 18:42	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*81.1 %*	*25-150*

Sample Information

Client Sample ID: **SB-6 0-4 20221114** **York Sample ID:** **22K0807-08**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 11:15 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*75.0 %*		*25-150*					
	Surrogate: M4PFHpA	*77.3 %*		*25-150*					
	Surrogate: M3PFHxS	*84.5 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*69.1 %*		*25-150*					
	Surrogate: M6PFDA	*46.1 %*		*25-150*					
	Surrogate: M7PFUdA	*49.8 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*46.9 %*		*25-150*					
	Surrogate: M2PFTeDA	*20.0 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*70.0 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*54.0 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*70.9 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*45.7 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*45.5 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*57.5 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*82.7 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*56.4 %*		*25-200*					
	Surrogate: M9PFNA	*59.1 %*		*25-150*					

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**89.8**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:		CTDOH-PH-0723	11/19/2022 18:24	

Sample Information

Client Sample ID: **SB-7 0-4 20221114** **York Sample ID:** **22K0807-09**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 11:30 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Information

Client Sample ID: **SB-7 0-4 20221114** **York Sample ID:** **22K0807-09**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 11:30 am	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.260	EPA 537m	11/17/2022 16:06 11/21/2022 18:55	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*87.8 %*	*25-150*

Sample Information

Client Sample ID:	**SB-7 0-4 20221114**			**York Sample ID:**	**22K0807-09**
York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received	
22K0807	20220641	Soil	November 14, 2022 11:30 am	11/15/2022	

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*85.0 %*		*25-150*					
	Surrogate: M4PFHpA	*76.8 %*		*25-150*					
	Surrogate: M3PFHxS	*83.8 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*87.0 %*		*25-150*					
	Surrogate: M6PFDA	*64.0 %*		*25-150*					
	Surrogate: M7PFUdA	*54.0 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*48.9 %*		*25-150*					
	Surrogate: M2PFTeDA	*23.2 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*78.7 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*76.0 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*81.7 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*47.4 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*49.9 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*63.6 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*83.8 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*59.3 %*		*25-200*					
	Surrogate: M9PFNA	*78.5 %*		*25-150*					

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**90.9**		**100**	%	0.100	SM 2540G	11/19/2022 18:12 11/19/2022 18:24	JTG
					Certifications:	CTDOH-PH-0723			

Sample Information

Client Sample ID:	**SB-8 0-4 20221114**			**York Sample ID:**	**22K0807-10**
York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received	
22K0807	20220641	Soil	November 14, 2022 11:50 am	11/15/2022	

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

YORK
ANALYTICAL LABORATORIES INC

Sample Information

Client Sample ID: **SB-8 0-4 20221114** **York Sample ID:** **22K0807-10**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 11:50 am	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
1763-23-1	*** Perfluorooctanesulfonic acid (PFOS)**	**0.442**		**0**	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry	0.252	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 19:08	

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*83.3 %*	*25-150*

Sample Information

Client Sample ID:	**SB-8 0-4 20221114**		**York Sample ID:**	**22K0807-10**
York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 11:50 am	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*75.1 %*		*25-150*					
	Surrogate: M4PFHpA	*76.3 %*		*25-150*					
	Surrogate: M3PFHxS	*83.6 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*80.0 %*		*25-150*					
	Surrogate: M6PFDA	*55.5 %*		*25-150*					
	Surrogate: M7PFUdA	*49.8 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*50.3 %*		*25-150*					
	Surrogate: M2PFTeDA	*30.2 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*68.8 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*63.5 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*72.6 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*47.5 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*46.6 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*58.5 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*77.1 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*86.8 %*		*25-200*					
	Surrogate: M9PFNA	*68.5 %*		*25-150*					

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**91.0**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:	CTDOH-PH-0723		11/19/2022 18:24	

Sample Information

Client Sample ID:	**SB-8 4-8 20221114**		**York Sample ID:**	**22K0807-11**
York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:00 pm	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

YORK ANALYTICAL LABORATORIES INC

Sample Information

Client Sample ID: **SB-8 4-8 20221114** **York Sample ID:** **22K0807-11**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:00 pm	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:21	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*84.2 %*	*25-150*

Sample Information

Client Sample ID: **SB-8 4-8 20221114** **York Sample ID:** **22K0807-11**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:00 pm	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*82.3 %*		*25-150*					
	Surrogate: M4PFHpA	*80.5 %*		*25-150*					
	Surrogate: M3PFHxS	*81.3 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*87.5 %*		*25-150*					
	Surrogate: M6PFDA	*68.7 %*		*25-150*					
	Surrogate: M7PFUdA	*63.0 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*48.0 %*		*25-150*					
	Surrogate: M2PFTeDA	*24.5 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*74.6 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*77.8 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*80.3 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*57.1 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*56.2 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*49.3 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*75.7 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*70.5 %*		*25-200*					
	Surrogate: M9PFNA	*81.8 %*		*25-150*					

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**92.2**		**100**	%	0.100	SM 2540G	11/19/2022 18:12 11/19/2022 18:24	JTG
					Certifications:	CTDOH-PH-0723			

Sample Information

Client Sample ID: **SB-9 0-4 20221114** **York Sample ID:** **22K0807-12**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:15 pm	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

YORK
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Sample Information

Client Sample ID: **SB-9 0-4 20221114** **York Sample ID:** **22K0807-12**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:15 pm	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.262	EPA 537m	11/17/2022 16:06 11/21/2022 19:34	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*83.5 %*	*25-150*

Sample Information

Client Sample ID: **SB-9 0-4 20221114** | **York Sample ID:** **22K0807-12**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:15 pm	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*75.5 %*		*25-150*					
	Surrogate: M4PFHpA	*73.9 %*		*25-150*					
	Surrogate: M3PFHxS	*88.1 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*84.2 %*		*25-150*					
	Surrogate: M6PFDA	*59.2 %*		*25-150*					
	Surrogate: M7PFUdA	*51.5 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*51.9 %*		*25-150*					
	Surrogate: M2PFTeDA	*30.0 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*71.6 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*79.5 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*77.9 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*49.8 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*53.7 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*63.7 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*84.0 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*86.1 %*		*25-200*					
	Surrogate: M9PFNA	*69.4 %*		*25-150*					

Total Solids | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**90.6**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:		CTDOH-PH-0723	11/19/2022 18:24	

Sample Information

Client Sample ID: **SB-9 4-8 20221114** | **York Sample ID:** **22K0807-13**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:20 pm	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Information

Client Sample ID: **SB-9 4-8 20221114** | **York Sample ID:** **22K0807-13**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:20 pm	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.272	EPA 537m	11/17/2022 16:06 11/21/2022 19:47	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*77.6 %*	*25-150*

Sample Information

Client Sample ID: **SB-9 4-8 20221114** | **York Sample ID:** **22K0807-13**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:20 pm	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*67.9 %*		*25-150*					
	Surrogate: M4PFHpA	*70.9 %*		*25-150*					
	Surrogate: M3PFHxS	*83.7 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*75.0 %*		*25-150*					
	Surrogate: M6PFDA	*53.2 %*		*25-150*					
	Surrogate: M7PFUdA	*50.2 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*44.5 %*		*25-150*					
	Surrogate: M2PFTeDA	*16.4 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*64.0 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*61.3 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*71.3 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*41.9 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*40.5 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*56.7 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*136 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*72.5 %*		*25-200*					
	Surrogate: M9PFNA	*59.1 %*		*25-150*					

Total Solids | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**86.2**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:	CTDOH-PH-0723		11/19/2022 18:24	

Sample Information

Client Sample ID: **SB-10 0-4 20221114** | **York Sample ID:** **22K0807-14**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:50 pm	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

YORK
ANALYTICAL LABORATORIES INC

Sample Information

Client Sample ID: **SB-10 0-4 20221114** | **York Sample ID:** **22K0807-14**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:50 pm	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 19:59	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*79.6 %*	*25-150*

Sample Information

Client Sample ID: **SB-10 0-4 20221114** | **York Sample ID:** **22K0807-14**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 12:50 pm	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*71.8 %*		*25-150*					
	Surrogate: M4PFHpA	*73.3 %*		*25-150*					
	Surrogate: M3PFHxS	*100 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*69.3 %*		*25-150*					
	Surrogate: M6PFDA	*57.6 %*		*25-150*					
	Surrogate: M7PFUdA	*49.7 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*50.0 %*		*25-150*					
	Surrogate: M2PFTeDA	*36.8 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*67.1 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*60.4 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*72.5 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*46.5 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*49.2 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*64.3 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*65.4 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*50.7 %*		*25-200*					
	Surrogate: M9PFNA	*62.9 %*		*25-150*					

Total Solids | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**87.5**		**100**	%	0.100	SM 2540G	11/19/2022 18:12 11/19/2022 18:24	JTG
					Certifications:	CTDOH-PH-0723			

Sample Information

Client Sample ID: **SB-10 4-8 20221114** | **York Sample ID:** **22K0807-15**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:00 pm	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Information

Client Sample ID: **SB-10 4-8 20221114** **York Sample ID:** **22K0807-15**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:00 pm	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.261	EPA 537m	11/17/2022 16:06 11/21/2022 20:12	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*78.4 %*	*25-150*

YORK ANALYTICAL LABORATORIES INC

Sample Information

Client Sample ID: **SB-10 4-8 20221114** **York Sample ID:** **22K0807-15**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:00 pm	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*79.4 %*		*25-150*					
	Surrogate: M4PFHpA	*72.7 %*		*25-150*					
	Surrogate: M3PFHxS	*78.3 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*81.0 %*		*25-150*					
	Surrogate: M6PFDA	*63.7 %*		*25-150*					
	Surrogate: M7PFUdA	*56.3 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*47.5 %*		*25-150*					
	Surrogate: M2PFTeDA	*23.2 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*69.0 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*64.2 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*78.0 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*50.1 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*48.0 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*46.4 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*86.5 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*72.0 %*		*25-200*					
	Surrogate: M9PFNA	*72.4 %*		*25-150*					

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**88.5**		**100**	%	0.100	SM 2540G	11/19/2022 18:12 11/19/2022 18:24	JTG
					Certifications:		CTDOH-PH-0723		

Sample Information

Client Sample ID: **SB-11 0-4 20221114** **York Sample ID:** **22K0807-16**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:15 pm	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Information

Client Sample ID: **SB-11 0-4 20221114** **York Sample ID:** **22K0807-16**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:15 pm	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.275	EPA 537m	11/17/2022 16:06 11/21/2022 20:38	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*86.9 %*	*25-150*

YORK ANALYTICAL LABORATORIES INC

Sample Information

Client Sample ID: **SB-11 0-4 20221114** **York Sample ID:** **22K0807-16**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:15 pm	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*83.2 %*		*25-150*					
	Surrogate: M4PFHpA	*82.9 %*		*25-150*					
	Surrogate: M3PFHxS	*84.0 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*88.7 %*		*25-150*					
	Surrogate: M6PFDA	*75.5 %*		*25-150*					
	Surrogate: M7PFUdA	*67.3 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*55.6 %*		*25-150*					
	Surrogate: M2PFTeDA	*42.3 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*74.8 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*83.9 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*83.9 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*46.7 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*63.4 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*69.7 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*74.1 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*90.9 %*		*25-200*					
	Surrogate: M9PFNA	*85.5 %*		*25-150*					

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**90.0**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:		CTDOH-PH-0723	11/19/2022 18:24	

Sample Information

Client Sample ID: **SB-11 4-8 20221114** **York Sample ID:** **22K0807-17**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:20 pm	11/15/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Information

Client Sample ID: **SB-11 4-8 20221114** | **York Sample ID:** **22K0807-17**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:20 pm	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry	0.279	EPA 537m	11/17/2022 16:06	WEL
					Certifications:			11/21/2022 20:52	

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*89.5 %*	*25-150*

Sample Information

Client Sample ID: **SB-11 4-8 20221114** | **York Sample ID:** **22K0807-17**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:20 pm	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*82.1 %*		*25-150*					
	Surrogate: M4PFHpA	*81.7 %*		*25-150*					
	Surrogate: M3PFHxS	*95.7 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*90.4 %*		*25-150*					
	Surrogate: M6PFDA	*62.2 %*		*25-150*					
	Surrogate: M7PFUdA	*49.4 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*43.5 %*		*25-150*					
	Surrogate: M2PFTeDA	*22.5 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*78.8 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*78.6 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*78.7 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*43.1 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*48.4 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*58.3 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*93.2 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*78.1 %*		*25-200*					
	Surrogate: M9PFNA	*79.4 %*		*25-150*					

Total Solids | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**86.6**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:	CTDOH-PH-0723		11/19/2022 18:24	

Sample Information

Client Sample ID: **SB-12 0-4 20221114** | **York Sample ID:** **22K0807-18**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:40 pm	11/15/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Information

Client Sample ID: **SB-12 0-4 20221114** **York Sample ID:** **22K0807-18**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:40 pm	11/15/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
2355-31-9	* N-MeFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		0	ug/kg dry Certifications:	0.253	EPA 537m	11/17/2022 16:06 11/21/2022 21:05	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*87.2 %*	*25-150*

Sample Information

Client Sample ID: **SB-12 0-4 20221114** **York Sample ID:** **22K0807-18**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0807	20220641	Soil	November 14, 2022 1:40 pm	11/15/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*81.5 %*		*25-150*					
	Surrogate: M4PFHpA	*83.8 %*		*25-150*					
	Surrogate: M3PFHxS	*104 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*81.7 %*		*25-150*					
	Surrogate: M6PFDA	*59.4 %*		*25-150*					
	Surrogate: M7PFUdA	*51.6 %*		*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*48.5 %*		*25-150*					
	Surrogate: M2PFTeDA	*32.0 %*		*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*73.0 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*86.5 %*		*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*77.2 %*		*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*33.5 %*		*10-150*					
	Surrogate: d3-N-MeFOSAA	*52.9 %*		*25-150*					
	Surrogate: d5-N-EtFOSAA	*74.1 %*		*25-150*					
	Surrogate: M2-6:2 FTS	*101 %*		*25-200*					
	Surrogate: M2-8:2 FTS	*119 %*		*25-200*					
	Surrogate: M9PFNA	*74.5 %*		*25-150*					

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Maximum Contaminant Level MCL, ng/L	Units	Reported to LOQ	Reference Method	Date/Time Analyzed	Analyst
solids	*** % Solids**	**89.9**		**100**	%	0.100	SM 2540G	11/19/2022 18:12	JTG
					Certifications:	CTDOH-PH-0723		11/19/2022 18:24	

Analytical Batch Summary

Batch ID: BK21120 **Preparation Method:** SPE Ext-PFAS-EPA 537.1M **Prepared By:** WJH

YORK Sample ID	Client Sample ID	Preparation Date
22K0807-01	EB 20221114	11/17/22
22K0807-02	FB 20221114	11/17/22
BK21120-BLK1	Blank	11/17/22
BK21120-BS1	LCS	11/17/22
BK21120-BSD1	LCS Dup	11/17/22

Batch ID: BK21122 **Preparation Method:** SPE PFAS Extraction-Soil-EPA 537m **Prepared By:** WJH

YORK Sample ID	Client Sample ID	Preparation Date
22K0807-03	SB-1 0-4 20221114	11/17/22
22K0807-04	SB-2 0-4 20221114	11/17/22
22K0807-05	SB-3 0-4 20221114	11/17/22
22K0807-06	SB-4 0-4 20221114	11/17/22
22K0807-07	SB-5 0-4 20221114	11/17/22
22K0807-08	SB-6 0-4 20221114	11/17/22
22K0807-09	SB-7 0-4 20221114	11/17/22
22K0807-10	SB-8 0-4 20221114	11/17/22
22K0807-11	SB-8 4-8 20221114	11/17/22
22K0807-12	SB-9 0-4 20221114	11/17/22
22K0807-13	SB-9 4-8 20221114	11/17/22
22K0807-14	SB-10 0-4 20221114	11/17/22
22K0807-15	SB-10 4-8 20221114	11/17/22
22K0807-16	SB-11 0-4 20221114	11/17/22
22K0807-17	SB-11 4-8 20221114	11/17/22
22K0807-18	SB-12 0-4 20221114	11/17/22
BK21122-BLK1	Blank	11/17/22
BK21122-BS1	LCS	11/17/22
BK21122-MS1	Matrix Spike	11/17/22
BK21122-MSD1	Matrix Spike Dup	11/17/22

Batch ID: BK21241 **Preparation Method:** % Solids Prep **Prepared By:** JTG

YORK Sample ID	Client Sample ID	Preparation Date
22K0807-03	SB-1 0-4 20221114	11/19/22
22K0807-04	SB-2 0-4 20221114	11/19/22
22K0807-05	SB-3 0-4 20221114	11/19/22
22K0807-06	SB-4 0-4 20221114	11/19/22
22K0807-07	SB-5 0-4 20221114	11/19/22
22K0807-08	SB-6 0-4 20221114	11/19/22
22K0807-09	SB-7 0-4 20221114	11/19/22
22K0807-10	SB-8 0-4 20221114	11/19/22
22K0807-11	SB-8 4-8 20221114	11/19/22
22K0807-12	SB-9 0-4 20221114	11/19/22
22K0807-13	SB-9 4-8 20221114	11/19/22
22K0807-14	SB-10 0-4 20221114	11/19/22

22K0807-15	SB-10 4-8 20221114	11/19/22
22K0807-16	SB-11 0-4 20221114	11/19/22
22K0807-17	SB-11 4-8 20221114	11/19/22
22K0807-18	SB-12 0-4 20221114	11/19/22
BK21241-DUP1	Duplicate	11/19/22

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21120 - SPE Ext-PFAS-EPA 537.1M											
Blank (BK21120-BLK1)							Prepared: 11/17/2022 Analyzed: 11/18/2022				
Perfluorobutanesulfonic acid (PFBS)	ND	2.00	ng/L								
Perfluorohexanoic acid (PFHxA)	ND	2.00	"								
Perfluoroheptanoic acid (PFHpA)	ND	2.00	"								
Perfluorohexanesulfonic acid (PFHxS)	ND	2.00	"								
Perfluorooctanoic acid (PFOA)	ND	2.00	"								
Perfluorooctanesulfonic acid (PFOS)	ND	2.00	"								
Perfluorononanoic acid (PFNA)	ND	2.00	"								
Perfluorodecanoic acid (PFDA)	ND	2.00	"								
Perfluoroundecanoic acid (PFUnA)	ND	2.00	"								
Perfluorododecanoic acid (PFDoA)	ND	2.00	"								
Perfluorotridecanoic acid (PFTrDA)	ND	2.00	"								
Perfluorotetradecanoic acid (PFTA)	ND	2.00	"								
N-MeFOSAA	ND	2.00	"								
N-EtFOSAA	ND	2.00	"								
Perfluoropentanoic acid (PFPeA)	ND	2.00	"								
Perfluoro-1-octanesulfonamide (FOSA)	ND	2.00	"								
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	2.00	"								
Perfluoro-1-decanesulfonic acid (PFDS)	ND	2.00	"								
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND	5.00	"								
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND	2.00	"								
Perfluoro-n-butanoic acid (PFBA)	ND	2.00	"								
Surrogate: M3PFBS	*57.3*		*"*	*74.3*		*77.1*	*25-150*				
Surrogate: M5PFHxA	*69.1*		*"*	*80.0*		*86.4*	*25-150*				
Surrogate: M4PFHpA	*70.8*		*"*	*80.0*		*88.5*	*25-150*				
Surrogate: M3PFHxS	*70.1*		*"*	*75.7*		*92.6*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*75.1*		*"*	*80.0*		*93.8*	*25-150*				
Surrogate: M6PFDA	*71.9*		*"*	*80.0*		*89.9*	*25-150*				
Surrogate: M7PFUdA	*66.6*		*"*	*80.0*		*83.3*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*57.9*		*"*	*80.0*		*72.4*	*25-150*				
Surrogate: M2PFTeDA	*56.0*		*"*	*80.0*		*70.0*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*60.5*		*"*	*80.0*		*75.6*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*77.3*		*"*	*76.6*		*101*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*68.6*		*"*	*80.0*		*85.7*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*37.6*		*"*	*80.0*		*47.0*	*10-150*				
Surrogate: d3-N-MeFOSAA	*63.4*		*"*	*80.0*		*79.3*	*25-150*				
Surrogate: d5-N-EtFOSAA	*62.5*		*"*	*80.0*		*78.1*	*25-150*				
Surrogate: M2-6:2 FTS	*78.5*		*"*	*75.9*		*103*	*25-200*				
Surrogate: M2-8:2 FTS	*85.3*		*"*	*76.6*		*111*	*25-200*				
Surrogate: M9PFNA	*76.3*		*"*	*80.0*		*95.4*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21120 - SPE Ext-PFAS-EPA 537.1M											
LCS (BK21120-BS1)								Prepared: 11/17/2022 Analyzed: 11/18/2022			
Perfluorobutanesulfonic acid (PFBS)	74.6	2.00	ng/L	70.8		105	50-130				
Perfluorohexanoic acid (PFHxA)	88.7	2.00	"	80.0		111	50-130				
Perfluoroheptanoic acid (PFHpA)	95.0	2.00	"	80.0		119	50-130				
Perfluorohexanesulfonic acid (PFHxS)	77.0	2.00	"	72.8		106	50-130				
Perfluorooctanoic acid (PFOA)	83.6	2.00	"	80.0		104	50-130				
Perfluorooctanesulfonic acid (PFOS)	72.0	2.00	"	74.0		97.3	50-130				
Perfluorononanoic acid (PFNA)	83.4	2.00	"	80.0		104	50-130				
Perfluorodecanoic acid (PFDA)	89.6	2.00	"	80.0		112	50-130				
Perfluoroundecanoic acid (PFUnA)	88.1	2.00	"	80.0		110	50-130				
Perfluorododecanoic acid (PFDoA)	88.0	2.00	"	80.0		110	50-130				
Perfluorotridecanoic acid (PFTrDA)	82.2	2.00	"	80.0		103	50-130				
Perfluorotetradecanoic acid (PFTA)	88.9	2.00	"	80.0		111	50-130				
N-MeFOSAA	79.6	2.00	"	80.0		99.5	50-130				
N-EtFOSAA	78.1	2.00	"	80.0		97.6	50-130				
Perfluoropentanoic acid (PFPeA)	89.4	2.00	"	80.0		112	50-130				
Perfluoro-1-octanesulfonamide (FOSA)	77.2	2.00	"	80.0		96.5	50-130				
Perfluoro-1-heptanesulfonic acid (PFHpS)	65.4	2.00	"	76.4		85.7	50-130				
Perfluoro-1-decanesulfonic acid (PFDS)	71.2	2.00	"	77.2		92.2	50-130				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	73.5	5.00	"	76.0		96.7	50-175				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	83.2	2.00	"	76.8		108	50-175				
Perfluoro-n-butanoic acid (PFBA)	86.5	2.00	"	80.0		108	50-130				
Surrogate: M3PFBS	*52.9*		*"*	*74.3*		*71.2*	*25-150*				
Surrogate: M5PFHxA	*61.3*		*"*	*80.0*		*76.6*	*25-150*				
Surrogate: M4PFHpA	*62.0*		*"*	*80.0*		*77.5*	*25-150*				
Surrogate: M3PFHxS	*60.6*		*"*	*75.7*		*80.0*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*69.2*		*"*	*80.0*		*86.5*	*25-150*				
Surrogate: M6PFDA	*62.2*		*"*	*80.0*		*77.8*	*25-150*				
Surrogate: M7PFUdA	*58.0*		*"*	*80.0*		*72.5*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*57.5*		*"*	*80.0*		*71.9*	*25-150*				
Surrogate: M2PFTeDA	*47.1*		*"*	*80.0*		*58.9*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*56.4*		*"*	*80.0*		*70.5*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*67.9*		*"*	*76.6*		*88.7*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*64.1*		*"*	*80.0*		*80.1*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*37.5*		*"*	*80.0*		*46.9*	*10-150*				
Surrogate: d3-N-MeFOSAA	*57.4*		*"*	*80.0*		*71.7*	*25-150*				
Surrogate: d5-N-EtFOSAA	*53.9*		*"*	*80.0*		*67.4*	*25-150*				
Surrogate: M2-6:2 FTS	*75.6*		*"*	*75.9*		*99.6*	*25-200*				
Surrogate: M2-8:2 FTS	*73.8*		*"*	*76.6*		*96.3*	*25-200*				
Surrogate: M9PFNA	*65.6*		*"*	*80.0*		*82.0*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Batch BK21120 - SPE Ext-PFAS-EPA 537.1M

LCS Dup (BK21120-BSD1) Prepared: 11/17/2022 Analyzed: 11/18/2022

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Perfluorobutanesulfonic acid (PFBS)	86.9	2.00	ng/L	70.8		123	50-130		15.1	30	
Perfluorohexanoic acid (PFHxA)	95.7	2.00	"	80.0		120	50-130		7.64	30	
Perfluoroheptanoic acid (PFHpA)	102	2.00	"	80.0		128	50-130		7.23	30	
Perfluorohexanesulfonic acid (PFHxS)	83.8	2.00	"	72.8		115	50-130		8.44	30	
Perfluorooctanoic acid (PFOA)	98.9	2.00	"	80.0		124	50-130		16.8	30	
Perfluorooctanesulfonic acid (PFOS)	75.8	2.00	"	74.0		102	50-130		5.22	30	
Perfluorononanoic acid (PFNA)	81.9	2.00	"	80.0		102	50-130		1.82	30	
Perfluorodecanoic acid (PFDA)	98.4	2.00	"	80.0		123	50-130		9.41	30	
Perfluoroundecanoic acid (PFUnA)	96.0	2.00	"	80.0		120	50-130		8.57	30	
Perfluorododecanoic acid (PFDoA)	98.0	2.00	"	80.0		123	50-130		10.8	30	
Perfluorotridecanoic acid (PFTrDA)	95.6	2.00	"	80.0		119	50-130		15.0	30	
Perfluorotetradecanoic acid (PFTA)	96.7	2.00	"	80.0		121	50-130		8.37	30	
N-MeFOSAA	88.5	2.00	"	80.0		111	50-130		10.6	30	
N-EtFOSAA	92.5	2.00	"	80.0		116	50-130		16.8	30	
Perfluoropentanoic acid (PFPeA)	101	2.00	"	80.0		126	50-130		12.2	30	
Perfluoro-1-octanesulfonamide (FOSA)	89.7	2.00	"	80.0		112	50-130		14.9	30	
Perfluoro-1-heptanesulfonic acid (PFHpS)	68.9	2.00	"	76.4		90.2	50-130		5.17	30	
Perfluoro-1-decanesulfonic acid (PFDS)	69.4	2.00	"	77.2		89.9	50-130		2.56	30	
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	107	5.00	"	76.0		141	50-175		37.0	30	Non-dir.
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	104	2.00	"	76.8		135	50-175		22.1	30	
Perfluoro-n-butanoic acid (PFBA)	92.4	2.00	"	80.0		116	50-130		6.58	30	
Surrogate: M3PFBS	*47.1*		*"*	*74.3*		*63.4*	*25-150*				
Surrogate: M5PFHxA	*57.0*		*"*	*80.0*		*71.2*	*25-150*				
Surrogate: M4PFHpA	*56.8*		*"*	*80.0*		*71.0*	*25-150*				
Surrogate: M3PFHxS	*52.6*		*"*	*75.7*		*69.5*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*60.5*		*"*	*80.0*		*75.6*	*25-150*				
Surrogate: M6PFDA	*57.6*		*"*	*80.0*		*72.0*	*25-150*				
Surrogate: M7PFUdA	*55.0*		*"*	*80.0*		*68.7*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*52.5*		*"*	*80.0*		*65.7*	*25-150*				
Surrogate: M2PFTeDA	*45.8*		*"*	*80.0*		*57.2*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*53.3*		*"*	*80.0*		*66.6*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*65.1*		*"*	*76.6*		*85.0*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*59.5*		*"*	*80.0*		*74.4*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*33.8*		*"*	*80.0*		*42.3*	*10-150*				
Surrogate: d3-N-MeFOSAA	*50.4*		*"*	*80.0*		*63.1*	*25-150*				
Surrogate: d5-N-EtFOSAA	*44.6*		*"*	*80.0*		*55.8*	*25-150*				
Surrogate: M2-6:2 FTS	*59.4*		*"*	*75.9*		*78.2*	*25-200*				
Surrogate: M2-8:2 FTS	*56.7*		*"*	*76.6*		*73.9*	*25-200*				
Surrogate: M9PFNA	*66.4*		*"*	*80.0*		*83.0*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag

Batch BK21122 - SPE PFAS Extraction-Soil-EPA 537m

Blank (BK21122-BLK1) Prepared: 11/17/2022 Analyzed: 11/21/2022

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Perfluorobutanesulfonic acid (PFBS)	ND	0.238	ug/kg wet								
Perfluorohexanoic acid (PFHxA)	ND	0.238	"								
Perfluoroheptanoic acid (PFHpA)	ND	0.238	"								
Perfluorohexanesulfonic acid (PFHxS)	ND	0.238	"								
Perfluorooctanoic acid (PFOA)	ND	0.238	"								
Perfluorooctanesulfonic acid (PFOS)	ND	0.238	"								
Perfluorononanoic acid (PFNA)	ND	0.238	"								
Perfluorodecanoic acid (PFDA)	ND	0.238	"								
Perfluoroundecanoic acid (PFUnA)	ND	0.238	"								
Perfluorododecanoic acid (PFDoA)	ND	0.238	"								
Perfluorotridecanoic acid (PFTrDA)	ND	0.238	"								
Perfluorotetradecanoic acid (PFTA)	ND	0.238	"								
N-MeFOSAA	ND	0.238	"								
N-EtFOSAA	ND	0.238	"								
Perfluoropentanoic acid (PFPeA)	ND	0.238	"								
Perfluoro-1-octanesulfonamide (FOSA)	ND	0.238	"								
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	0.238	"								
Perfluoro-1-decanesulfonic acid (PFDS)	ND	0.238	"								
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND	0.238	"								
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND	0.238	"								
Perfluoro-n-butanoic acid (PFBA)	ND	0.238	"								
Surrogate: M3PFBS	*4.96*		*"*	*4.43*		*112*	*25-150*				
Surrogate: M5PFHxA	*4.30*		*"*	*4.77*		*90.2*	*25-150*				
Surrogate: M4PFHpA	*3.39*		*"*	*4.77*		*71.1*	*25-150*				
Surrogate: M3PFHxS	*3.86*		*"*	*4.51*		*85.5*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.67*		*"*	*4.77*		*98.0*	*25-150*				
Surrogate: M6PFDA	*3.55*		*"*	*4.77*		*74.5*	*25-150*				
Surrogate: M7PFUdA	*2.93*		*"*	*4.77*		*61.5*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.50*		*"*	*4.77*		*52.4*	*25-150*				
Surrogate: M2PFTeDA	*1.94*		*"*	*4.77*		*40.7*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*4.27*		*"*	*4.77*		*89.6*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*4.20*		*"*	*4.56*		*91.9*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.77*		*"*	*4.77*		*100*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.40*		*"*	*4.77*		*50.4*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.72*		*"*	*4.77*		*57.1*	*25-150*				
Surrogate: d5-N-EtFOSAA	*2.68*		*"*	*4.77*		*56.2*	*25-150*				
Surrogate: M2-6:2 FTS	*4.58*		*"*	*4.53*		*101*	*25-200*				
Surrogate: M2-8:2 FTS	*3.69*		*"*	*4.57*		*80.8*	*25-200*				
Surrogate: M9PFNA	*4.11*		*"*	*4.77*		*86.2*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21122 - SPE PFAS Extraction-Soil-EPA 537m											
LCS (BK21122-BS1)								Prepared: 11/17/2022 Analyzed: 11/21/2022			
Perfluorobutanesulfonic acid (PFBS)	4.64	0.244	ug/kg wet	4.32		107	50-130				
Perfluorohexanoic acid (PFHxA)	5.68	0.244	"	4.88		116	50-130				
Perfluoroheptanoic acid (PFHpA)	5.70	0.244	"	4.88		117	50-130				
Perfluorohexanesulfonic acid (PFHxS)	4.77	0.244	"	4.44		107	50-130				
Perfluorooctanoic acid (PFOA)	5.10	0.244	"	4.88		105	50-130				
Perfluorooctanesulfonic acid (PFOS)	4.51	0.244	"	4.51		99.9	50-130				
Perfluorononanoic acid (PFNA)	5.13	0.244	"	4.88		105	50-130				
Perfluorodecanoic acid (PFDA)	6.02	0.244	"	4.88		123	50-130				
Perfluoroundecanoic acid (PFUnA)	5.24	0.244	"	4.88		107	50-130				
Perfluorododecanoic acid (PFDoA)	5.52	0.244	"	4.88		113	50-130				
Perfluorotridecanoic acid (PFTrDA)	4.03	0.244	"	4.88		82.6	50-130				
Perfluorotetradecanoic acid (PFTA)	5.91	0.244	"	4.88		121	50-130				
N-MeFOSAA	4.84	0.244	"	4.88		99.2	50-130				
N-EtFOSAA	4.90	0.244	"	4.88		100	50-130				
Perfluoropentanoic acid (PFPeA)	5.78	0.244	"	4.88		118	50-130				
Perfluoro-1-octanesulfonamide (FOSA)	5.14	0.244	"	4.88		105	50-130				
Perfluoro-1-heptanesulfonic acid (PFHpS)	5.24	0.244	"	4.66		112	50-130				
Perfluoro-1-decanesulfonic acid (PFDS)	4.11	0.244	"	4.71		87.2	50-130				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	5.09	0.244	"	4.64		110	50-200				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	5.62	0.244	"	4.69		120	50-200				
Perfluoro-n-butanoic acid (PFBA)	5.26	0.244	"	4.88		108	50-130				
Surrogate: M3PFBS	*4.62*		"	*4.53*		*102*	*25-150*				
Surrogate: M5PFHxA	*4.45*		"	*4.88*		*91.3*	*25-150*				
Surrogate: M4PFHpA	*4.26*		"	*4.88*		*87.4*	*25-150*				
Surrogate: M3PFHxS	*4.58*		"	*4.62*		*99.1*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.49*		"	*4.88*		*91.9*	*25-150*				
Surrogate: M6PFDA	*3.45*		"	*4.88*		*70.7*	*25-150*				
Surrogate: M7PFUdA	*3.35*		"	*4.88*		*68.6*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*3.09*		"	*4.88*		*63.3*	*25-150*				
Surrogate: M2PFTeDA	*2.18*		"	*4.88*		*44.7*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*4.23*		"	*4.88*		*86.6*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*4.07*		"	*4.67*		*87.2*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.61*		"	*4.88*		*94.5*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.97*		"	*4.88*		*61.0*	*10-150*				
Surrogate: d3-N-MeFOSAA	*3.35*		"	*4.88*		*68.7*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.04*		"	*4.88*		*62.2*	*25-150*				
Surrogate: M2-6:2 FTS	*4.25*		"	*4.63*		*91.9*	*25-200*				
Surrogate: M2-8:2 FTS	*3.75*		"	*4.68*		*80.2*	*25-200*				
Surrogate: M9PFNA	*4.26*		"	*4.88*		*87.2*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21122 - SPE PFAS Extraction-Soil-EPA 537m											
Matrix Spike (BK21122-MS1)	*Source sample: 22K0807-05 (SB-3 0-4 20221114)						Prepared: 11/17/2022 Analyzed: 11/21/2022				
Perfluorobutanesulfonic acid (PFBS)	5.25	0.282	ug/kg dry	5.00	ND	105	25-150				
Perfluorohexanoic acid (PFHxA)	5.91	0.282	"	5.65	ND	105	25-150				
Perfluoroheptanoic acid (PFHpA)	6.93	0.282	"	5.65	ND	123	25-150				
Perfluorohexanesulfonic acid (PFHxS)	5.01	0.282	"	5.14	ND	97.6	25-150				
Perfluorooctanoic acid (PFOA)	6.00	0.282	"	5.65	ND	106	25-150				
Perfluorooctanesulfonic acid (PFOS)	4.52	0.282	"	5.22	ND	86.6	25-150				
Perfluorononanoic acid (PFNA)	5.93	0.282	"	5.65	ND	105	25-150				
Perfluorodecanoic acid (PFDA)	6.17	0.282	"	5.65	ND	109	25-150				
Perfluoroundecanoic acid (PFUnA)	5.92	0.282	"	5.65	ND	105	25-150				
Perfluorododecanoic acid (PFDoA)	6.94	0.282	"	5.65	ND	123	25-150				
Perfluorotridecanoic acid (PFTrDA)	5.05	0.282	"	5.65	ND	89.5	25-150				
Perfluorotetradecanoic acid (PFTA)	6.39	0.282	"	5.65	ND	113	25-150				
N-MeFOSAA	6.21	0.282	"	5.65	ND	110	25-150				
N-EtFOSAA	5.44	0.282	"	5.65	ND	96.3	25-150				
Perfluoropentanoic acid (PFPeA)	6.37	0.282	"	5.65	ND	113	25-150				
Perfluoro-1-octanesulfonamide (FOSA)	5.39	0.282	"	5.65	ND	95.4	25-150				
Perfluoro-1-heptanesulfonic acid (PFHpS)	6.36	0.282	"	5.39	ND	118	25-150				
Perfluoro-1-decanesulfonic acid (PFDS)	3.90	0.282	"	5.45	ND	71.5	25-150				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	5.81	0.282	"	5.36	ND	108	25-200				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	6.36	0.282	"	5.42	ND	117	25-200				
Perfluoro-n-butanoic acid (PFBA)	6.00	0.282	"	5.65	ND	106	25-150				
Surrogate: M3PFBS	*5.43*		*"*	*5.24*		*104*	*25-150*				
Surrogate: M5PFHxA	*4.80*		*"*	*5.65*		*85.0*	*25-150*				
Surrogate: M4PFHpA	*4.52*		*"*	*5.65*		*80.1*	*25-150*				
Surrogate: M3PFHxS	*5.88*		*"*	*5.34*		*110*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.67*		*"*	*5.65*		*82.7*	*25-150*				
Surrogate: M6PFDA	*3.38*		*"*	*5.65*		*59.9*	*25-150*				
Surrogate: M7PFUdA	*2.80*		*"*	*5.65*		*49.6*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.68*		*"*	*5.65*		*47.4*	*25-150*				
Surrogate: M2PFTeDA	*1.75*		*"*	*5.65*		*31.0*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*4.80*		*"*	*5.65*		*85.0*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*4.58*		*"*	*5.40*		*84.7*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.64*		*"*	*5.65*		*82.3*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*3.03*		*"*	*5.65*		*53.7*	*10-150*				
Surrogate: d3-N-MeFOSAA	*3.24*		*"*	*5.65*		*57.5*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.99*		*"*	*5.65*		*70.6*	*25-150*				
Surrogate: M2-6:2 FTS	*12.2*		*"*	*5.36*		*227*	*25-200*				
Surrogate: M2-8:2 FTS	*9.82*		*"*	*5.41*		*182*	*25-200*				
Surrogate: M9PFNA	*3.87*		*"*	*5.65*		*68.5*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21122 - SPE PFAS Extraction-Soil-EPA 537m											
Matrix Spike Dup (BK21122-MSD1)	*Source sample: 22K0807-05 (SB-3 0-4 20221114)						Prepared: 11/17/2022 Analyzed: 11/21/2022				
Perfluorobutanesulfonic acid (PFBS)	5.15	0.273	ug/kg dry	4.84	ND	106	25-150		2.00	35	
Perfluorohexanoic acid (PFHxA)	5.96	0.273	"	5.46	ND	109	25-150		0.946	35	
Perfluoroheptanoic acid (PFHpA)	6.37	0.273	"	5.46	ND	117	25-150		8.50	35	
Perfluorohexanesulfonic acid (PFHxS)	4.71	0.273	"	4.97	ND	94.6	25-150		6.31	35	
Perfluorooctanoic acid (PFOA)	5.95	0.273	"	5.46	ND	109	25-150		0.875	35	
Perfluorooctanesulfonic acid (PFOS)	5.17	0.273	"	5.05	ND	102	25-150		13.5	35	
Perfluorononanoic acid (PFNA)	5.09	0.273	"	5.46	ND	93.2	25-150		15.1	35	
Perfluorodecanoic acid (PFDA)	5.97	0.273	"	5.46	ND	109	25-150		3.35	35	
Perfluoroundecanoic acid (PFUnA)	5.52	0.273	"	5.46	ND	101	25-150		6.86	35	
Perfluorododecanoic acid (PFDoA)	6.74	0.273	"	5.46	ND	123	25-150		2.93	35	
Perfluorotridecanoic acid (PFTrDA)	5.46	0.273	"	5.46	ND	99.9	25-150		7.80	35	
Perfluorotetradecanoic acid (PFTA)	6.19	0.273	"	5.46	ND	113	25-150		3.15	35	
N-MeFOSAA	5.45	0.273	"	5.46	ND	99.8	25-150		13.0	35	
N-EtFOSAA	5.88	0.273	"	5.46	ND	108	25-150		7.86	35	
Perfluoropentanoic acid (PFPeA)	6.34	0.273	"	5.46	ND	116	25-150		0.450	35	
Perfluoro-1-octanesulfonamide (FOSA)	5.32	0.273	"	5.46	ND	97.4	25-150		1.17	35	
Perfluoro-1-heptanesulfonic acid (PFHpS)	5.11	0.273	"	5.22	ND	98.0	25-150		21.8	35	
Perfluoro-1-decanesulfonic acid (PFDS)	3.91	0.273	"	5.27	ND	74.1	25-150		0.316	35	
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	6.29	0.273	"	5.19	ND	121	25-200		7.96	35	
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	6.49	0.273	"	5.25	ND	124	25-200		1.99	35	
Perfluoro-n-butanoic acid (PFBA)	5.68	0.273	"	5.46	ND	104	25-150		5.40	35	
Surrogate: M3PFBS	*4.82*		"	*5.08*		*95.0*	*25-150*				
Surrogate: M5PFHxA	*4.44*		"	*5.46*		*81.3*	*25-150*				
Surrogate: M4PFHpA	*4.17*		"	*5.46*		*76.3*	*25-150*				
Surrogate: M3PFHxS	*5.45*		"	*5.17*		*105*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.12*		"	*5.46*		*75.4*	*25-150*				
Surrogate: M6PFDA	*2.95*		"	*5.46*		*53.9*	*25-150*				
Surrogate: M7PFUdA	*2.83*		"	*5.46*		*51.8*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.87*		"	*5.46*		*52.5*	*25-150*				
Surrogate: M2PFTeDA	*1.94*		"	*5.46*		*35.6*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*4.36*		"	*5.46*		*79.9*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*4.02*		"	*5.23*		*76.8*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.23*		"	*5.46*		*77.3*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.65*		"	*5.46*		*48.5*	*10-150*				
Surrogate: d3-N-MeFOSAA	*3.31*		"	*5.46*		*60.6*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.78*		"	*5.46*		*69.1*	*25-150*				
Surrogate: M2-6:2 FTS	*8.98*		"	*5.19*		*173*	*25-200*				
Surrogate: M2-8:2 FTS	*7.91*		"	*5.23*		*151*	*25-200*				
Surrogate: M9PFNA	*3.86*		"	*5.46*		*70.6*	*25-150*				

Miscellaneous Physical Parameters - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21241 - % Solids Prep											
Duplicate (BK21241-DUP1)	*Source sample: 22K0807-06 (SB-4 0-4 20221114)						Prepared & Analyzed: 11/19/2022				
% Solids	93.1	0.100	%		92.7				0.472	20	

Sample and Data Qualifiers Relating to This Work Order

PFSu-L The isotopically labeled surrogate recovered below lab control limits due to a matrix effect. Isotope Dilution was applied.

PF-CCV-L The CCV recovery was slightly below acceptable limits for the qualified compound. However, sample results are not biased low because results are corrected for isotope recovery.

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.
MCL	This is the Maximum Contaminant Level in ng/L (ppt) establised by the NYSDOH for these compounds wheree an MCL is reported. Exceedences are flagged according.

YORK

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Field Chain-of-Custody Record

NOTE: YORK's Standard Terms & Conditions are listed on the back side of this document. This document serves as your written authorization for YORK to proceed with the analyses requested below. Your signature binds you to YORK's Standard Terms & Conditions.

YORK Project No. 22K0807

Page ____ of ____

YOUR Information	Report To:	Invoice To:	YOUR Project Number	Turn-Around Time
Company: PVE Engineering	Company:	Company:	20220641	RUSH - Next Day
Address: 48 Springside Avenue Poughkeepsie, NY 12603	Address: Same	Address: Same	**YOUR Project Name**	RUSH - Two Day
Phone.: 843-431-2344	Phone.:	Phone.:	20220641	RUSH - Three Day
Contact: Trevor Traglia	Contact: Same	Contact: Tara Alvarado		RUSH - Four Day
E-mail: ttraglia@pvell.com	E-mail:	E-mail: talvarado@pvellc.com	YOUR PO#: 20220641	Standard (5-7 Day) X

Please print clearly and legibly. All information must be complete. Samples will not be logged in and the turn-around-time clock will not begin until any questions by YORK are resolved.

Trevor Traglia

Samples Collected by: (print your name above and sign below)

Matrix Codes	Samples From		Report / EDD Type (circle selections)			YORK Reg. Comp.
S - soil / solid	New York	X	Summary Report	CT RCP	Standard Excel EDD	Compared to the following Regulation(s): (please fill in)
GW - groundwater	New Jersey		QA Report	CT RCP DQA/DUE	EQuIS (Standard)	
DW - drinking water	Connecticut		NY ASP A Package	NJDEP Reduced Deliverables	NYSDEC EQuIS	
WW - wastewater	Pennsylvania		NY ASP B Package	NJDKQP	NJDEP SRP HazSite	
O - Oil, Other	Other				Other:	

Sample Identification	Sample Matrix	Date/Time Sampled	Analysis Requested	Container Description
EB 20221114	W	11/14/22 / 9:40	PFAS (NY 21 list) via 537.1M.	1 Plastic 125ml (each)
FB 20221114	W	/ 9:45		
SB-1 0-4 20221114	S	/ 9:50		
SB-2 0-4 20221114		/ 10:10		
SB-3 0-4 20221114		/ 10:20		
SB-4 0-4 20221114		/ 10:40		
SB-5 0-4 20221114		/ 11:00		
SB-6 0-4 20221114		/ 11:15		
SB-7 0-4 20221114		/ 11:30		
SB-8 0-4 20221114		/ 11:50		

Comments:

Preservation: (check all that apply)
HCl ___ MeOH ___ HNO_3 ___ H_2SO_4 ___ NaOH ___ ZnAc ___
Ascorbic Acid ___ Other: ________

Special Instruction
Field Filtered ____
Lab to Filter ____

Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time
/ PVE	11-15-22 9:00	Chris C York	11-15-22 9:00	Chris York	11-15-22 1505
Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time
Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Received in LAB by / Date/Time	Temp. Received at Lab
				11/15/22 1505	4.0 Degrees C

York Analytical Laboratories, Inc.
120 Research Drive, Stratford, CT 06615 | 132-02 89th Ave, Queens, NY 11418
clientservices@yorklab.com
www.yorklab.com

Field Chain-of-Custody Record

NOTE: YORK's Standard Terms & Conditions are listed on the back side of this document. This document serves as your written authorization for YORK to proceed with the analyses requested below. Your signature binds you to YORK's Standard Terms & Conditions.

YORK Project No. 22K0807

Page ____ of ____

YOUR Information	Report To:	Invoice To:	YOUR Project Number	Turn-Around Time
Company: PVE Engineering	Company:	Company:	20220641	RUSH - Next Day
Address: 463 Spring Side Avenue Poughkeepsie, NY 12603	Address: Same	Address: Same	YOUR Project Name	RUSH - Two Day
Phone.: 845-454-2544	Phone.:	Phone.:	20220641	RUSH - Three Day
Contact: Trevor Tinglo	Contact:	Contact: Tara Alvarado		RUSH - Four Day
E-mail: ttinglo@pvellc.com	E-mail: Same	E-mail: talvarado@pvellc.com	YOUR PO#: 20220641-PFAS	Standard (5-7 Day) X

Please print clearly and legibly. All information must be complete. Samples will not be logged in and the turn-around-time clock will not begin until any questions by YORK are resolved.

Trevor Tinglo

Samples Collected by: (print your name above and sign below)

Matrix Codes	Samples From	Report / EDD Type (circle selections)			YORK Reg. Comp.
S - soil / solid	New York X	Summary Report	CT RCP	Standard Excel EDD	Compared to the following Regulation(s): (please fill in)
GW - groundwater	New Jersey	QA Report	CT RCP DQA/DUE	EQuIS (Standard)	
DW - drinking water	Connecticut	NY ASP A Package	NJDEP Reduced Deliverables	NYSDEC EQuIS	
WW - wastewater	Pennsylvania	NY ASP B Package	NJDKQP	NJDEP SRP HazSite	
O - Oil / Other	Other			Other:	

Sample Identification	Sample Matrix	Date/Time Sampled	Analysis Requested	Container Description
SB-8 4-8 20221114	S	11/14/22 / 12:00	PFAS (NY 21 list) via 537.1M,	1 125mL Plastic (each)
SB-9 0-4 20221114		/ 12:15		
SB-9 4-8 20221114		/ 12:20		
SB-10 0-4 20221114		/ 12:50		
SB-10 4-8 20221114		/ 13:00		
SB-11 0-4 20221114		/ 13:15		
SB-11 4-8 20221114		/ 13:20		
SB-12 0-4 20221114		/ 13:40		

Comments:

Preservation: (check all that apply)
HCl ___ MeOH ___ HNO3 ___ H2SO4 ___ NaOH ___ ZnAc ___
Ascorbic Acid ___ Other: ______

Special Instruction
Field Filtered ____
Lab to Filter ____

Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time
/PVE	11-15-22 9:00	Chris York	11-15-22 9:00	Chris York	11-15-22 1505
Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time
Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Received in LAB by / Date/Time	Temp. Received at Lab
				11/15/22 1505	4.0 Degrees C

Technical Report

prepared for:

PVE, LLC.
48 Springside Avenue
Poughkeepsie NY, 12603
Attention: Trevor Treglia

Report Date: 11/28/2022
Client Project ID: 20220641
York Project (SDG) No.: 22K0939

CT Cert. No. PH-0723 New Jersey Cert. No. CT005 and NY037 New York Cert. Nos. 10854 and 12058 PA Cert. No. 68-04440

Report Date: 11/28/2022
Client Project ID: 20220641
York Project (SDG) No.: 22K0939

PVE, LLC.
48 Springside Avenue
Poughkeepsie NY, 12603
Attention: Trevor Treglia

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on November 17, 2022 and listed below. The project was identified as your project: **20220641**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
22K0939-01	SB-13 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-02	FB 20221115	Water	11/15/2022	11/17/2022
22K0939-03	SB-14 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-04	SB-14 4-8 20221115	Soil	11/15/2022	11/17/2022
22K0939-05	SB-15 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-06	SB-16 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-07	SB-16 4-8 20221115	Soil	11/15/2022	11/17/2022
22K0939-08	SB-17 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-09	SB-18 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-10	SB-18 4-8 20221115	Soil	11/15/2022	11/17/2022
22K0939-11	SB-19 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-12	SB-19 4-8 20221115	Soil	11/15/2022	11/17/2022
22K0939-13	SB-20 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-14	SB-21 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-15	SB-21 4-8 20221115	Soil	11/15/2022	11/17/2022
22K0939-16	SB-22 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-17	SB-23 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-18	SB-24 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-19	SB-25 0-4 20221115	Soil	11/15/2022	11/17/2022
22K0939-20	SB-26 0-4 20221115	Soil	11/15/2022	11/17/2022

General Notes for York Project (SDG) No.: 22K0939

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

Approved By: Cassie L. Mosher **Date:** 11/28/2022

Cassie L. Mosher
Laboratory Manager

YORK
ANALYTICAL LABORATORIES INC

Sample Information

Client Sample ID: **SB-13 0-4 20221115** **York Sample ID:** **22K0939-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 9:10 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV -L	ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV -L	ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.262	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:45	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*74.7 %*	*25-150*

Sample Information

Client Sample ID:	**SB-13 0-4 20221115**			**York Sample ID:**	**22K0939-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 9:10 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*73.3 %*		*25-150*						
	Surrogate: M4PFHpA	*68.4 %*		*25-150*						
	Surrogate: M3PFHxS	*71.7 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*79.6 %*		*25-150*						
	Surrogate: M6PFDA	*57.5 %*		*25-150*						
	Surrogate: M7PFUdA	*46.9 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*38.3 %*		*25-150*						
	Surrogate: M2PFTeDA	*30.8 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*63.6 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*75.8 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*75.6 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*40.3 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*45.4 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*53.2 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*103 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*72.7 %*		*25-200*						
	Surrogate: M9PFNA	*61.9 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**89.7**		%	0.100	1	SM 2540G	11/22/2022 12:43	11/22/2022 16:46	YR
							Certifications: CTDOH-PH-0723			

Sample Information

Client Sample ID:	**FB 20221115**			**York Sample ID:**	**22K0939-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Water	November 15, 2022 9:10 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Information

Client Sample ID: **FB 20221115** **York Sample ID:** **22K0939-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Water	November 15, 2022 9:10 am	11/17/2022

Sample Prepared by Method: SPE Ext-PFAS-EPA 537.1M

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
2355-31-9	* N-MeFOSAA	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
2991-50-6	* N-EtFOSAA	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ng/L	4.46	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ng/L	1.79	1	EPA 537m Certifications:	11/17/2022 15:26	11/18/2022 23:32	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*75.5 %*	*25-150*
Surrogate: M5PFHxA	*77.8 %*	*25-150*
Surrogate: M4PFHpA	*76.3 %*	*25-150*

Sample Information

Client Sample ID: **FB 20221115** | **York Sample ID:** **22K0939-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Water	November 15, 2022 9:10 am	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE Ext-PFAS-EPA 537.1M

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M3PFHxS	*77.6 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*86.7 %*		*25-150*						
	Surrogate: M6PFDA	*80.2 %*		*25-150*						
	Surrogate: M7PFUdA	*73.9 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*74.1 %*		*25-150*						
	Surrogate: M2PFTeDA	*62.7 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*67.9 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*89.1 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*78.8 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*51.1 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*71.4 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*67.9 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*102 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*78.9 %*		*25-200*						
	Surrogate: M9PFNA	*83.7 %*		*25-150*						

Sample Information

Client Sample ID: **SB-14 0-4 20221115** | **York Sample ID:** **22K0939-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 9:25 am	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL

Sample Information

Client Sample ID: **SB-14 0-4 20221115** **York Sample ID:** **22K0939-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 9:25 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 15:58	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*76.7 %*	*25-150*
Surrogate: M5PFHxA	*73.0 %*	*25-150*
Surrogate: M4PFHpA	*70.0 %*	*25-150*
Surrogate: M3PFHxS	*78.4 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*77.5 %*	*25-150*
Surrogate: M6PFDA	*55.5 %*	*25-150*
Surrogate: M7PFUdA	*49.2 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*41.0 %*	*25-150*
Surrogate: M2PFTeDA	*31.8 %*	*10-150*

Sample Information

Client Sample ID:	**SB-14 0-4 20221115**		**York Sample ID:**	**22K0939-03**
York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 9:25 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*63.4 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*65.4 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*75.8 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*38.4 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*57.6 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*54.7 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*92.1 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*84.9 %*		*25-200*						
	Surrogate: M9PFNA	*76.2 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**89.7**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID:	**SB-14 4-8 20221115**		**York Sample ID:**	**22K0939-04**
York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 9:30 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL

Sample Information

Client Sample ID: **SB-14 4-8 20221115** **York Sample ID:** **22K0939-04**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 9:30 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.289	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:11	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*78.6 %*	*25-150*
Surrogate: M5PFHxA	*67.5 %*	*25-150*
Surrogate: M4PFHpA	*63.4 %*	*25-150*
Surrogate: M3PFHxS	*84.6 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*72.5 %*	*25-150*
Surrogate: M6PFDA	*45.5 %*	*25-150*
Surrogate: M7PFUdA	*43.4 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*34.5 %*	*25-150*
Surrogate: M2PFTeDA	*30.1 %*	*10-150*

Sample Information

Client Sample ID: **SB-14 4-8 20221115** **York Sample ID:** **22K0939-04**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 9:30 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*58.0 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*60.0 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*69.7 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*39.4 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*48.8 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*54.5 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*181 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*112 %*		*25-200*						
	Surrogate: M9PFNA	*58.0 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**84.3**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-15 0-4 20221115** **York Sample ID:** **22K0939-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 9:50 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL

Sample Information

Client Sample ID: **SB-15 0-4 20221115** **York Sample ID:** **22K0939-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 9:50 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.281	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:24	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*70.7 %*	*25-150*
Surrogate: M5PFHxA	*72.0 %*	*25-150*
Surrogate: M4PFHpA	*71.6 %*	*25-150*
Surrogate: M3PFHxS	*83.6 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*81.6 %*	*25-150*
Surrogate: M6PFDA	*62.2 %*	*25-150*
Surrogate: M7PFUdA	*51.3 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*44.7 %*	*25-150*
Surrogate: M2PFTeDA	*36.7 %*	*10-150*

Sample Information

Client Sample ID: **SB-15 0-4 20221115** **York Sample ID:** **22K0939-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 9:50 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*60.4 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*74.4 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*73.7 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*29.7 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*47.8 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*54.0 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*76.8 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*69.4 %*		*25-200*						
	Surrogate: M9PFNA	*69.7 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**88.6**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-16 0-4 20221115** **York Sample ID:** **22K0939-06**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:10 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL

Sample Information

Client Sample ID: **SB-16 0-4 20221115** **York Sample ID:** **22K0939-06**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:10 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:37	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*88.1 %*	*25-150*
Surrogate: M5PFHxA	*78.0 %*	*25-150*
Surrogate: M4PFHpA	*75.1 %*	*25-150*
Surrogate: M3PFHxS	*97.5 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*86.4 %*	*25-150*
Surrogate: M6PFDA	*56.2 %*	*25-150*
Surrogate: M7PFUdA	*50.8 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*51.5 %*	*25-150*
Surrogate: M2PFTeDA	*41.3 %*	*10-150*

Sample Information

Client Sample ID: **SB-16 0-4 20221115** | **York Sample ID:** **22K0939-06**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:10 am	11/17/2022

PFAS, NYSDEC Target List — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*67.4 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*71.2 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*79.3 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*36.6 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*57.2 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*54.5 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*150 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*130 %*		*25-200*						
	Surrogate: M9PFNA	*71.5 %*		*25-150*						

Total Solids — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**89.4**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-16 4-8 20221115** | **York Sample ID:** **22K0939-07**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:25 am	11/17/2022

PFAS, NYSDEC Target List — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL

Sample Information

Client Sample ID: **SB-16 4-8 20221115** **York Sample ID:** **22K0939-07**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:25 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV -L	ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV -L	ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 16:50	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*72.4 %*	*25-150*
Surrogate: M5PFHxA	*67.5 %*	*25-150*
Surrogate: M4PFHpA	*58.8 %*	*25-150*
Surrogate: M3PFHxS	*70.3 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*67.8 %*	*25-150*
Surrogate: M6PFDA	*49.2 %*	*25-150*
Surrogate: M7PFUdA	*40.6 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*34.6 %*	*25-150*
Surrogate: M2PFTeDA	*25.0 %*	*10-150*

Sample Information

Client Sample ID: **SB-16 4-8 20221115** **York Sample ID:** **22K0939-07**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:25 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*55.8 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*58.7 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*65.7 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*39.1 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*44.7 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*42.4 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*129 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*82.3 %*		*25-200*						
	Surrogate: M9PFNA	*56.5 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	* **% Solids**	**85.2**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-17 0-4 20221115** **York Sample ID:** **22K0939-08**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:40 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL

Sample Information

Client Sample ID: SB-17 0-4 20221115 **York Sample ID:** 22K0939-08

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:40 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:16	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*71.3 %*	*25-150*
Surrogate: M5PFHxA	*69.4 %*	*25-150*
Surrogate: M4PFHpA	*66.4 %*	*25-150*
Surrogate: M3PFHxS	*91.2 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*80.2 %*	*25-150*
Surrogate: M6PFDA	*56.5 %*	*25-150*
Surrogate: M7PFUdA	*44.2 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*38.0 %*	*25-150*
Surrogate: M2PFTeDA	*32.6 %*	*10-150*

Sample Information

Client Sample ID: **SB-17 0-4 20221115** **York Sample ID:** **22K0939-08**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:40 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*61.1 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*78.1 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*73.2 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*31.9 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*50.0 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*52.1 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*143 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*105 %*		*25-200*						
	Surrogate: M9PFNA	*72.7 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	* **% Solids**	**91.5**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-18 0-4 20221115** **York Sample ID:** **22K0939-09**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:55 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL

Sample Information

Client Sample ID: **SB-18 0-4 20221115** **York Sample ID:** **22K0939-09**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:55 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV -L	ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV -L	ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV -L	ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.268	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:29	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*75.5 %*	*25-150*
Surrogate: M5PFHxA	*71.2 %*	*25-150*
Surrogate: M4PFHpA	*68.6 %*	*25-150*
Surrogate: M3PFHxS	*76.6 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*71.4 %*	*25-150*
Surrogate: M6PFDA	*47.8 %*	*25-150*
Surrogate: M7PFUdA	*42.4 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*35.2 %*	*25-150*
Surrogate: M2PFTeDA	*23.2 %*	*10-150*

Sample Information

Client Sample ID:	**SB-18 0-4 20221115**		**York Sample ID:**	**22K0939-09**
York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 10:55 am	11/17/2022

PFAS, NYSDEC Target List — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*58.4 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*60.8 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*71.2 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*31.5 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*42.4 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*41.3 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*84.6 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*79.0 %*		*25-200*						
	Surrogate: M9PFNA	*62.4 %*		*25-150*						

Total Solids — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**89.1**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID:	**SB-18 4-8 20221115**		**York Sample ID:**	**22K0939-10**
York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:05 am	11/17/2022

PFAS, NYSDEC Target List — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL

Sample Information

Client Sample ID: **SB-18 4-8 20221115** **York Sample ID:** **22K0939-10**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:05 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.296	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:42	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*79.7 %*	*25-150*
Surrogate: M5PFHxA	*74.3 %*	*25-150*
Surrogate: M4PFHpA	*79.3 %*	*25-150*
Surrogate: M3PFHxS	*87.9 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*85.3 %*	*25-150*
Surrogate: M6PFDA	*55.8 %*	*25-150*
Surrogate: M7PFUdA	*38.7 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*35.2 %*	*25-150*
Surrogate: M2PFTeDA	*27.3 %*	*10-150*

Sample Information

Client Sample ID: **SB-18 4-8 20221115** | **York Sample ID:** **22K0939-10**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:05 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*65.2 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*57.7 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*80.2 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*26.4 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*36.7 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*45.8 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*94.3 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*90.6 %*		*25-200*						
	Surrogate: M9PFNA	*73.6 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**84.1**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-19 0-4 20221115** | **York Sample ID:** **22K0939-11**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:25 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL

Sample Information

Client Sample ID: SB-19 0-4 20221115 | **York Sample ID:** 22K0939-11

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:25 am	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV -L	ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV -L	ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV -L	ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.261	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 17:55	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*75.9 %*	*25-150*
Surrogate: M5PFHxA	*71.0 %*	*25-150*
Surrogate: M4PFHpA	*68.1 %*	*25-150*
Surrogate: M3PFHxS	*79.7 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*79.3 %*	*25-150*
Surrogate: M6PFDA	*57.7 %*	*25-150*
Surrogate: M7PFUdA	*37.1 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*30.1 %*	*25-150*
Surrogate: M2PFTeDA	*30.9 %*	*10-150*

Sample Information

Client Sample ID: **SB-19 0-4 20221115** | **York Sample ID:** **22K0939-11**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:25 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*59.4 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*71.2 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*71.1 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*15.5 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*33.7 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*47.4 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*106 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*111 %*		*25-200*						
	Surrogate: M9PFNA	*70.9 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**91.7**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-19 4-8 20221115** | **York Sample ID:** **22K0939-12**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:35 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL

Sample Information

Client Sample ID: **SB-19 4-8 20221115** **York Sample ID:** **22K0939-12**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:35 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:08	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*73.0 %*	*25-150*
Surrogate: M5PFHxA	*67.6 %*	*25-150*
Surrogate: M4PFHpA	*65.6 %*	*25-150*
Surrogate: M3PFHxS	*79.8 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*81.4 %*	*25-150*
Surrogate: M6PFDA	*50.3 %*	*25-150*
Surrogate: M7PFUdA	*36.8 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*33.2 %*	*25-150*
Surrogate: M2PFTeDA	*29.8 %*	*10-150*

Sample Information

Client Sample ID: **SB-19 4-8 20221115** | **York Sample ID:** **22K0939-12**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:35 am	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units		Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*59.0 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*67.5 %*			*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*69.4 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*22.5 %*			*10-150*						
	Surrogate: d3-N-MeFOSAA	*39.2 %*			*25-150*						
	Surrogate: d5-N-EtFOSAA	*48.0 %*			*25-150*						
	Surrogate: M2-6:2 FTS	*148 %*			*25-200*						
	Surrogate: M2-8:2 FTS	*112 %*			*25-200*						
	Surrogate: M9PFNA	*64.4 %*			*25-150*						

Total Solids | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**87.0**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-20 0-4 20221115** | **York Sample ID:** **22K0939-13**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:50 am	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL

Sample Information

Client Sample ID: **SB-20 0-4 20221115** | **York Sample ID:** **22K0939-13**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:50 am	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	*** Perfluorooctanesulfonic acid (PFOS)**	**0.347**		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.274	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:21	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*74.2 %*	*25-150*
Surrogate: M5PFHxA	*72.4 %*	*25-150*
Surrogate: M4PFHpA	*74.3 %*	*25-150*
Surrogate: M3PFHxS	*77.6 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*82.1 %*	*25-150*
Surrogate: M6PFDA	*49.4 %*	*25-150*
Surrogate: M7PFUdA	*35.4 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*40.5 %*	*25-150*
Surrogate: M2PFTeDA	*30.6 %*	*10-150*

Sample Information

Client Sample ID: **SB-20 0-4 20221115** **York Sample ID:** **22K0939-13**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 11:50 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*65.2 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*67.2 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*70.1 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*27.8 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*44.5 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*56.1 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*78.2 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*81.3 %*		*25-200*						
	Surrogate: M9PFNA	*68.7 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	* **% Solids**	**88.3**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-21 0-4 20221115** **York Sample ID:** **22K0939-14**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:10 pm	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL

Sample Information

Client Sample ID: SB-21 0-4 20221115 **York Sample ID:** 22K0939-14

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:10 pm	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.269	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:34	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*83.1 %*	*25-150*
Surrogate: M5PFHxA	*73.2 %*	*25-150*
Surrogate: M4PFHpA	*78.8 %*	*25-150*
Surrogate: M3PFHxS	*87.5 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*74.5 %*	*25-150*
Surrogate: M6PFDA	*44.8 %*	*25-150*
Surrogate: M7PFUdA	*37.1 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*37.1 %*	*25-150*
Surrogate: M2PFTeDA	*22.8 %*	*10-150*

Sample Information

Client Sample ID: **SB-21 0-4 20221115** | **York Sample ID:** **22K0939-14**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:10 pm	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*64.3 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*60.2 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*74.8 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*33.5 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*38.1 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*56.0 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*119 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*93.6 %*		*25-200*						
	Surrogate: M9PFNA	*59.0 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	* **% Solids**	**89.8**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-21 4-8 20221115** | **York Sample ID:** **22K0939-15**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:15 pm	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL

Sample Information

Client Sample ID: **SB-21 4-8 20221115** | **York Sample ID:** **22K0939-15**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:15 pm	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV -L	ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV -L	ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV -L	ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.266	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:47	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*84.6 %*	*25-150*
Surrogate: M5PFHxA	*76.9 %*	*25-150*
Surrogate: M4PFHpA	*80.2 %*	*25-150*
Surrogate: M3PFHxS	*83.1 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*84.3 %*	*25-150*
Surrogate: M6PFDA	*46.1 %*	*25-150*
Surrogate: M7PFUdA	*40.7 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*33.7 %*	*25-150*
Surrogate: M2PFTeDA	*24.3 %*	*10-150*

Sample Information

Client Sample ID: **SB-21 4-8 20221115** **York Sample ID:** **22K0939-15**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:15 pm	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*67.8 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*61.2 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*75.4 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*32.6 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*47.1 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*40.5 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*150 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*98.5 %*		*25-200*						
	Surrogate: M9PFNA	*67.8 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**88.0**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-22 0-4 20221115** **York Sample ID:** **22K0939-16**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:35 pm	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL

Sample Information

Client Sample ID: **SB-22 0-4 20221115** **York Sample ID:** **22K0939-16**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:35 pm	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.256	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 18:59	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*81.6 %*	*25-150*
Surrogate: M5PFHxA	*72.2 %*	*25-150*
Surrogate: M4PFHpA	*73.3 %*	*25-150*
Surrogate: M3PFHxS	*85.8 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*76.9 %*	*25-150*
Surrogate: M6PFDA	*46.8 %*	*25-150*
Surrogate: M7PFUdA	*35.0 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*33.3 %*	*25-150*
Surrogate: M2PFTeDA	*21.5 %*	*10-150*

Sample Information

Client Sample ID: **SB-22 0-4 20221115** | **York Sample ID:** **22K0939-16**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:35 pm	11/17/2022

PFAS, NYSDEC Target List — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*64.6 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*65.6 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*71.8 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*32.1 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*41.6 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*45.6 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*140 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*90.9 %*		*25-200*						
	Surrogate: M9PFNA	*67.5 %*		*25-150*						

Total Solids — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	* **% Solids**	**90.7**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-23 0-4 20221115** | **York Sample ID:** **22K0939-17**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:50 pm	11/17/2022

PFAS, NYSDEC Target List — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL

Sample Information

Client Sample ID: SB-23 0-4 20221115 **York Sample ID:** 22K0939-17

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:50 pm	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.258	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:12	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*82.7 %*	*25-150*
Surrogate: M5PFHxA	*74.3 %*	*25-150*
Surrogate: M4PFHpA	*70.4 %*	*25-150*
Surrogate: M3PFHxS	*80.1 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*84.3 %*	*25-150*
Surrogate: M6PFDA	*54.3 %*	*25-150*
Surrogate: M7PFUdA	*42.2 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*44.6 %*	*25-150*
Surrogate: M2PFTeDA	*35.2 %*	*10-150*

Sample Information

Client Sample ID: **SB-23 0-4 20221115** **York Sample ID:** **22K0939-17**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 12:50 pm	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*68.1 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*69.2 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*72.3 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*34.9 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*50.2 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*70.2 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*149 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*112 %*		*25-200*						
	Surrogate: M9PFNA	*68.9 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**88.1**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-24 0-4 20221115** **York Sample ID:** **22K0939-18**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 1:00 pm	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL

Sample Information

Client Sample ID: **SB-24 0-4 20221115** **York Sample ID:** **22K0939-18**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 1:00 pm	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.265	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:38	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*81.2 %*	*25-150*
Surrogate: M5PFHxA	*79.5 %*	*25-150*
Surrogate: M4PFHpA	*76.4 %*	*25-150*
Surrogate: M3PFHxS	*98.8 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*87.9 %*	*25-150*
Surrogate: M6PFDA	*60.4 %*	*25-150*
Surrogate: M7PFUdA	*38.8 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*37.9 %*	*25-150*
Surrogate: M2PFTeDA	*33.5 %*	*10-150*

Sample Information

Client Sample ID: **SB-24 0-4 20221115** | **York Sample ID:** **22K0939-18**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 1:00 pm	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*67.3 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*75.4 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*79.2 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*34.2 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*39.2 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*61.1 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*123 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*114 %*		*25-200*						
	Surrogate: M9PFNA	*82.1 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**90.1**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-25 0-4 20221115** | **York Sample ID:** **22K0939-19**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 1:10 pm	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL

Sample Information

Client Sample ID: **SB-25 0-4 20221115** **York Sample ID:** **22K0939-19**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 1:10 pm	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.284	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 19:52	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*87.5 %*	*25-150*
Surrogate: M5PFHxA	*75.2 %*	*25-150*
Surrogate: M4PFHpA	*76.9 %*	*25-150*
Surrogate: M3PFHxS	*85.2 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*81.2 %*	*25-150*
Surrogate: M6PFDA	*53.1 %*	*25-150*
Surrogate: M7PFUdA	*43.7 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*46.7 %*	*25-150*
Surrogate: M2PFTeDA	*38.0 %*	*10-150*

Sample Information

Client Sample ID: **SB-25 0-4 20221115** | **York Sample ID:** **22K0939-19**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 1:10 pm	11/17/2022

PFAS, NYSDEC Target List — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*68.8 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*73.6 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*77.7 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*35.2 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*51.0 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*69.5 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*186 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*150 %*		*25-200*						
	Surrogate: M9PFNA	*69.6 %*		*25-150*						

Total Solids — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	* **% Solids**	**87.4**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	11/22/2022 12:43	11/22/2022 16:46	YR

Sample Information

Client Sample ID: **SB-26 0-4 20221115** | **York Sample ID:** **22K0939-20**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 1:20 pm	11/17/2022

PFAS, NYSDEC Target List — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL

YORK ANALYTICAL LABORATORIES INC

Sample Information

Client Sample ID: **SB-26 0-4 20221115** | **York Sample ID:** **22K0939-20**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 1:20 pm	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV -L	ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.260	1	EPA 537m Certifications:	11/21/2022 16:39	11/24/2022 20:30	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*80.0 %*	*25-150*
Surrogate: M5PFHxA	*74.4 %*	*25-150*
Surrogate: M4PFHpA	*77.2 %*	*25-150*
Surrogate: M3PFHxS	*87.6 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*82.3 %*	*25-150*
Surrogate: M6PFDA	*62.2 %*	*25-150*
Surrogate: M7PFUdA	*43.7 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*48.6 %*	*25-150*
Surrogate: M2PFTeDA	*35.3 %*	*10-150*

Sample Information

Client Sample ID: **SB-26 0-4 20221115** **York Sample ID:** **22K0939-20**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0939	20220641	Soil	November 15, 2022 1:20 pm	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*69.0 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*71.2 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*73.9 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*41.2 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*53.7 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*76.1 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*131 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*122 %*		*25-200*						
	Surrogate: M9PFNA	*70.0 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**90.2**		%	0.100	1	SM 2540G	11/22/2022 12:43	11/22/2022 16:46	YR
							Certifications: CTDOH-PH-0723			

Analytical Batch Summary

Batch ID: BK21120 **Preparation Method:** SPE Ext-PFAS-EPA 537.1M **Prepared By:** WJH

YORK Sample ID	Client Sample ID	Preparation Date
22K0939-02	FB 20221115	11/17/22
BK21120-BLK1	Blank	11/17/22
BK21120-BS1	LCS	11/17/22
BK21120-BSD1	LCS Dup	11/17/22

Batch ID: BK21336 **Preparation Method:** SPE PFAS Extraction-Soil-EPA 537m **Prepared By:** BAMW

YORK Sample ID	Client Sample ID	Preparation Date
22K0939-01	SB-13 0-4 20221115	11/21/22
22K0939-03	SB-14 0-4 20221115	11/21/22
22K0939-04	SB-14 4-8 20221115	11/21/22
22K0939-05	SB-15 0-4 20221115	11/21/22
22K0939-06	SB-16 0-4 20221115	11/21/22
22K0939-07	SB-16 4-8 20221115	11/21/22
22K0939-08	SB-17 0-4 20221115	11/21/22
22K0939-09	SB-18 0-4 20221115	11/21/22
22K0939-10	SB-18 4-8 20221115	11/21/22
22K0939-11	SB-19 0-4 20221115	11/21/22
22K0939-12	SB-19 4-8 20221115	11/21/22
22K0939-13	SB-20 0-4 20221115	11/21/22
22K0939-14	SB-21 0-4 20221115	11/21/22
22K0939-15	SB-21 4-8 20221115	11/21/22
22K0939-16	SB-22 0-4 20221115	11/21/22
22K0939-17	SB-23 0-4 20221115	11/21/22
22K0939-18	SB-24 0-4 20221115	11/21/22
22K0939-19	SB-25 0-4 20221115	11/21/22
22K0939-20	SB-26 0-4 20221115	11/21/22
BK21336-BLK1	Blank	11/21/22
BK21336-BS1	LCS	11/21/22
BK21336-MS1	Matrix Spike	11/21/22
BK21336-MSD1	Matrix Spike Dup	11/21/22

Batch ID: BK21414 **Preparation Method:** % Solids Prep **Prepared By:** YR

YORK Sample ID	Client Sample ID	Preparation Date
22K0939-01	SB-13 0-4 20221115	11/22/22
22K0939-03	SB-14 0-4 20221115	11/22/22
22K0939-04	SB-14 4-8 20221115	11/22/22
22K0939-05	SB-15 0-4 20221115	11/22/22
22K0939-06	SB-16 0-4 20221115	11/22/22
22K0939-07	SB-16 4-8 20221115	11/22/22
22K0939-08	SB-17 0-4 20221115	11/22/22
22K0939-09	SB-18 0-4 20221115	11/22/22
22K0939-10	SB-18 4-8 20221115	11/22/22
22K0939-11	SB-19 0-4 20221115	11/22/22

22K0939-12	SB-19 4-8 20221115	11/22/22
22K0939-13	SB-20 0-4 20221115	11/22/22
22K0939-14	SB-21 0-4 20221115	11/22/22
22K0939-15	SB-21 4-8 20221115	11/22/22
22K0939-16	SB-22 0-4 20221115	11/22/22
22K0939-17	SB-23 0-4 20221115	11/22/22
22K0939-18	SB-24 0-4 20221115	11/22/22
22K0939-19	SB-25 0-4 20221115	11/22/22
22K0939-20	SB-26 0-4 20221115	11/22/22
BK21414-DUP1	Duplicate	11/22/22

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21120 - SPE Ext-PFAS-EPA 537.1M											
Blank (BK21120-BLK1)								Prepared: 11/17/2022 Analyzed: 11/18/2022			
Perfluorobutanesulfonic acid (PFBS)	ND	2.00	ng/L								
Perfluorohexanoic acid (PFHxA)	ND	2.00	"								
Perfluoroheptanoic acid (PFHpA)	ND	2.00	"								
Perfluorohexanesulfonic acid (PFHxS)	ND	2.00	"								
Perfluorooctanoic acid (PFOA)	ND	2.00	"								
Perfluorooctanesulfonic acid (PFOS)	ND	2.00	"								
Perfluorononanoic acid (PFNA)	ND	2.00	"								
Perfluorodecanoic acid (PFDA)	ND	2.00	"								
Perfluoroundecanoic acid (PFUnA)	ND	2.00	"								
Perfluorododecanoic acid (PFDoA)	ND	2.00	"								
Perfluorotridecanoic acid (PFTrDA)	ND	2.00	"								
Perfluorotetradecanoic acid (PFTA)	ND	2.00	"								
N-MeFOSAA	ND	2.00	"								
N-EtFOSAA	ND	2.00	"								
Perfluoropentanoic acid (PFPeA)	ND	2.00	"								
Perfluoro-1-octanesulfonamide (FOSA)	ND	2.00	"								
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	2.00	"								
Perfluoro-1-decanesulfonic acid (PFDS)	ND	2.00	"								
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND	5.00	"								
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND	2.00	"								
Perfluoro-n-butanoic acid (PFBA)	ND	2.00	"								
Surrogate: M3PFBS	*57.3*		"	*74.3*		*77.1*	*25-150*				
Surrogate: M5PFHxA	*69.1*		"	*80.0*		*86.4*	*25-150*				
Surrogate: M4PFHpA	*70.8*		"	*80.0*		*88.5*	*25-150*				
Surrogate: M3PFHxS	*70.1*		"	*75.7*		*92.6*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*75.1*		"	*80.0*		*93.8*	*25-150*				
Surrogate: M6PFDA	*71.9*		"	*80.0*		*89.9*	*25-150*				
Surrogate: M7PFUdA	*66.6*		"	*80.0*		*83.3*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*57.9*		"	*80.0*		*72.4*	*25-150*				
Surrogate: M2PFTeDA	*56.0*		"	*80.0*		*70.0*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*60.5*		"	*80.0*		*75.6*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*77.3*		"	*76.6*		*101*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*68.6*		"	*80.0*		*85.7*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*37.6*		"	*80.0*		*47.0*	*10-150*				
Surrogate: d3-N-MeFOSAA	*63.4*		"	*80.0*		*79.3*	*25-150*				
Surrogate: d5-N-EtFOSAA	*62.5*		"	*80.0*		*78.1*	*25-150*				
Surrogate: M2-6:2 FTS	*78.5*		"	*75.9*		*103*	*25-200*				
Surrogate: M2-8:2 FTS	*85.3*		"	*76.6*		*111*	*25-200*				
Surrogate: M9PFNA	*76.3*		"	*80.0*		*95.4*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Batch BK21120 - SPE Ext-PFAS-EPA 537.1M

LCS (BK21120-BS1) Prepared: 11/17/2022 Analyzed: 11/18/2022

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Perfluorobutanesulfonic acid (PFBS)	74.6	2.00	ng/L	70.8		105	50-130				
Perfluorohexanoic acid (PFHxA)	88.7	2.00	"	80.0		111	50-130				
Perfluoroheptanoic acid (PFHpA)	95.0	2.00	"	80.0		119	50-130				
Perfluorohexanesulfonic acid (PFHxS)	77.0	2.00	"	72.8		106	50-130				
Perfluorooctanoic acid (PFOA)	83.6	2.00	"	80.0		104	50-130				
Perfluorooctanesulfonic acid (PFOS)	72.0	2.00	"	74.0		97.3	50-130				
Perfluorononanoic acid (PFNA)	83.4	2.00	"	80.0		104	50-130				
Perfluorodecanoic acid (PFDA)	89.6	2.00	"	80.0		112	50-130				
Perfluoroundecanoic acid (PFUnA)	88.1	2.00	"	80.0		110	50-130				
Perfluorododecanoic acid (PFDoA)	88.0	2.00	"	80.0		110	50-130				
Perfluorotridecanoic acid (PFTrDA)	82.2	2.00	"	80.0		103	50-130				
Perfluorotetradecanoic acid (PFTA)	88.9	2.00	"	80.0		111	50-130				
N-MeFOSAA	79.6	2.00	"	80.0		99.5	50-130				
N-EtFOSAA	78.1	2.00	"	80.0		97.6	50-130				
Perfluoropentanoic acid (PFPeA)	89.4	2.00	"	80.0		112	50-130				
Perfluoro-1-octanesulfonamide (FOSA)	77.2	2.00	"	80.0		96.5	50-130				
Perfluoro-1-heptanesulfonic acid (PFHpS)	65.4	2.00	"	76.4		85.7	50-130				
Perfluoro-1-decanesulfonic acid (PFDS)	71.2	2.00	"	77.2		92.2	50-130				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	73.5	5.00	"	76.0		96.7	50-175				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	83.2	2.00	"	76.8		108	50-175				
Perfluoro-n-butanoic acid (PFBA)	86.5	2.00	"	80.0		108	50-130				
Surrogate: M3PFBS	*52.9*		"	*74.3*		*71.2*	*25-150*				
Surrogate: M5PFHxA	*61.3*		"	*80.0*		*76.6*	*25-150*				
Surrogate: M4PFHpA	*62.0*		"	*80.0*		*77.5*	*25-150*				
Surrogate: M3PFHxS	*60.6*		"	*75.7*		*80.0*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*69.2*		"	*80.0*		*86.5*	*25-150*				
Surrogate: M6PFDA	*62.2*		"	*80.0*		*77.8*	*25-150*				
Surrogate: M7PFUdA	*58.0*		"	*80.0*		*72.5*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*57.5*		"	*80.0*		*71.9*	*25-150*				
Surrogate: M2PFTeDA	*47.1*		"	*80.0*		*58.9*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*56.4*		"	*80.0*		*70.5*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*67.9*		"	*76.6*		*88.7*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*64.1*		"	*80.0*		*80.1*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*37.5*		"	*80.0*		*46.9*	*10-150*				
Surrogate: d3-N-MeFOSAA	*57.4*		"	*80.0*		*71.7*	*25-150*				
Surrogate: d5-N-EtFOSAA	*53.9*		"	*80.0*		*67.4*	*25-150*				
Surrogate: M2-6:2 FTS	*75.6*		"	*75.9*		*99.6*	*25-200*				
Surrogate: M2-8:2 FTS	*73.8*		"	*76.6*		*96.3*	*25-200*				
Surrogate: M9PFNA	*65.6*		"	*80.0*		*82.0*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21120 - SPE Ext-PFAS-EPA 537.1M											
LCS Dup (BK21120-BSD1)							Prepared: 11/17/2022 Analyzed: 11/18/2022				
Perfluorobutanesulfonic acid (PFBS)	86.9	2.00	ng/L	70.8		123	50-130		15.1	30	
Perfluorohexanoic acid (PFHxA)	95.7	2.00	"	80.0		120	50-130		7.64	30	
Perfluoroheptanoic acid (PFHpA)	102	2.00	"	80.0		128	50-130		7.23	30	
Perfluorohexanesulfonic acid (PFHxS)	83.8	2.00	"	72.8		115	50-130		8.44	30	
Perfluorooctanoic acid (PFOA)	98.9	2.00	"	80.0		124	50-130		16.8	30	
Perfluorooctanesulfonic acid (PFOS)	75.8	2.00	"	74.0		102	50-130		5.22	30	
Perfluorononanoic acid (PFNA)	81.9	2.00	"	80.0		102	50-130		1.82	30	
Perfluorodecanoic acid (PFDA)	98.4	2.00	"	80.0		123	50-130		9.41	30	
Perfluoroundecanoic acid (PFUnA)	96.0	2.00	"	80.0		120	50-130		8.57	30	
Perfluorododecanoic acid (PFDoA)	98.0	2.00	"	80.0		123	50-130		10.8	30	
Perfluorotridecanoic acid (PFTrDA)	95.6	2.00	"	80.0		119	50-130		15.0	30	
Perfluorotetradecanoic acid (PFTA)	96.7	2.00	"	80.0		121	50-130		8.37	30	
N-MeFOSAA	88.5	2.00	"	80.0		111	50-130		10.6	30	
N-EtFOSAA	92.5	2.00	"	80.0		116	50-130		16.8	30	
Perfluoropentanoic acid (PFPeA)	101	2.00	"	80.0		126	50-130		12.2	30	
Perfluoro-1-octanesulfonamide (FOSA)	89.7	2.00	"	80.0		112	50-130		14.9	30	
Perfluoro-1-heptanesulfonic acid (PFHpS)	68.9	2.00	"	76.4		90.2	50-130		5.17	30	
Perfluoro-1-decanesulfonic acid (PFDS)	69.4	2.00	"	77.2		89.9	50-130		2.56	30	
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	107	5.00	"	76.0		141	50-175		37.0	30	Non-dir.
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	104	2.00	"	76.8		135	50-175		22.1	30	
Perfluoro-n-butanoic acid (PFBA)	92.4	2.00	"	80.0		116	50-130		6.58	30	
Surrogate: M3PFBS	*47.1*		"	*74.3*		*63.4*	*25-150*				
Surrogate: M5PFHxA	*57.0*		"	*80.0*		*71.2*	*25-150*				
Surrogate: M4PFHpA	*56.8*		"	*80.0*		*71.0*	*25-150*				
Surrogate: M3PFHxS	*52.6*		"	*75.7*		*69.5*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*60.5*		"	*80.0*		*75.6*	*25-150*				
Surrogate: M6PFDA	*57.6*		"	*80.0*		*72.0*	*25-150*				
Surrogate: M7PFUdA	*55.0*		"	*80.0*		*68.7*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*52.5*		"	*80.0*		*65.7*	*25-150*				
Surrogate: M2PFTeDA	*45.8*		"	*80.0*		*57.2*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*53.3*		"	*80.0*		*66.6*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*65.1*		"	*76.6*		*85.0*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*59.5*		"	*80.0*		*74.4*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*33.8*		"	*80.0*		*42.3*	*10-150*				
Surrogate: d3-N-MeFOSAA	*50.4*		"	*80.0*		*63.1*	*25-150*				
Surrogate: d5-N-EtFOSAA	*44.6*		"	*80.0*		*55.8*	*25-150*				
Surrogate: M2-6:2 FTS	*59.4*		"	*75.9*		*78.2*	*25-200*				
Surrogate: M2-8:2 FTS	*56.7*		"	*76.6*		*73.9*	*25-200*				
Surrogate: M9PFNA	*66.4*		"	*80.0*		*83.0*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21336 - SPE PFAS Extraction-Soil-EPA 537m											
Blank (BK21336-BLK1)								Prepared: 11/21/2022 Analyzed: 11/24/2022			
Perfluorobutanesulfonic acid (PFBS)	ND	0.232	ug/kg wet								
Perfluorohexanoic acid (PFHxA)	ND	0.232	"								
Perfluoroheptanoic acid (PFHpA)	ND	0.232	"								
Perfluorohexanesulfonic acid (PFHxS)	ND	0.232	"								
Perfluorooctanoic acid (PFOA)	ND	0.232	"								
Perfluorooctanesulfonic acid (PFOS)	ND	0.232	"								
Perfluorononanoic acid (PFNA)	ND	0.232	"								
Perfluorodecanoic acid (PFDA)	ND	0.232	"								
Perfluoroundecanoic acid (PFUnA)	ND	0.232	"								
Perfluorododecanoic acid (PFDoA)	ND	0.232	"								
Perfluorotridecanoic acid (PFTrDA)	ND	0.232	"								
Perfluorotetradecanoic acid (PFTA)	ND	0.232	"								
N-MeFOSAA	ND	0.232	"								
N-EtFOSAA	ND	0.232	"								
Perfluoropentanoic acid (PFPeA)	ND	0.232	"								
Perfluoro-1-octanesulfonamide (FOSA)	ND	0.232	"								
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	0.232	"								
Perfluoro-1-decanesulfonic acid (PFDS)	ND	0.232	"								
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND	0.232	"								
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND	0.232	"								
Perfluoro-n-butanoic acid (PFBA)	ND	0.232	"								
Surrogate: M3PFBS	*3.80*		*"*	*4.30*		*88.4*	*25-150*				
Surrogate: M5PFHxA	*3.98*		*"*	*4.63*		*86.0*	*25-150*				
Surrogate: M4PFHpA	*4.00*		*"*	*4.63*		*86.5*	*25-150*				
Surrogate: M3PFHxS	*4.39*		*"*	*4.38*		*100*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.22*		*"*	*4.63*		*91.2*	*25-150*				
Surrogate: M6PFDA	*2.86*		*"*	*4.63*		*61.8*	*25-150*				
Surrogate: M7PFUdA	*2.36*		*"*	*4.63*		*51.1*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.00*		*"*	*4.63*		*43.1*	*25-150*				
Surrogate: M2PFTeDA	*1.93*		*"*	*4.63*		*41.6*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.33*		*"*	*4.63*		*71.9*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*3.64*		*"*	*4.43*		*82.1*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*3.93*		*"*	*4.63*		*84.8*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.20*		*"*	*4.63*		*47.6*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.48*		*"*	*4.63*		*53.5*	*25-150*				
Surrogate: d5-N-EtFOSAA	*2.31*		*"*	*4.63*		*49.8*	*25-150*				
Surrogate: M2-6:2 FTS	*4.01*		*"*	*4.39*		*91.3*	*25-200*				
Surrogate: M2-8:2 FTS	*2.90*		*"*	*4.44*		*65.4*	*25-200*				
Surrogate: M9PFNA	*3.86*		*"*	*4.63*		*83.3*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21336 - SPE PFAS Extraction-Soil-EPA 537m											
LCS (BK21336-BS1)							Prepared: 11/21/2022 Analyzed: 11/24/2022				
Perfluorobutanesulfonic acid (PFBS)	4.51	0.244	ug/kg wet	4.32		104	50-130				
Perfluorohexanoic acid (PFHxA)	5.74	0.244	"	4.88		117	50-130				
Perfluoroheptanoic acid (PFHpA)	5.19	0.244	"	4.88		106	50-130				
Perfluorohexanesulfonic acid (PFHxS)	4.43	0.244	"	4.44		99.7	50-130				
Perfluorooctanoic acid (PFOA)	4.98	0.244	"	4.88		102	50-130				
Perfluorooctanesulfonic acid (PFOS)	3.82	0.244	"	4.52		84.6	50-130				
Perfluorononanoic acid (PFNA)	4.74	0.244	"	4.88		97.1	50-130				
Perfluorodecanoic acid (PFDA)	4.86	0.244	"	4.88		99.5	50-130				
Perfluoroundecanoic acid (PFUnA)	5.37	0.244	"	4.88		110	50-130				
Perfluorododecanoic acid (PFDoA)	5.75	0.244	"	4.88		118	50-130				
Perfluorotridecanoic acid (PFTrDA)	3.83	0.244	"	4.88		78.4	50-130				
Perfluorotetradecanoic acid (PFTA)	4.88	0.244	"	4.88		99.9	50-130				
N-MeFOSAA	5.48	0.244	"	4.88		112	50-130				
N-EtFOSAA	4.65	0.244	"	4.88		95.1	50-130				
Perfluoropentanoic acid (PFPeA)	5.38	0.244	"	4.88		110	50-130				
Perfluoro-1-octanesulfonamide (FOSA)	4.70	0.244	"	4.88		96.3	50-130				
Perfluoro-1-heptanesulfonic acid (PFHpS)	4.94	0.244	"	4.66		106	50-130				
Perfluoro-1-decanesulfonic acid (PFDS)	3.49	0.244	"	4.71		74.1	50-130				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	4.40	0.244	"	4.64		94.9	50-200				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	7.39	0.244	"	4.69		158	50-200				
Perfluoro-n-butanoic acid (PFBA)	5.04	0.244	"	4.88		103	50-130				
Surrogate: M3PFBS	*4.46*		"	*4.54*		*98.3*	*25-150*				
Surrogate: M5PFHxA	*4.04*		"	*4.88*		*82.8*	*25-150*				
Surrogate: M4PFHpA	*4.40*		"	*4.88*		*90.0*	*25-150*				
Surrogate: M3PFHxS	*4.31*		"	*4.62*		*93.2*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.44*		"	*4.88*		*90.9*	*25-150*				
Surrogate: M6PFDA	*3.30*		"	*4.88*		*67.6*	*25-150*				
Surrogate: M7PFUdA	*2.57*		"	*4.88*		*52.6*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.32*		"	*4.88*		*47.5*	*25-150*				
Surrogate: M2PFTeDA	*2.17*		"	*4.88*		*44.4*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.83*		"	*4.88*		*78.5*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*3.94*		"	*4.67*		*84.4*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.60*		"	*4.88*		*94.2*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.52*		"	*4.88*		*51.6*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.44*		"	*4.88*		*50.0*	*25-150*				
Surrogate: d5-N-EtFOSAA	*2.49*		"	*4.88*		*51.1*	*25-150*				
Surrogate: M2-6:2 FTS	*5.63*		"	*4.63*		*121*	*25-200*				
Surrogate: M2-8:2 FTS	*3.26*		"	*4.68*		*69.7*	*25-200*				
Surrogate: M9PFNA	*4.08*		"	*4.88*		*83.6*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Batch BK21336 - SPE PFAS Extraction-Soil-EPA 537m

Matrix Spike (BK21336-MS1) *Source sample: 22K0939-19 (SB-25 0-4 20221115) Prepared: 11/21/2022 Analyzed: 11/24/2022

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Perfluorobutanesulfonic acid (PFBS)	6.05	0.285	ug/kg dry	5.05	ND	120	25-150				
Perfluorohexanoic acid (PFHxA)	7.11	0.285	"	5.70	ND	125	25-150				
Perfluoroheptanoic acid (PFHpA)	7.18	0.285	"	5.70	ND	126	25-150				
Perfluorohexanesulfonic acid (PFHxS)	6.27	0.285	"	5.19	ND	121	25-150				
Perfluorooctanoic acid (PFOA)	6.51	0.285	"	5.70	ND	114	25-150				
Perfluorooctanesulfonic acid (PFOS)	8.01	0.285	"	5.27	ND	152	25-150	High Bias			
Perfluorononanoic acid (PFNA)	6.28	0.285	"	5.70	ND	110	25-150				
Perfluorodecanoic acid (PFDA)	6.11	0.285	"	5.70	ND	107	25-150				
Perfluoroundecanoic acid (PFUnA)	6.39	0.285	"	5.70	ND	112	25-150				
Perfluorododecanoic acid (PFDoA)	6.99	0.285	"	5.70	ND	123	25-150				
Perfluorotridecanoic acid (PFTrDA)	6.38	0.285	"	5.70	ND	112	25-150				
Perfluorotetradecanoic acid (PFTA)	7.20	0.285	"	5.70	ND	126	25-150				
N-MeFOSAA	6.59	0.285	"	5.70	ND	116	25-150				
N-EtFOSAA	6.32	0.285	"	5.70	ND	111	25-150				
Perfluoropentanoic acid (PFPeA)	7.01	0.285	"	5.70	ND	123	25-150				
Perfluoro-1-octanesulfonamide (FOSA)	5.46	0.285	"	5.70	ND	95.8	25-150				
Perfluoro-1-heptanesulfonic acid (PFHpS)	7.97	0.285	"	5.45	ND	146	25-150				
Perfluoro-1-decanesulfonic acid (PFDS)	4.75	0.285	"	5.50	ND	86.3	25-150				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	6.16	0.285	"	5.42	ND	114	25-200				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	6.69	0.285	"	5.47	ND	122	25-200				
Perfluoro-n-butanoic acid (PFBA)	6.42	0.285	"	5.70	ND	113	25-150				
Surrogate: M3PFBS	*4.13*		"	*5.30*		*78.0*	*25-150*				
Surrogate: M5PFHxA	*4.11*		"	*5.70*		*72.1*	*25-150*				
Surrogate: M4PFHpA	*4.01*		"	*5.70*		*70.3*	*25-150*				
Surrogate: M3PFHxS	*4.27*		"	*5.39*		*79.1*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.23*		"	*5.70*		*74.2*	*25-150*				
Surrogate: M6PFDA	*3.10*		"	*5.70*		*54.5*	*25-150*				
Surrogate: M7PFUdA	*2.34*		"	*5.70*		*41.1*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.41*		"	*5.70*		*42.3*	*25-150*				
Surrogate: M2PFTeDA	*1.84*		"	*5.70*		*32.2*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.70*		"	*5.70*		*64.8*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*3.16*		"	*5.46*		*57.9*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.16*		"	*5.70*		*72.9*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.15*		"	*5.70*		*37.8*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.90*		"	*5.70*		*50.9*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.08*		"	*5.70*		*54.0*	*25-150*				
Surrogate: M2-6:2 FTS	*9.21*		"	*5.41*		*170*	*25-200*				
Surrogate: M2-8:2 FTS	*7.26*		"	*5.46*		*133*	*25-200*				
Surrogate: M9PFNA	*3.69*		"	*5.70*		*64.8*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag

Batch BK21336 - SPE PFAS Extraction-Soil-EPA 537m

Matrix Spike Dup (BK21336-MSD1) *Source sample: 22K0939-19 (SB-25 0-4 20221115) Prepared: 11/21/2022 Analyzed: 11/24/2022

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Perfluorobutanesulfonic acid (PFBS)	5.60	0.279	ug/kg dry	4.94	ND	113	25-150		7.75	35	
Perfluorohexanoic acid (PFHxA)	7.07	0.279	"	5.58	ND	127	25-150		0.564	35	
Perfluoroheptanoic acid (PFHpA)	6.41	0.279	"	5.58	ND	115	25-150		11.3	35	
Perfluorohexanesulfonic acid (PFHxS)	6.29	0.279	"	5.08	ND	124	25-150		0.389	35	
Perfluorooctanoic acid (PFOA)	6.04	0.279	"	5.58	ND	108	25-150		7.41	35	
Perfluorooctanesulfonic acid (PFOS)	5.63	0.279	"	5.16	ND	109	25-150		34.9	35	
Perfluorononanoic acid (PFNA)	5.97	0.279	"	5.58	ND	107	25-150		5.12	35	
Perfluorodecanoic acid (PFDA)	6.47	0.279	"	5.58	ND	116	25-150		5.64	35	
Perfluoroundecanoic acid (PFUnA)	6.29	0.279	"	5.58	ND	113	25-150		1.50	35	
Perfluorododecanoic acid (PFDoA)	6.87	0.279	"	5.58	ND	123	25-150		1.74	35	
Perfluorotridecanoic acid (PFTrDA)	5.58	0.279	"	5.58	ND	100	25-150		13.4	35	
Perfluorotetradecanoic acid (PFTA)	6.76	0.279	"	5.58	ND	121	25-150		6.34	35	
N-MeFOSAA	6.87	0.279	"	5.58	ND	123	25-150		4.08	35	
N-EtFOSAA	5.76	0.279	"	5.58	ND	103	25-150		9.40	35	
Perfluoropentanoic acid (PFPeA)	6.78	0.279	"	5.58	ND	121	25-150		3.30	35	
Perfluoro-1-octanesulfonamide (FOSA)	5.69	0.279	"	5.58	ND	102	25-150		4.13	35	
Perfluoro-1-heptanesulfonic acid (PFHpS)	7.71	0.279	"	5.33	ND	145	25-150		3.39	35	
Perfluoro-1-decanesulfonic acid (PFDS)	5.15	0.279	"	5.39	ND	95.7	25-150		8.17	35	
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	6.40	0.279	"	5.30	ND	121	25-200		3.86	35	
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	7.39	0.279	"	5.36	ND	138	25-200		9.93	35	
Perfluoro-n-butanoic acid (PFBA)	6.12	0.279	"	5.58	ND	110	25-150		4.79	35	
Surrogate: M3PFBS	*3.81*		*"*	*5.18*		*73.6*	*25-150*				
Surrogate: M5PFHxA	*3.58*		*"*	*5.58*		*64.2*	*25-150*				
Surrogate: M4PFHpA	*3.71*		*"*	*5.58*		*66.6*	*25-150*				
Surrogate: M3PFHxS	*3.81*		*"*	*5.28*		*72.1*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*3.99*		*"*	*5.58*		*71.5*	*25-150*				
Surrogate: M6PFDA	*2.72*		*"*	*5.58*		*48.7*	*25-150*				
Surrogate: M7PFUdA	*2.40*		*"*	*5.58*		*43.0*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.56*		*"*	*5.58*		*45.8*	*25-150*				
Surrogate: M2PFTeDA	*1.83*		*"*	*5.58*		*32.8*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.46*		*"*	*5.58*		*62.1*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*3.19*		*"*	*5.34*		*59.8*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*3.81*		*"*	*5.58*		*68.2*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*1.82*		*"*	*5.58*		*32.6*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.64*		*"*	*5.58*		*47.3*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.73*		*"*	*5.58*		*66.8*	*25-150*				
Surrogate: M2-6:2 FTS	*9.19*		*"*	*5.30*		*174*	*25-200*				
Surrogate: M2-8:2 FTS	*7.00*		*"*	*5.35*		*131*	*25-200*				
Surrogate: M9PFNA	*3.49*		*"*	*5.58*		*62.5*	*25-150*				

Miscellaneous Physical Parameters - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21414 - % Solids Prep											
Duplicate (BK21414-DUP1)	*Source sample: 22K0504-10 (Duplicate)						Prepared & Analyzed: 11/22/2022				
% Solids	86.6	0.100	%		86.8				0.252	20	

Sample and Data Qualifiers Relating to This Work Order

PF-CCV-L	The CCV recovery was slightly below acceptable limits for the qualified compound. However, sample results are not biased low because results are corrected for isotope recovery.

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

York Analytical Laboratories, Inc.
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www.yorklab.com

Field Chain-of-Custody Record

NOTE: YORK's Standard Terms & Conditions are listed on the back side of this document. This document serves as your written authorization for YORK to proceed with the analyses requested below. Your signature binds you to YORK's Standard Terms & Conditions.

YORK Project No. 22K0939

Page 1 of 2

YOUR Information	Report To:	Invoice To:	YOUR Project Number	Turn-Around Time
Company: PVE Engineering	Company:	Company:	20220641	RUSH - Next Day
Address: 485 Springside Avenue, Poughkeepsie, NY 12603	Address: Same	Address: Same	YOUR Project Name	RUSH - Two Day
Phone: 845-454-2544	Phone:	Phone:	20220641	RUSH - Three Day
Contact: Trevor Traglia	Contact: Same	Contact: Tara Alvarado		RUSH - Four Day
E-mail: ttraglia@pvecllc.com	E-mail:	E-mail: talvarado@pvecllc.com	YOUR PO#: 20220641 - PFAS	Standard (5-7 Day) X

Please print clearly and legibly. All information must be complete. Samples will not be logged in and the turn-around-time clock will not begin until any questions by YORK are resolved.

Trevor Traglia

Samples Collected by: (print your name above and sign below)

Matrix Codes	Samples From		Report / EDD Type (circle selections)			YORK Reg. Comp.
S - soil / solid	New York	X	Summary Report (circled)	CT RCP	Standard Excel EDD	Compared to the following Regulation(s): (please fill in)
GW - groundwater	New Jersey		QA Report	CT RCP DQA/DUE	EQuIS (Standard)	
DW - drinking water	Connecticut		NY ASP A Package	NJDEP Reduced Deliverables	NYSDEC EQuIS (circled)	
WW - wastewater	Pennsylvania		NY ASP B Package	NJDKQP	NJDEP SRP HazSite	
O - Oil / Other	Other				Other:	

Sample Identification	Sample Matrix	Date/Time Sampled	Analysis Requested	Container Description
SB-13 0-4 20221115	S	11/15/22 / 9:10	PFAS (NY 21 list) via 537.1M	1 - 125mL Plastic
FB 20221115	W	/ 9:10		
SB-14 0-4 20221115	S	/ 9:25		
SB-14 4-8 20221115		/ 9:30		
SB-15 0-4 20221115		/ 9:50		
SB-16 0-4 20221115		/ 10:10		
SB-16 4-8 20221115		/ 10:25		
SB-17 0-4 20221115		/ 10:40		
SB-18 0-4 20221115		/ 10:55		
SB-18 4-8 20221115		/ 11:05		

Comments:

Preservation: (check all that apply)
HCl ___ MeOH ___ HNO3 ___ H2SO4 ___ NaOH ___ ZnAc ___
Ascorbic Acid ___ Other: ___

Special Instruction
Field Filtered ___
Lab to Filter ___

Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time
/ PVE	11/16/22 1145		11/16/22 1145		
Samples Received by / Company	**Date/Time**	**Samples Relinquished by / Company**	**Date/Time**	**Samples Received by / Company**	**Date/Time**
Samples Relinquished by / Company	**Date/Time**	**Samples Received by / Company**	**Date/Time**	**Samples Received in LAB by / Date/Time**	**Temp. Received at Lab**
				WH York 11/17/22 11am	3 Degrees C

York Analytical Laboratories, Inc.
120 Research Drive, Stratford, CT 06615
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clientservices@yorklab.com
www.yorklab.com

Field Chain-of-Custody Record

NOTE: YORK's Standard Terms & Conditions are listed on the back side of this document. This document serves as your written authorization for YORK to proceed with the analyses requested below. Your signature binds you to YORK's Standard Terms & Conditions.

YORK Project No. 22K0939

Page 2 of 2

YOUR Information	Report To:	Invoice To:	YOUR Project Number	Turn-Around Time
Company: PVE Engineering	Company:	Company:	2022 0641	RUSH - Next Day
Address: 48 Spring Side Avenue Poughkeepsie, NY 12603	Address: Same	Address: Same	YOUR Project Name	RUSH - Two Day
Phone.: 845-454-2544	Phone.:	Phone.:	2022 0641	RUSH - Three Day
Contact: Trevor Traglia	Contact:	Contact: Tara Alvarado		RUSH - Four Day
E-mail: ttraglia@pvellc.com	E-mail: Same	E-mail: talvarado@pvellc.com	YOUR PO#: 20220641-PFAS	Standard (5-7 Day) X

Please print clearly and legibly. All information must be complete. Samples will not be logged in and the turn-around-time clock will not begin until any questions by YORK are resolved.

Trevor Traglia

Samples Collected by: (print your name above and sign below)

Matrix Codes	Samples From		Report / EDD Type (circle selections)			YORK Reg. Comp.
S - soil / solid	New York	X	Summary Report	CT RCP	Standard Excel EDD	Compared to the following Regulation(s): (please fill in)
GW - groundwater	New Jersey		QA Report	CT RCP DQA/DUE	EQuIS (Standard)	
DW - drinking water	Connecticut		NY ASP A Package	NJDEP Reduced Deliverables	NYSDEC EQuIS	
WW - wastewater	Pennsylvania		NY ASP B Package		NJDEP SRP HazSite	
O - Oil / Other	Other			NJDKQP	Other:	

Sample Identification	Sample Matrix	Date/Time Sampled	Analysis Requested	Container Description
SB-19 0-4 20221115	S	11/15/22 / 11:25	PFAS (NY 21 list) via 537.1 Mod	2-125 mL plastic
SB-19 4-8 20221115		/ 11:35		
SB-20 0-4 20221115		/ 11:50		
SB-21 0-4 20221115		/ 12:10		
SB-21 4-8 20221115		/ 12:15		
SB-22 0-4 20221115		/ 12:35		
SB-23 0-4 20221115		/ 12:50		
SB-24 0-4 20221115		/ 13:00		
SB-25 0-4 20221115		/ 13:10		
SB-26 0-4 20221115		/ 13:20		

Comments:

Preservation: (check all that apply)
HCl ___ MeOH ___ HNO_3 ___ H_2SO_4 ___ NaOH ___ ZnAc ___
Ascorbic Acid ___ Other: ___

Special Instruction
Field Filtered ___
Lab to Filter ___

Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time
[signature] / PVE	11/16/22 1145	[signature]	11/16/22 1145	[signature]	
Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time
Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Received in LAB by / Date/Time	Temp. Received at Lab
				WH / York 11/17/22 11am	3 Degrees C

Technical Report

prepared for:

PVE, LLC.
48 Springside Avenue
Poughkeepsie NY, 12603
Attention: Trevor Treglia

Report Date: 11/28/2022
Client Project ID: 20220641
York Project (SDG) No.: 22K0985

Report Date: 11/28/2022
Client Project ID: 20220641
York Project (SDG) No.: 22K0985

PVE, LLC.
48 Springside Avenue
Poughkeepsie NY, 12603
Attention: Trevor Treglia

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on November 17, 2022 and listed below. The project was identified as your project: **20220641**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
22K0985-01	**SB-27 0-4 20221116**	**Soil**	**11/16/2022**	**11/17/2022**
22K0985-02	**SB-28 0-4 20221116**	**Soil**	**11/16/2022**	**11/17/2022**
22K0985-03	**SB-29 0-4 20221116**	**Soil**	**11/16/2022**	**11/17/2022**
22K0985-04	**SB-29 4-8 20221116**	**Soil**	**11/16/2022**	**11/17/2022**
22K0985-05	**SB-30 0-4 20221116**	**Soil**	**11/16/2022**	**11/17/2022**
22K0985-06	**SB-30 4-8 20221116**	**Soil**	**11/16/2022**	**11/17/2022**
22K0985-07	**SB-31 0-4 20221116**	**Soil**	**11/16/2022**	**11/17/2022**
22K0985-08	**FB 20221116**	**Water**	**11/16/2022**	**11/17/2022**

General Notes for York Project (SDG) No.: 22K0985

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

Approved By: Cassie L Mosher **Date:** 11/28/2022

Cassie L. Mosher
Laboratory Manager

Sample Information

Client Sample ID: SB-27 0-4 20221116 — **York Sample ID:** 22K0985-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 10:15 am	11/17/2022

PFAS, NYSDEC Target List — **Log-in Notes:** — **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.282	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:45	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*41.0 %*	*25-150*

Sample Information

Client Sample ID: **SB-27 0-4 20221116** | **York Sample ID:** **22K0985-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 10:15 am	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*38.8 %*		*25-150*						
	Surrogate: M4PFHpA	*37.4 %*		*25-150*						
	Surrogate: M3PFHxS	*46.6 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*44.2 %*		*25-150*						
	Surrogate: M6PFDA	*32.7 %*		*25-150*						
	Surrogate: M7PFUdA	*23.2 %*	PFSu-L	*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*17.1 %*	PFSu-L	*25-150*						
	Surrogate: M2PFTeDA	*13.6 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*35.9 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*34.6 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*40.6 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*24.8 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*21.4 %*	PFSu-L	*25-150*						
	Surrogate: d5-N-EtFOSAA	*24.7 %*	PFSu-L	*25-150*						
	Surrogate: M2-6:2 FTS	*64.5 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*57.6 %*		*25-200*						
	Surrogate: M9PFNA	*40.7 %*		*25-150*						

Total Solids | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**87.8**		%	0.100	1	SM 2540G	11/21/2022 12:26	11/22/2022 12:29	YR
							Certifications: CTDOH-PH-0723			

Sample Information

Client Sample ID: **SB-28 0-4 20221116** | **York Sample ID:** **22K0985-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 10:30 am	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Information

Client Sample ID: **SB-28 0-4 20221116** **York Sample ID:** **22K0985-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 10:30 am	11/17/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
27619-97-2	* **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)**	**0.327**		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.278	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 18:57	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*37.3 %*	*25-150*
Surrogate: M5PFHxA	*34.5 %*	*25-150*
Surrogate: M4PFHpA	*33.3 %*	*25-150*

Sample Information

Client Sample ID: **SB-28 0-4 20221116** **York Sample ID:** **22K0985-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 10:30 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M3PFHxS	*47.2 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*33.2 %*		*25-150*						
	Surrogate: M6PFDA	*36.2 %*		*25-150*						
	Surrogate: M7PFUdA	*27.8 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*21.3 %*	PFSu-L	*25-150*						
	Surrogate: M2PFTeDA	*16.0 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*30.9 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*40.5 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*34.7 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*17.1 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*25.9 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*27.9 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*57.6 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*49.4 %*		*25-200*						
	Surrogate: M9PFNA	*34.8 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**89.4**		%	0.100	1	SM 2540G	11/21/2022 12:26	11/22/2022 12:29	YR
							Certifications: CTDOH-PH-0723			

Sample Information

Client Sample ID: **SB-29 0-4 20221116** **York Sample ID:** **22K0985-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 10:40 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst

Sample Information

Client Sample ID: **SB-29 0-4 20221116** | **York Sample ID:** **22K0985-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 10:40 am	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.283	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:10	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*35.1 %*	*25-150*

Sample Information

Client Sample ID:	SB-29 0-4 20221116		York Sample ID:	22K0985-03
York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 10:40 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*34.6 %*		*25-150*						
	Surrogate: M4PFHpA	*33.7 %*		*25-150*						
	Surrogate: M3PFHxS	*34.6 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*37.7 %*		*25-150*						
	Surrogate: M6PFDA	*35.5 %*		*25-150*						
	Surrogate: M7PFUdA	*31.1 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*25.2 %*		*25-150*						
	Surrogate: M2PFTeDA	*12.1 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*33.3 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*46.4 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*35.4 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*27.1 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*29.8 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*28.5 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*38.7 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*46.4 %*		*25-200*						
	Surrogate: M9PFNA	*38.5 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**86.2**		%	0.100	1	SM 2540G	11/21/2022 12:26	11/22/2022 12:29	YR
							Certifications: CTDOH-PH-0723			

Sample Information

Client Sample ID:	SB-29 4-8 20221116		York Sample ID:	22K0985-04
York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 10:50 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Information

Client Sample ID: **SB-29 4-8 20221116** **York Sample ID:** **22K0985-04**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 10:50 am	11/17/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV -L	ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV -L	ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.288	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:23	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*41.7 %*	*25-150*
Surrogate: M5PFHxA	*36.8 %*	*25-150*
Surrogate: M4PFHpA	*37.4 %*	*25-150*

Sample Information

Client Sample ID: **SB-29 4-8 20221116** **York Sample ID:** **22K0985-04**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 10:50 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M3PFHxS	*46.4 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*44.4 %*		*25-150*						
	Surrogate: M6PFDA	*34.8 %*		*25-150*						
	Surrogate: M7PFUdA	*26.8 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*20.8 %*	PFSu-L	*25-150*						
	Surrogate: M2PFTeDA	*13.3 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*35.3 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*40.8 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*39.7 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*25.6 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*28.1 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*23.2 %*	PFSu-L	*25-150*						
	Surrogate: M2-6:2 FTS	*57.5 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*56.2 %*		*25-200*						
	Surrogate: M9PFNA	*39.9 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**86.5**		%	0.100	1	SM 2540G	11/21/2022 12:26	11/22/2022 12:29	YR
							Certifications: CTDOH-PH-0723			

Sample Information

Client Sample ID: **SB-30 0-4 20221116** **York Sample ID:** **22K0985-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 11:05 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst

YORK
ANALYTICAL LABORATORIES INC

Sample Information

Client Sample ID: **SB-30 0-4 20221116** **York Sample ID:** **22K0985-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 11:05 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.259	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:36	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*54.7 %*	*25-150*

Sample Information

Client Sample ID: **SB-30 0-4 20221116** | **York Sample ID:** **22K0985-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 11:05 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*46.1 %*		*25-150*						
	Surrogate: M4PFHpA	*44.5 %*		*25-150*						
	Surrogate: M3PFHxS	*52.8 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*48.2 %*		*25-150*						
	Surrogate: M6PFDA	*41.6 %*		*25-150*						
	Surrogate: M7PFUdA	*30.0 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*27.7 %*		*25-150*						
	Surrogate: M2PFTeDA	*23.7 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*44.2 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*58.1 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*48.7 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*6.89 %*	PFSu-L	*10-150*						
	Surrogate: d3-N-MeFOSAA	*16.8 %*	PFSu-L	*25-150*						
	Surrogate: d5-N-EtFOSAA	*35.0 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*148 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*112 %*		*25-200*						
	Surrogate: M9PFNA	*46.4 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**94.4**		%	0.100	1	SM 2540G	11/21/2022 12:26	11/22/2022 12:29	YR
							Certifications: CTDOH-PH-0723			

Sample Information

Client Sample ID: **SB-30 4-8 20221116** | **York Sample ID:** **22K0985-06**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 11:15 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Information

Client Sample ID: **SB-30 4-8 20221116** | **York Sample ID:** **22K0985-06**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 11:15 am	11/17/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.273	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 19:49	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*47.1 %*	*25-150*
Surrogate: M5PFHxA	*43.2 %*	*25-150*
Surrogate: M4PFHpA	*41.6 %*	*25-150*

Sample Information

Client Sample ID: **SB-30 4-8 20221116** | **York Sample ID:** **22K0985-06**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 11:15 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M3PFHxS	*48.1 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*47.7 %*		*25-150*						
	Surrogate: M6PFDA	*39.1 %*		*25-150*						
	Surrogate: M7PFUdA	*32.6 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*25.0 %*		*25-150*						
	Surrogate: M2PFTeDA	*15.1 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*41.6 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*49.4 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*47.0 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*24.0 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*42.1 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*33.8 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*72.0 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*64.9 %*		*25-200*						
	Surrogate: M9PFNA	*40.7 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**89.0**		%	0.100	1	SM 2540G	11/21/2022 12:26	11/22/2022 12:29	YR
							Certifications: CTDOH-PH-0723			

Sample Information

Client Sample ID: **SB-31 0-4 20221116** | **York Sample ID:** **22K0985-07**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 11:25 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst

YORK
ANALYTICAL LABORATORIES INC

Sample Information

Client Sample ID: **SB-31 0-4 20221116** **York Sample ID:** **22K0985-07**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 11:25 am	11/17/2022

PFAS, NYSDEC Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.279	1	EPA 537m Certifications:	11/18/2022 17:24	11/22/2022 20:02	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*31.7 %*	*25-150*

Sample Information

Client Sample ID: **SB-31 0-4 20221116** | **York Sample ID:** **22K0985-07**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Soil	November 16, 2022 11:25 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*32.8 %*		*25-150*						
	Surrogate: M4PFHpA	*33.7 %*		*25-150*						
	Surrogate: M3PFHxS	*37.9 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*40.0 %*		*25-150*						
	Surrogate: M6PFDA	*32.6 %*		*25-150*						
	Surrogate: M7PFUdA	*28.2 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*24.2 %*	PFSu-L	*25-150*						
	Surrogate: M2PFTeDA	*13.6 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*30.0 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*38.1 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*33.3 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*28.4 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*32.6 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*30.0 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*37.5 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*42.3 %*		*25-200*						
	Surrogate: M9PFNA	*33.7 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**89.4**		%	0.100	1	SM 2540G	11/21/2022 12:26	11/22/2022 12:29	YR

Certifications: CTDOH-PH-0723

Sample Information

Client Sample ID: **FB 20221116** | **York Sample ID:** **22K0985-08**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Water	November 16, 2022 10:10 am	11/17/2022

PFAS, NYSDEC Target List

Log-in Notes: **Sample Notes:**

Sample Information

Client Sample ID: FB 20221116 **York Sample ID:** 22K0985-08

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Water	November 16, 2022 10:10 am	11/17/2022

Sample Prepared by Method: SPE Ext-PFAS-EPA 537.1M

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND	PF-CCV-L	ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
2355-31-9	* N-MeFOSAA	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
2991-50-6	* N-EtFOSAA	ND	PF-CCV-L	ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND	PF-CCV-L	ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ng/L	4.73	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ng/L	1.89	1	EPA 537m Certifications:	11/22/2022 11:22	11/23/2022 19:01	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*90.1 %*	*25-150*
Surrogate: M5PFHxA	*77.4 %*	*25-150*
Surrogate: M4PFHpA	*80.0 %*	*25-150*

Sample Information

Client Sample ID: FB 20221116 | **York Sample ID:** 22K0985-08

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22K0985	20220641	Water	November 16, 2022 10:10 am	11/17/2022

PFAS, NYSDEC Target List | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: SPE Ext-PFAS-EPA 537.1M

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M3PFHxS	*96.2 %*			*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*86.8 %*			*25-150*					
	Surrogate: M6PFDA	*78.9 %*			*25-150*					
	Surrogate: M7PFUdA	*75.3 %*			*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*66.2 %*			*25-150*					
	Surrogate: M2PFTeDA	*58.5 %*			*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*66.5 %*			*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*92.2 %*			*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*79.9 %*			*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*34.5 %*			*10-150*					
	Surrogate: d3-N-MeFOSAA	*69.7 %*			*25-150*					
	Surrogate: d5-N-EtFOSAA	*65.2 %*			*25-150*					
	Surrogate: M2-6:2 FTS	*125 %*			*25-200*					
	Surrogate: M2-8:2 FTS	*112 %*			*25-200*					
	Surrogate: M9PFNA	*87.9 %*			*25-150*					

Analytical Batch Summary

Batch ID: BK21224 **Preparation Method:** SPE PFAS Extraction-Soil-EPA 537m **Prepared By:** BAMW

YORK Sample ID	Client Sample ID	Preparation Date
22K0985-01	SB-27 0-4 20221116	11/18/22
22K0985-02	SB-28 0-4 20221116	11/18/22
22K0985-03	SB-29 0-4 20221116	11/18/22
22K0985-04	SB-29 4-8 20221116	11/18/22
22K0985-05	SB-30 0-4 20221116	11/18/22
22K0985-06	SB-30 4-8 20221116	11/18/22
22K0985-07	SB-31 0-4 20221116	11/18/22
BK21224-BLK1	Blank	11/18/22
BK21224-BS1	LCS	11/18/22
BK21224-MS1	Matrix Spike	11/18/22
BK21224-MSD1	Matrix Spike Dup	11/18/22

Batch ID: BK21242 **Preparation Method:** % Solids Prep **Prepared By:** YR

YORK Sample ID	Client Sample ID	Preparation Date
22K0985-01	SB-27 0-4 20221116	11/21/22
22K0985-02	SB-28 0-4 20221116	11/21/22
22K0985-03	SB-29 0-4 20221116	11/21/22
22K0985-04	SB-29 4-8 20221116	11/21/22
22K0985-05	SB-30 0-4 20221116	11/21/22
22K0985-06	SB-30 4-8 20221116	11/21/22
22K0985-07	SB-31 0-4 20221116	11/21/22
BK21242-DUP1	Duplicate	11/22/22

Batch ID: BK21405 **Preparation Method:** SPE Ext-PFAS-EPA 537.1M **Prepared By:** WJH

YORK Sample ID	Client Sample ID	Preparation Date
22K0985-08	FB 20221116	11/22/22
BK21405-BLK1	Blank	11/22/22
BK21405-BS1	LCS	11/22/22
BK21405-BSD1	LCS Dup	11/22/22

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag

Batch BK21224 - SPE PFAS Extraction-Soil-EPA 537m

Blank (BK21224-BLK1) Prepared: 11/18/2022 Analyzed: 11/22/2022

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Perfluorobutanesulfonic acid (PFBS)	ND	0.229	ug/kg wet								
Perfluorohexanoic acid (PFHxA)	ND	0.229	"								
Perfluoroheptanoic acid (PFHpA)	ND	0.229	"								
Perfluorohexanesulfonic acid (PFHxS)	ND	0.229	"								
Perfluorooctanoic acid (PFOA)	ND	0.229	"								
Perfluorooctanesulfonic acid (PFOS)	ND	0.229	"								
Perfluorononanoic acid (PFNA)	ND	0.229	"								
Perfluorodecanoic acid (PFDA)	ND	0.229	"								
Perfluoroundecanoic acid (PFUnA)	ND	0.229	"								
Perfluorododecanoic acid (PFDoA)	ND	0.229	"								
Perfluorotridecanoic acid (PFTrDA)	ND	0.229	"								
Perfluorotetradecanoic acid (PFTA)	ND	0.229	"								
N-MeFOSAA	ND	0.229	"								
N-EtFOSAA	ND	0.229	"								
Perfluoropentanoic acid (PFPeA)	ND	0.229	"								
Perfluoro-1-octanesulfonamide (FOSA)	ND	0.229	"								
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	0.229	"								
Perfluoro-1-decanesulfonic acid (PFDS)	ND	0.229	"								
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND	0.229	"								
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND	0.229	"								
Perfluoro-n-butanoic acid (PFBA)	ND	0.229	"								
Surrogate: M3PFBS	*4.21*		*"*	*4.25*		*99.1*	*25-150*				
Surrogate: M5PFHxA	*3.80*		*"*	*4.58*		*83.1*	*25-150*				
Surrogate: M4PFHpA	*3.37*		*"*	*4.58*		*73.5*	*25-150*				
Surrogate: M3PFHxS	*4.05*		*"*	*4.33*		*93.6*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.01*		*"*	*4.58*		*87.6*	*25-150*				
Surrogate: M6PFDA	*2.88*		*"*	*4.58*		*62.9*	*25-150*				
Surrogate: M7PFUdA	*2.42*		*"*	*4.58*		*52.9*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.14*		*"*	*4.58*		*46.7*	*25-150*				
Surrogate: M2PFTeDA	*1.91*		*"*	*4.58*		*41.7*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.54*		*"*	*4.58*		*77.3*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*3.58*		*"*	*4.38*		*81.7*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.27*		*"*	*4.58*		*93.2*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.40*		*"*	*4.58*		*52.4*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.22*		*"*	*4.58*		*48.5*	*25-150*				
Surrogate: d5-N-EtFOSAA	*2.31*		*"*	*4.58*		*50.4*	*25-150*				
Surrogate: M2-6:2 FTS	*4.28*		*"*	*4.34*		*98.6*	*25-200*				
Surrogate: M2-8:2 FTS	*2.70*		*"*	*4.38*		*61.6*	*25-200*				
Surrogate: M9PFNA	*3.57*		*"*	*4.58*		*77.9*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21224 - SPE PFAS Extraction-Soil-EPA 537m											
LCS (BK21224-BS1)								Prepared: 11/18/2022 Analyzed: 11/22/2022			
Perfluorobutanesulfonic acid (PFBS)	4.50	0.238	ug/kg wet	4.22		107	50-130				
Perfluorohexanoic acid (PFHxA)	5.54	0.238	"	4.76		116	50-130				
Perfluoroheptanoic acid (PFHpA)	6.20	0.238	"	4.76		130	50-130				
Perfluorohexanesulfonic acid (PFHxS)	4.34	0.238	"	4.34		100	50-130				
Perfluorooctanoic acid (PFOA)	5.77	0.238	"	4.76		121	50-130				
Perfluorooctanesulfonic acid (PFOS)	4.63	0.238	"	4.41		105	50-130				
Perfluorononanoic acid (PFNA)	4.69	0.238	"	4.76		98.5	50-130				
Perfluorodecanoic acid (PFDA)	5.74	0.238	"	4.76		120	50-130				
Perfluoroundecanoic acid (PFUnA)	5.86	0.238	"	4.76		123	50-130				
Perfluorododecanoic acid (PFDoA)	5.74	0.238	"	4.76		120	50-130				
Perfluorotridecanoic acid (PFTrDA)	4.03	0.238	"	4.76		84.7	50-130				
Perfluorotetradecanoic acid (PFTA)	5.04	0.238	"	4.76		106	50-130				
N-MeFOSAA	5.20	0.238	"	4.76		109	50-130				
N-EtFOSAA	5.41	0.238	"	4.76		114	50-130				
Perfluoropentanoic acid (PFPeA)	5.77	0.238	"	4.76		121	50-130				
Perfluoro-1-octanesulfonamide (FOSA)	4.41	0.238	"	4.76		92.6	50-130				
Perfluoro-1-heptanesulfonic acid (PFHpS)	5.28	0.238	"	4.55		116	50-130				
Perfluoro-1-decanesulfonic acid (PFDS)	3.83	0.238	"	4.60		83.2	50-130				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	6.49	0.238	"	4.53		143	50-200				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	6.02	0.238	"	4.57		132	50-200				
Perfluoro-n-butanoic acid (PFBA)	5.29	0.238	"	4.76		111	50-130				
Surrogate: M3PFBS	*4.44*		*"*	*4.43*		*100*	*25-150*				
Surrogate: M5PFHxA	*4.19*		*"*	*4.76*		*87.9*	*25-150*				
Surrogate: M4PFHpA	*3.87*		*"*	*4.76*		*81.3*	*25-150*				
Surrogate: M3PFHxS	*4.49*		*"*	*4.51*		*99.6*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.05*		*"*	*4.76*		*85.0*	*25-150*				
Surrogate: M6PFDA	*3.11*		*"*	*4.76*		*65.2*	*25-150*				
Surrogate: M7PFUdA	*2.44*		*"*	*4.76*		*51.3*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.58*		*"*	*4.76*		*54.2*	*25-150*				
Surrogate: M2PFTeDA	*2.12*		*"*	*4.76*		*44.5*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.88*		*"*	*4.76*		*81.5*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*3.58*		*"*	*4.56*		*78.6*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.39*		*"*	*4.76*		*92.1*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.56*		*"*	*4.76*		*53.7*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.75*		*"*	*4.76*		*57.7*	*25-150*				
Surrogate: d5-N-EtFOSAA	*2.52*		*"*	*4.76*		*53.0*	*25-150*				
Surrogate: M2-6:2 FTS	*4.23*		*"*	*4.52*		*93.6*	*25-200*				
Surrogate: M2-8:2 FTS	*3.15*		*"*	*4.56*		*69.1*	*25-200*				
Surrogate: M9PFNA	*4.07*		*"*	*4.76*		*85.3*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Batch BK21224 - SPE PFAS Extraction-Soil-EPA 537m

Matrix Spike (BK21224-MS1) *Source sample: 22K0940-02 (Matrix Spike) Prepared: 11/18/2022 Analyzed: 11/22/2022

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Perfluorobutanesulfonic acid (PFBS)	4.72	0.239	ug/kg dry	4.22	ND	112	25-150				
Perfluorohexanoic acid (PFHxA)	5.40	0.239	"	4.77	ND	113	25-150				
Perfluoroheptanoic acid (PFHpA)	5.85	0.239	"	4.77	ND	123	25-150				
Perfluorohexanesulfonic acid (PFHxS)	4.56	0.239	"	4.34	ND	105	25-150				
Perfluorooctanoic acid (PFOA)	5.38	0.239	"	4.77	ND	113	25-150				
Perfluorooctanesulfonic acid (PFOS)	5.71	0.239	"	4.42	ND	129	25-150				
Perfluorononanoic acid (PFNA)	5.17	0.239	"	4.77	ND	108	25-150				
Perfluorodecanoic acid (PFDA)	5.49	0.239	"	4.77	ND	115	25-150				
Perfluoroundecanoic acid (PFUnA)	5.59	0.239	"	4.77	ND	117	25-150				
Perfluorododecanoic acid (PFDoA)	6.08	0.239	"	4.77	ND	127	25-150				
Perfluorotridecanoic acid (PFTrDA)	4.19	0.239	"	4.77	ND	87.8	25-150				
Perfluorotetradecanoic acid (PFTA)	5.07	0.239	"	4.77	ND	106	25-150				
N-MeFOSAA	5.28	0.239	"	4.77	ND	111	25-150				
N-EtFOSAA	5.60	0.239	"	4.77	ND	117	25-150				
Perfluoropentanoic acid (PFPeA)	5.67	0.239	"	4.77	ND	119	25-150				
Perfluoro-1-octanesulfonamide (FOSA)	4.47	0.239	"	4.77	ND	93.7	25-150				
Perfluoro-1-heptanesulfonic acid (PFHpS)	5.15	0.239	"	4.56	ND	113	25-150				
Perfluoro-1-decanesulfonic acid (PFDS)	2.86	0.239	"	4.61	ND	62.0	25-150				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	5.86	0.239	"	4.54	ND	129	25-200				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	6.26	0.239	"	4.58	ND	137	25-200				
Perfluoro-n-butanoic acid (PFBA)	5.18	0.239	"	4.77	ND	108	25-150				
Surrogate: M3PFBS	*4.13*		"	*4.44*		*93.1*	*25-150*				
Surrogate: M5PFHxA	*4.20*		"	*4.77*		*87.9*	*25-150*				
Surrogate: M4PFHpA	*4.08*		"	*4.77*		*85.5*	*25-150*				
Surrogate: M3PFHxS	*4.63*		"	*4.52*		*103*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.40*		"	*4.77*		*92.2*	*25-150*				
Surrogate: M6PFDA	*3.32*		"	*4.77*		*69.6*	*25-150*				
Surrogate: M7PFUdA	*2.52*		"	*4.77*		*52.9*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.14*		"	*4.77*		*44.8*	*25-150*				
Surrogate: M2PFTeDA	*1.72*		"	*4.77*		*36.1*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.74*		"	*4.77*		*78.3*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*3.75*		"	*4.57*		*82.1*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.38*		"	*4.77*		*91.8*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.54*		"	*4.77*		*53.1*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.79*		"	*4.77*		*58.5*	*25-150*				
Surrogate: d5-N-EtFOSAA	*2.65*		"	*4.77*		*55.5*	*25-150*				
Surrogate: M2-6:2 FTS	*5.65*		"	*4.53*		*125*	*25-200*				
Surrogate: M2-8:2 FTS	*4.86*		"	*4.57*		*106*	*25-200*				
Surrogate: M9PFNA	*3.97*		"	*4.77*		*83.1*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Batch BK21224 - SPE PFAS Extraction-Soil-EPA 537m

Matrix Spike Dup (BK21224-MSD1) *Source sample: 22K0940-02 (Matrix Spike Dup) Prepared: 11/18/2022 Analyzed: 11/22/2022

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Perfluorobutanesulfonic acid (PFBS)	5.28	0.255	ug/kg dry	4.51	ND	117	25-150		11.2	35	
Perfluorohexanoic acid (PFHxA)	6.86	0.255	"	5.10	ND	135	25-150		23.9	35	
Perfluoroheptanoic acid (PFHpA)	6.40	0.255	"	5.10	ND	125	25-150		8.97	35	
Perfluorohexanesulfonic acid (PFHxS)	5.53	0.255	"	4.64	ND	119	25-150		19.2	35	
Perfluorooctanoic acid (PFOA)	5.66	0.255	"	5.10	ND	111	25-150		5.11	35	
Perfluorooctanesulfonic acid (PFOS)	5.77	0.255	"	4.72	ND	122	25-150		1.15	35	
Perfluorononanoic acid (PFNA)	5.93	0.255	"	5.10	ND	116	25-150		13.8	35	
Perfluorodecanoic acid (PFDA)	6.32	0.255	"	5.10	ND	124	25-150		14.1	35	
Perfluoroundecanoic acid (PFUnA)	6.02	0.255	"	5.10	ND	118	25-150		7.27	35	
Perfluorododecanoic acid (PFDoA)	6.44	0.255	"	5.10	ND	126	25-150		5.79	35	
Perfluorotridecanoic acid (PFTrDA)	4.65	0.255	"	5.10	ND	91.2	25-150		10.5	35	
Perfluorotetradecanoic acid (PFTA)	5.84	0.255	"	5.10	ND	115	25-150		14.2	35	
N-MeFOSAA	6.76	0.255	"	5.10	ND	132	25-150		24.6	35	
N-EtFOSAA	5.22	0.255	"	5.10	ND	102	25-150		7.02	35	
Perfluoropentanoic acid (PFPeA)	6.39	0.255	"	5.10	ND	125	25-150		11.9	35	
Perfluoro-1-octanesulfonamide (FOSA)	5.59	0.255	"	5.10	ND	110	25-150		22.2	35	
Perfluoro-1-heptanesulfonic acid (PFHpS)	6.11	0.255	"	4.87	ND	125	25-150		17.0	35	
Perfluoro-1-decanesulfonic acid (PFDS)	3.46	0.255	"	4.92	ND	70.4	25-150		19.2	35	
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	6.28	0.255	"	4.85	ND	130	25-200		6.91	35	
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	6.90	0.255	"	4.90	ND	141	25-200		9.77	35	
Perfluoro-n-butanoic acid (PFBA)	5.83	0.255	"	5.10	ND	114	25-150		11.8	35	
Surrogate: M3PFBS	*4.40*		*"*	*4.74*		*92.8*	*25-150*				
Surrogate: M5PFHxA	*3.97*		*"*	*5.10*		*77.7*	*25-150*				
Surrogate: M4PFHpA	*4.21*		*"*	*5.10*		*82.5*	*25-150*				
Surrogate: M3PFHxS	*4.42*		*"*	*4.83*		*91.5*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.77*		*"*	*5.10*		*93.5*	*25-150*				
Surrogate: M6PFDA	*3.31*		*"*	*5.10*		*64.8*	*25-150*				
Surrogate: M7PFUdA	*2.71*		*"*	*5.10*		*53.0*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.40*		*"*	*5.10*		*47.0*	*25-150*				
Surrogate: M2PFTeDA	*1.66*		*"*	*5.10*		*32.5*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.92*		*"*	*5.10*		*76.8*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*4.00*		*"*	*4.88*		*82.0*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.49*		*"*	*5.10*		*88.0*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.36*		*"*	*5.10*		*46.3*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.34*		*"*	*5.10*		*45.8*	*25-150*				
Surrogate: d5-N-EtFOSAA	*2.56*		*"*	*5.10*		*50.1*	*25-150*				
Surrogate: M2-6:2 FTS	*5.28*		*"*	*4.84*		*109*	*25-200*				
Surrogate: M2-8:2 FTS	*3.34*		*"*	*4.89*		*68.3*	*25-200*				
Surrogate: M9PFNA	*3.92*		*"*	*5.10*		*76.8*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21405 - SPE Ext-PFAS-EPA 537.1M											
Blank (BK21405-BLK1)								Prepared: 11/22/2022 Analyzed: 11/23/2022			
Perfluorobutanesulfonic acid (PFBS)	ND	2.00	ng/L								
Perfluorohexanoic acid (PFHxA)	ND	2.00	"								
Perfluoroheptanoic acid (PFHpA)	ND	2.00	"								
Perfluorohexanesulfonic acid (PFHxS)	ND	2.00	"								
Perfluorooctanoic acid (PFOA)	ND	2.00	"								
Perfluorooctanesulfonic acid (PFOS)	ND	2.00	"								
Perfluorononanoic acid (PFNA)	ND	2.00	"								
Perfluorodecanoic acid (PFDA)	ND	2.00	"								
Perfluoroundecanoic acid (PFUnA)	ND	2.00	"								
Perfluorododecanoic acid (PFDoA)	ND	2.00	"								
Perfluorotridecanoic acid (PFTrDA)	ND	2.00	"								
Perfluorotetradecanoic acid (PFTA)	ND	2.00	"								
N-MeFOSAA	ND	2.00	"								
N-EtFOSAA	ND	2.00	"								
Perfluoropentanoic acid (PFPeA)	ND	2.00	"								
Perfluoro-1-octanesulfonamide (FOSA)	ND	2.00	"								
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	2.00	"								
Perfluoro-1-decanesulfonic acid (PFDS)	ND	2.00	"								
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND	5.00	"								
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND	2.00	"								
Perfluoro-n-butanoic acid (PFBA)	ND	2.00	"								
Surrogate: M3PFBS	*70.0*		*"*	*74.3*		*94.2*	*25-150*				
Surrogate: M5PFHxA	*61.3*		*"*	*80.0*		*76.6*	*25-150*				
Surrogate: M4PFHpA	*63.3*		*"*	*80.0*		*79.1*	*25-150*				
Surrogate: M3PFHxS	*67.8*		*"*	*75.7*		*89.6*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*65.3*		*"*	*80.0*		*81.6*	*25-150*				
Surrogate: M6PFDA	*57.2*		*"*	*80.0*		*71.5*	*25-150*				
Surrogate: M7PFUdA	*52.1*		*"*	*80.0*		*65.2*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*48.6*		*"*	*80.0*		*60.7*	*25-150*				
Surrogate: M2PFTeDA	*45.2*		*"*	*80.0*		*56.5*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*53.5*		*"*	*80.0*		*66.9*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*68.6*		*"*	*76.6*		*89.6*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*68.4*		*"*	*80.0*		*85.6*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*22.3*		*"*	*80.0*		*27.9*	*10-150*				
Surrogate: d3-N-MeFOSAA	*49.2*		*"*	*80.0*		*61.5*	*25-150*				
Surrogate: d5-N-EtFOSAA	*47.7*		*"*	*80.0*		*59.6*	*25-150*				
Surrogate: M2-6:2 FTS	*89.3*		*"*	*75.9*		*118*	*25-200*				
Surrogate: M2-8:2 FTS	*56.0*		*"*	*76.6*		*73.1*	*25-200*				
Surrogate: M9PFNA	*62.5*		*"*	*80.0*		*78.1*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21405 - SPE Ext-PFAS-EPA 537.1M											
LCS (BK21405-BS1)								Prepared: 11/22/2022 Analyzed: 11/23/2022			
Perfluorobutanesulfonic acid (PFBS)	70.8	2.00	ng/L	70.8		100	50-130				
Perfluorohexanoic acid (PFHxA)	86.7	2.00	"	80.0		108	50-130				
Perfluoroheptanoic acid (PFHpA)	87.4	2.00	"	80.0		109	50-130				
Perfluorohexanesulfonic acid (PFHxS)	78.1	2.00	"	72.8		107	50-130				
Perfluorooctanoic acid (PFOA)	86.4	2.00	"	80.0		108	50-130				
Perfluorooctanesulfonic acid (PFOS)	71.4	2.00	"	74.0		96.5	50-130				
Perfluorononanoic acid (PFNA)	78.2	2.00	"	80.0		97.8	50-130				
Perfluorodecanoic acid (PFDA)	85.5	2.00	"	80.0		107	50-130				
Perfluoroundecanoic acid (PFUnA)	84.2	2.00	"	80.0		105	50-130				
Perfluorododecanoic acid (PFDoA)	88.8	2.00	"	80.0		111	50-130				
Perfluorotridecanoic acid (PFTrDA)	66.1	2.00	"	80.0		82.7	50-130				
Perfluorotetradecanoic acid (PFTA)	76.4	2.00	"	80.0		95.5	50-130				
N-MeFOSAA	85.1	2.00	"	80.0		106	50-130				
N-EtFOSAA	78.9	2.00	"	80.0		98.7	50-130				
Perfluoropentanoic acid (PFPeA)	85.8	2.00	"	80.0		107	50-130				
Perfluoro-1-octanesulfonamide (FOSA)	73.6	2.00	"	80.0		92.0	50-130				
Perfluoro-1-heptanesulfonic acid (PFHpS)	65.2	2.00	"	76.4		85.3	50-130				
Perfluoro-1-decanesulfonic acid (PFDS)	58.0	2.00	"	77.2		75.2	50-130				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	78.6	5.00	"	76.0		103	50-175				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	89.0	2.00	"	76.8		116	50-175				
Perfluoro-n-butanoic acid (PFBA)	83.0	2.00	"	80.0		104	50-130				
Surrogate: M3PFBS	*72.6*		*"*	*74.3*		*97.7*	*25-150*				
Surrogate: M5PFHxA	*66.1*		*"*	*80.0*		*82.6*	*25-150*				
Surrogate: M4PFHpA	*67.1*		*"*	*80.0*		*83.8*	*25-150*				
Surrogate: M3PFHxS	*71.3*		*"*	*75.7*		*94.2*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*69.1*		*"*	*80.0*		*86.3*	*25-150*				
Surrogate: M6PFDA	*62.1*		*"*	*80.0*		*77.6*	*25-150*				
Surrogate: M7PFUdA	*57.4*		*"*	*80.0*		*71.7*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*52.9*		*"*	*80.0*		*66.1*	*25-150*				
Surrogate: M2PFTeDA	*52.6*		*"*	*80.0*		*65.8*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*57.4*		*"*	*80.0*		*71.7*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*79.0*		*"*	*76.6*		*103*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*71.3*		*"*	*80.0*		*89.2*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*29.6*		*"*	*80.0*		*37.0*	*10-150*				
Surrogate: d3-N-MeFOSAA	*52.1*		*"*	*80.0*		*65.2*	*25-150*				
Surrogate: d5-N-EtFOSAA	*51.0*		*"*	*80.0*		*63.7*	*25-150*				
Surrogate: M2-6:2 FTS	*100*		*"*	*75.9*		*132*	*25-200*				
Surrogate: M2-8:2 FTS	*70.1*		*"*	*76.6*		*91.4*	*25-200*				
Surrogate: M9PFNA	*68.5*		*"*	*80.0*		*85.6*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag

Batch BK21405 - SPE Ext-PFAS-EPA 537.1M

LCS Dup (BK21405-BSD1) Prepared: 11/22/2022 Analyzed: 11/23/2022

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Perfluorobutanesulfonic acid (PFBS)	74.0	2.00	ng/L	70.8		105	50-130		4.38	30	
Perfluorohexanoic acid (PFHxA)	87.8	2.00	"	80.0		110	50-130		1.28	30	
Perfluoroheptanoic acid (PFHpA)	99.5	2.00	"	80.0		124	50-130		12.9	30	
Perfluorohexanesulfonic acid (PFHxS)	77.0	2.00	"	72.8		106	50-130		1.37	30	
Perfluorooctanoic acid (PFOA)	85.4	2.00	"	80.0		107	50-130		1.12	30	
Perfluorooctanesulfonic acid (PFOS)	74.1	2.00	"	74.0		100	50-130		3.73	30	
Perfluorononanoic acid (PFNA)	80.0	2.00	"	80.0		100	50-130		2.28	30	
Perfluorodecanoic acid (PFDA)	90.6	2.00	"	80.0		113	50-130		5.83	30	
Perfluoroundecanoic acid (PFUnA)	87.4	2.00	"	80.0		109	50-130		3.72	30	
Perfluorododecanoic acid (PFDoA)	92.3	2.00	"	80.0		115	50-130		3.84	30	
Perfluorotridecanoic acid (PFTrDA)	67.4	2.00	"	80.0		84.2	50-130		1.87	30	
Perfluorotetradecanoic acid (PFTA)	83.2	2.00	"	80.0		104	50-130		8.50	30	
N-MeFOSAA	80.7	2.00	"	80.0		101	50-130		5.35	30	
N-EtFOSAA	76.5	2.00	"	80.0		95.7	50-130		3.11	30	
Perfluoropentanoic acid (PFPeA)	89.6	2.00	"	80.0		112	50-130		4.28	30	
Perfluoro-1-octanesulfonamide (FOSA)	75.9	2.00	"	80.0		94.9	50-130		3.05	30	
Perfluoro-1-heptanesulfonic acid (PFHpS)	67.6	2.00	"	76.4		88.4	50-130		3.64	30	
Perfluoro-1-decanesulfonic acid (PFDS)	63.9	2.00	"	77.2		82.7	50-130		9.61	30	
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	75.6	5.00	"	76.0		99.5	50-175		3.88	30	
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	80.6	2.00	"	76.8		105	50-175		9.93	30	
Perfluoro-n-butanoic acid (PFBA)	86.9	2.00	"	80.0		109	50-130		4.56	30	
Surrogate: M3PFBS	*74.3*		"	*74.3*		*99.9*	*25-150*				
Surrogate: M5PFHxA	*69.5*		"	*80.0*		*86.9*	*25-150*				
Surrogate: M4PFHpA	*62.8*		"	*80.0*		*78.6*	*25-150*				
Surrogate: M3PFHxS	*74.6*		"	*75.7*		*98.6*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*71.8*		"	*80.0*		*89.8*	*25-150*				
Surrogate: M6PFDA	*64.1*		"	*80.0*		*80.2*	*25-150*				
Surrogate: M7PFUdA	*58.0*		"	*80.0*		*72.5*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*54.4*		"	*80.0*		*68.0*	*25-150*				
Surrogate: M2PFTeDA	*47.2*		"	*80.0*		*59.0*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*58.1*		"	*80.0*		*72.7*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*78.7*		"	*76.6*		*103*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*72.0*		"	*80.0*		*90.0*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*32.1*		"	*80.0*		*40.1*	*10-150*				
Surrogate: d3-N-MeFOSAA	*56.2*		"	*80.0*		*70.2*	*25-150*				
Surrogate: d5-N-EtFOSAA	*51.7*		"	*80.0*		*64.6*	*25-150*				
Surrogate: M2-6:2 FTS	*85.1*		"	*75.9*		*112*	*25-200*				
Surrogate: M2-8:2 FTS	*74.7*		"	*76.6*		*97.5*	*25-200*				
Surrogate: M9PFNA	*70.6*		"	*80.0*		*88.3*	*25-150*				

Miscellaneous Physical Parameters - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BK21242 - % Solids Prep											
Duplicate (BK21242-DUP1)	*Source sample: 22K0820-02 (Duplicate)						Prepared & Analyzed: 11/22/2022				
% Solids	92.5	0.100	%		96.4				4.14	20	

Sample and Data Qualifiers Relating to This Work Order

PFSu-L The isotopically labeled surrogate recovered below lab control limits due to a matrix effect. Isotope Dilution was applied.

PF-CCV-L The CCV recovery was slightly below acceptable limits for the qualified compound. However, sample results are not biased low because results are corrected for isotope recovery.

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

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Field Chain-of-Custody Record

NOTE: YORK's Standard Terms & Conditions are listed on the back side of this document. This document serves as your written authorization for YORK to proceed with the analyses requested below. Your signature binds you to YORK's Standard Terms & Conditions.

YORK Project No. 22KC985

Page ____ of ____

YOUR Information	Report To:	Invoice To:	YOUR Project Number	Turn-Around Time
Company: PVE Engineering	Company:	Company:	20220641	RUSH - Next Day
Address: 48 Spring Side Avenue Poughkeepsie, NY 12603	Address: Same	Address: Same	YOUR Project Name	RUSH - Two Day
Phone.: 845-454-2544	Phone.:	Phone.:	20220641	RUSH - Three Day
Contact: Trevor Traglia	Contact: Trevor Traglia	Contact: Tara Alvarado		RUSH - Four Day
E-mail: ttraglia@pvellc.com	E-mail: ttraglia@pvellc.com	E-mail: talvarado@pvellc.com	YOUR PO#: 20220641_PFAS	Standard (5-7 Day) X

Please print clearly and legibly. All information must be complete. Samples will not be logged in and the turn-around-time clock will not begin until any questions by YORK are resolved.

Trevor Traglia

Samples Collected by: (print your name above and sign below)

Matrix Codes	Samples From		Report / EDD Type (circle selections)			YORK Reg. Comp.
S - soil / solid	New York	X	Summary Report	CT RCP	Standard Excel EDD	Compared to the following Regulation(s): (please fill in)
GW - groundwater	New Jersey		QA Report	CT RCP DQA/DUE	EQuIS (Standard)	
DW - drinking water	Connecticut		NY ASP A Package	NJDEP Reduced Deliverables	NYSDEC EQuIS	
WW - wastewater	Pennsylvania		NY ASP B Package		NJDEP SRP HazSite	
O - Oil / Other	Other			NJDKQP	Other:	

Sample Identification	Sample Matrix	Date/Time Sampled	Analysis Requested	Container Description
SB-27 0-4 20221116	S	11/16/22/10:15	PFAS (NY 21 list) via 537.1M	2-125mL Plastic
SB-28 0-4 20221116		/10:30		
SB-29 0-4 20221116		/10:40		
SB-29 4-8 20221116		/10:50		
SB-30 0-4 20221116		/11:05		
SB-30 4-8 20221116		/11:15		
SB-31 0-4 20221116		/11:25		
FB 20221116	W	11/16/22/10:10		

Comments:

Preservation: (check all that apply)
HCl ___ MeOH ___ HNO$_3$ ___ H$_2$SO$_4$ ___ NaOH ___ ZnAc ___
Ascorbic Acid ___ Other: ________

Special Instruction
Field Filtered ____
Lab to Filter ____

Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time
[signature] / PVE	11-17-22 9:40	Chuc York	11-17-22 9:40	Chuc York	11-17-22 1540
Samples Received by / Company	**Date/Time**	**Samples Relinquished by / Company**	**Date/Time**	**Samples Received by / Company**	**Date/Time**
Samples Relinquished by / Company	**Date/Time**	**Samples Received by / Company**	**Date/Time**	**Samples Received in LAB by / Date/Time**	**Temp. Received at Lab**
				[signature] 11/17/22 1540	5-9