Annual Drinking Water Quality Report for 2017
United Wappinger Water District
Wappingers Falls, New York 12590
Public Water Supply ID# 1330660

INTRODUCTION

To comply with State regulations, the United Wappinger Water District is issuing an annual report describing the quality of your drinking water. The purpose of this report is to raise your understanding of drinking water and awareness of the need to protect our drinking water sources. Last year, your tap water met all State drinking water health standards. We are proud to report that our system did not violate a maximum contaminant level or any other water quality standard. This report provides an overview of last year's water quality. Included are details about where your water comes from, what it contains, and how it compares to State standards.

If you have any questions about this report or concerning your drinking water, please contact **CAMO Pollution Control, Inc. at (845) 463-7310**. We want you to be informed about your drinking water. If you want to learn more, please attend any of our regularly scheduled village board meetings. The time and place of the regularly scheduled Town Board meetings may be obtained from **Joseph Paoloni, Town Clerk, at (845) 297-5771.**

WHERE DOES OUR WATER COME FROM?

In general, the sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activities. Contaminants that may be present in source water include: microbial contaminants; inorganic contaminants; pesticides and herbicides; organic chemical contaminants; and radioactive contaminants. In order to ensure that tap water is safe to drink, the State and the EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The State Health Department's and the FDA's regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Our water source is two major well fields: the Atlas well field and the Hilltop well field. All water passes through filters at each of these well fields. During 2017 our system did not experience any restriction of our water source. All of our water is treated with chlorine as a disinfectant to destroy microorganisms prior to distribution. The estimated hardness of your water is between 14 and 18 grains.

SOURCE WATER ASSESSMENT

The New York State Health Department has completed a source water assessment for this system, based on available information. Possible and actual threats to this drinking water source were evaluated. The state source water assessment includes a susceptibility rating based on the risk posed by each potential source of contamination and how easily contaminants can move through the subsurface to the wells. The susceptibility rating is an estimated of the potential for contamination of the source water; it does not mean that the water delivered to the consumers is, or will become, contaminated. See the section "Sampling Results" for a list of the contaminants that have been detected, if any.

The source water assessments provide resource managers with additional information for protecting source waters into the future. The county and state health departments will use this information to direct future source water protection activities. These may include water quality monitoring, resource management, and planning and education programs. A copy of the assessment can be obtained by contacting us, as noted.

North Wappinger Water (Atlas) Well Field SWAP Summary

The source water assessment has rated our water source as having an elevated susceptibility to microbial and nitrate contamination. These ratings are due primarily to the close proximity of the wells to a permitted discharge facility (industrial/commercial facilities that discharge wastewater into the environment and are regulated by the state and/or federal government) and the residential land use and related activities in the assessment area. In addition, the wells are located in an area prone to flooding. The county and state health departments will use this information to direct future water protection activities.

Hilltop Water Well Field SWAP Summary

The source water assessment has rated our water source as having an elevated susceptibility to microbials, nitrates, salts, sulfate, industrial solvents, and other industrial contaminants. These ratings are due primarily to the close proximity of the wells to a permitted discharge facility (industrial/commercial facilities that discharge wastewater into the environment and are regulated by the state and/or federal government) and the residential land use and related activities in the assessment area. In addition, the wells are located in an area prone to flooding. While the source water assessment has rated our wells as being susceptible to microbials, please note that our water is disinfected to ensure that the finished water delivered into your home meets New York State's drinking water standards for microbial contamination.

FACTS AND FIGURES

Our water system serves 14,000 customers through 3,498 service connections. The total water produced in 2017 was 371.4 million gallons. The daily average of water treated and pumped into the

distribution system was 999,660 gallons per day. Our highest single day was 1.4 million gallons. The estimated amount of water delivered to our customers was 323.5 million gallons. This leaves an unaccounted total of 57 million gallons. This water was used for flushing mains, fighting fires, and leaks. In 2017, water customers were billed a minimum of $66.20 for up to and including 2,500 cubic feet, with an additional charge of $1.20 per 100 cubic feet for anything over 2,500 cubic feet.

ARE THERE CONTAMINANTS IN OUR DRINKING WATER?

As the State regulations require, we routinely test your drinking water for numerous contaminants. These contaminants include: asbestos, total coliform, turbidity, inorganic compounds, nitrate, nitrite, lead and copper, volatile organic compounds, total trihalomethanes, haloacetic acids, radiological and synthetic organic compounds. The table presented below depicts all compounds which were detected in your drinking water. The State allows us to test for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

It should be noted that all drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791) or the Dutchess County Health Department at (845) 486-3404.

INORGANICS			Hilltop Well Field			Atlas Well Field			Distribution System				
Substance (Unit of Measure)	MCL	MCLG	Sample Date	Amount Detected	Range Low-High	Sample Date	Amount Detected	Range Low-High	Sample Date	Amount Detected	Range Low-High	Violation	Typical Source
Barium (ppm)	2	2	11/17	0.00874	N/A	11/17	0.0172	N/A	N/A	N/A	N/A	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Chloride (ppm)	250	N/A	11/17	76.7	N/A	12/17	116	N/A	N/A	N/A	N/A	No	Naturally occurring or indicative of road salt contamination
Chromium	.1	.1	11/17	0.00231	N/A	11/17	0.00248	N/A	N/A	N/A	N/A	No	Discharge from steel and pulp mills; erosion of natural deposits
Nickel (ppm)	N/A	N/A	11/17	.0149	N/A	11/17	.00144	N/A	N/A	N/A	N/A	No	Discharge from steel metal factories
Nitrate (ppm)	10	10	11/17	0.41	N/A	11/17	0.50	N/A	N/A	N/A	N/A	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Sodium[1] (ppm)	see footnote	N/A	11/17	63.1	N/A	11/17	39.8	N/A	N/A	N/A	N/A	No	Naturally occurring; road salt; water softeners; animal waste
Sulfate (ppm)	250	N/A	11/17	19.2	N/A	11/17	20.9	N/A	N/A	N/A	N/A	No	Naturally occurring
Zinc (ppm)	5	N/A	11/17	0.0273	N/A	12/17	0.0201	N/A	N/A	N/A	N/A	No	Naturally occurring; mining waste
Color (pt co)	15	N/A	11/17	10	N/A	11/17	10	N/A	N/A	N/A	N/A	No	Naturally occurring

TAP WATER SAMPLES WERE COLLECTED FOR LEAD AND COPPER ANALYSES FROM SAMPLE SITES THROUGHOUT THE COMMUNITY

Substance (Unit of Measure)	Sample Date	AL	MCLG	Amount Detected (90^{th} %tile)	Range Low-High	Sites Above AL/Total Sites	Violation	Typical Source
Copper (ppm) See footnote [2]	9/16	1.3	1.3	0.17	0.0148-0.268	0/35	No	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb) See footnote [2]	9/16	15	0	4.7	ND-8.9	0/35	No	Corrosion of household plumbing systems; erosion of natural deposits

DISINFECTION BYPRODUCTS													
			Hilltop Well Field			Atlas Well Field			Distribution System				
Substance (Unit of Measure)	MCL	MCLG	Sample Date	Amount Detected	Range Low-High	Sample Date	Amount Detected	Range Low-High	Sample Date	Amount Detected	Range Low-High	Violation	Typical Source
Haloacetic Acids (ppb)													
Royal Ridge STP	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Quarterly	9.625 Average	*7.1-11.9*	No	By-product of drinking water disinfection needed to kill harmful organisms
Chelsea Hydrant	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Quarterly	8.525 Average	*5.3-10.9*	No	
Total Trihalomethanes (TTHMs) (ppb)													
Royal Ridge STP	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Quarterly	37.06 Average	26.9-51.3	No	By-product of drinking water chlorination needed to kill harmful organisms. TTHMs are formed when source water contains large amounts of organic matter
Chelsea Hydrant	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Quarterly	22.73 Average	17 – 25.2	No	
Total Organic Carbon (mg/l) See Footnote [3]	TT	N/A	2017	1.36	ND – 2.32	2017	1.39	ND – 2.24	N/A	N/A	N/A	No	Naturally occurring
Turbidity NTU	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Daily 5 Days Per Week	0.12 Average	.09 – .21	No	Soil runoff

Footnotes

1 – Water containing more than 20 ppm of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 ppm of sodium should not be used for drinking by people on moderately restricted sodium diets.

2 – The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below it. The 90th percentile is equal to or greater than 90% of the lead and copper values detected at your water system.

3 – The amount detected is the average of all samples taken in 2017

Definitions:

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Non-Detects (ND): Laboratory analysis indicates that the constituent is not present.

Milligrams per liter (mg/l): Corresponds to one part of liquid in one million parts of liquid (parts per million - ppm).

Micrograms per liter (ug/l): Corresponds to one part of liquid in one billion parts of liquid (parts per billion - ppb).

WHAT DOES THIS INFORMATION MEAN?

As you can see by the table, our system had no violations. We have learned through our testing that some contaminants have been detected; however, these contaminants were detected below the level allowed by the State.

We are required to present the following information on lead in drinking water:

If present, elevated levels of lead can cause serious health problems, especially for pregnant women, infants, and young children. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. **CAMO Pollution Control, Inc.** is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at http://www.epa.gov/safewater/lead.

IS OUR WATER SYSTEM MEETING OTHER RULES THAT GOVERN OPERATIONS?

During 2017, our system was in compliance with applicable State drinking water operating, monitoring and reporting requirements.

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

Although our drinking water met or exceeded state and federal regulations, some people may be more vulnerable to disease causing microorganisms or pathogens in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice from their health care provider about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium, Giardia and other microbial pathogens are available from the Safe Drinking Water Hotline (800-426-4791).

WHY SAVE WATER AND HOW TO AVOID WASTING IT?

Although our system has an adequate amount of water to meet present and future demands, there are a number of reasons why it is important to conserve water:

- Saving water saves energy and some of the costs associated with both of these necessities of life;
- Saving water reduces the cost of energy required to pump water and the need to construct costly new wells, pumping systems and water towers; and
- Saving water lessens the strain on the water system during a dry spell or drought, helping to avoid severe water use restrictions so that essential fire fighting needs are met.

You can play a role in conserving water by becoming conscious of the amount of water your household is using, and by looking for ways to use less whenever you can. It is not hard to conserve water. Conservation tips include:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you can save almost 6,000 gallons per year.
- Check your toilets for leaks by putting a few drops of food coloring in the tank, watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from one of these otherwise invisible toilet leaks. Fix it and you save more than 30,000 gallons a year.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water using appliances, and check the meter after 15 minutes. If it moved, you have a leak.

SYSTEM IMPROVEMENTS

In 2013, the water main extension to the Chelsea/New York City water facility was completed at no expense to the district. This extension of water main, and the agreement with New York City, has given the Town the option of using New York City water when the City's upgrades are complete. In 2014 the water mains were extended to the hamlet of Chelsea.

As noted previously, the water quality in the United Wappinger Water District meets all standards and limits set forth by the State of New York, with no violations regarding water quality. The Dutchess County Health Department formulated a schedule which required the Town to have filters installed. In the fall of 2015 the filter project was completed. Now all the water for United Wappinger Water is filtered and this will improve quality and insure that dangerous viruses cannot enter thorough our source water. Along with the filter project, two separate distribution capital projects were completed in 2015; the MacFarlane Road Loop, and the Meadowood Loop. These additional loops will help to ensure water quality and quantity throughout the system.

In 2018 the town is planning on drilling at least one new well at the Hilltop Well Field. In addition, the filtration system and monitoring system will be replaced at the Meadowood Well Field. Both of these repairs will add to the source capacity.

CLOSING

Thank you for allowing us to continue to provide your family with quality drinking water this year. In order to maintain a safe and dependable water supply, we sometimes need to make improvements that will benefit all of our customers. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements. We ask that all our customers help us protect our water sources, which are the heart of our community. Please call **CAMO Pollution Control, Inc. at (845) 463-7310** if you have questions.

WE ASK THAT ALL OF OUR RESIDENTS BE VIGILANT AND REPORT ANY SUSPICIOUS ACTIVITY IN THE AREA OF OUR WATER TREATMENT PLANT. PLEASE CONTACT LAW ENFORCEMENT AT 911.

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The source water assessment has rated our water source as having an elevated susceptibility to microbial and nitrate contamination. These ratings are due primarily to the close proximity of the wells to a permitted discharge facility (industrial/commercial facilities that discharge wastewater into the environment and are regulated by the state and/or federal government) and the residential land use and related activities in the assessment area. In addition, the wells are located in an area prone to flooding. The county and state health departments will use this information to direct future water protection activities.

Hilltop Water Well Field SWAP Summary

The source water assessment has rated our water source as having an elevated susceptibility to microbials, nitrates, salts, sulfate, industrial solvents, and other industrial contaminants. These ratings are due primarily to the close proximity of the wells to a permitted discharge facility (industrial/commercial facilities that discharge wastewater into the environment and are regulated by the state and/or federal government) and the residential land use and related activities in the assessment area. In addition, the wells are located in an area prone to flooding. While the source water assessment has rated our wells as being susceptible to microbials, please note that our water is disinfected to ensure that the finished water delivered into your home meets New York State's drinking water standards for microbial contamination.

FACTS AND FIGURES

Our water system serves an estimated 14,000 customers through 3,600 service connections. The total water produced in 2018 was 355 million gallons. The daily average of water treated and pumped into the distribution system was 972,739 gallons per day. Our highest single day was 1.5 million gallons. The estimated amount of water delivered to our customers was 323.5 million gallons. This leaves an unaccounted total of 57 million gallons. This water was used for flushing mains, fighting fires, and leaks. In 2018, water customers were billed a minimum of $66.20 for up to and including 2,500 cubic feet, with an additional charge of $1.20 per 100 cubic feet for anything over 2,500 cubic feet.

ARE THERE CONTAMINANTS IN OUR DRINKING WATER?

As the State regulations require, we routinely test your drinking water for numerous contaminants. These contaminants include: asbestos, total coliform, turbidity, inorganic compounds, nitrate, nitrite, lead and copper, volatile organic compounds, total trihalomethanes, haloacetic acids, radiological and synthetic organic compounds. The table presented below depicts all compounds which were detected in your drinking water. The State allows us to test for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

It should be noted that all drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791) or the Dutchess County Health Department at (845) 486-3404.

INORGANICS													
			Hilltop Well Field			Atlas Well Field			Distribution System				
Substance (Unit of Measure)	MCL	MCLG	Sample Date	Amount Detected	Range Low-High	Sample Date	Amount Detected	Range Low-High	Sample Date	Amount Detected	Range Low-High	Violation	Typical Source
Antimony (ppm)	0.006	N/A	12/18	0.004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder.
Barium (ppm)	2	2	12/18	0.0095	N/A	12/18	0.0139	N/A	N/A	N/A	N/A	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Chloride (ppm) Note 3	250	N/A	2018	127.0	76.1-148	2018	68.6	57.2-76.7	N/A	N/A	N/A	No	Naturally occurring or indicative of road salt contamination
Manganese (ppm)	0.3	N/A	12/18	.0084	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	Naturally occurring
Nickel (ppm)	N/A	N/A	12/18	0.0007	N/A	12/18	0.0008	N/A	N/A	N/A	N/A	No	Discharge from steel metal factories
Nitrate (ppm)	10	10	12/18	0.760	N/A	12/18	0.766	N/A	N/A	N/A	N/A	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Odor (TON)	3 TON	N/A	12/18	1	N/A	12/18	1	N/A	N/A	N/A	N/A	No	Naturally occurring
Sodium[1] (ppm) Note 3	see footnote	N/A	2018	86.7	46.8-107	2018	45.6	38.9-51.9	N/A	N/A	N/A	No	Naturally occurring; road salt; water softeners; animal waste
Sulfate (ppm)	250	N/A	12/18	17.4	N/A	12/18	18.7	N/A	N/A	N/A	N/A	No	Naturally occurring
Zinc (ppm)	5	N/A	12/18	0.0131	N/A	12/18	0.0079	N/A	N/A	N/A	N/A	No	Naturally occurring; mining waste
Color (pt co)	15	N/A	12/18	5	N/A	12/18	2	N/A	N/A	N/A	N/A	No	Naturally occurring

TAP WATER SAMPLES WERE COLLECTED FOR LEAD AND COPPER ANALYSES FROM SAMPLE SITES THROUGHOUT THE COMMUNITY

Substance (Unit of Measure)	Sample Date	AL	MCLG	Amount Detected (90th %tile)	Range Low-High	Sites Above AL/Total Sites	Violation	Typical Source
Copper (ppm) See footnote [2]	9/16	1.3	1.3	0.17	0.0148-0.268	0/35	No	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb) See footnote [2]	9/16	15	0	4.7	ND-8.9	0/35	No	Corrosion of household plumbing systems; erosion of natural deposits

DISINFECTION BYPRODUCTS													
			Hilltop Well Field			Atlas Well Field			Distribution System				
Substance (Unit of Measure)	MCL	MCLG	Sample Date	Amount Detected	Range Low-High	Sample Date	Amount Detected	Range Low-High	Sample Date	Amount Detected	Range Low-High	Violation	Typical Source
Haloacetic Acids (ppb) Royal Ridge STP Chelsea Hydrant	 60 60	 N/A N/A	 N/A N/A	 N/A N/A	 N/A N/A	 N/A N/A	 N/A N/A	 N/A N/A	 Quarterly Quarterly	 10.9 Average 7.5 Average	 *8.1-13.4* *3.7-12.7*	 No No	By-product of drinking water disinfection needed to kill harmful organisms
Total Trihalomethanes (TTHMs) (ppb) Royal Ridge STP Chelsea Hydrant	 80 80	 N/A N/A	 N/A N/A	 N/A N/A	 N/A N/A	 N/A N/A	 N/A N/A	 N/A N/A	 Quarterly Quarterly	 32.25 Average 27.2 Average	 31.1-33.9 16.1 – 52	 No No	By-product of drinking water chlorination needed to kill harmful organisms. TTHMs are formed when source water contains large amounts of organic matter
Total Organic Carbon (mg/l) See Footnote [3]	TT	N/A	2018	1.09	ND – 2.62	2018	1.85	ND – 3.63	N/A	N/A	N/A	No	Naturally occurring
Turbidity NTU	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Daily 5 Days Per Week	0.146 Average	.080 – .900	No	Soil runoff

UNREGULATED CONTAMINANTS -see note 4 below							
			Atlas Well Field				
Substance (Unit of Measure)	MCL	MCLG	Sample Date	Amount Detected	Range Low-High	Violation	Typical Source
Perfluorooctanoic acid (PFOA)							
Well 1	N/A	70	9/19/2018	3.86	N/A	No	See attached fact sheet
Well 3	N/A	70	9/19/2018	2.52	N/A	No	
Well 5	N/A	70	9/19/2018	3.54	N/A	No	
Well 6	N/A	70	9/19/2018	3.92	N/A	No	
POE	N/A	70	9/19/2018	3.83	N/A	No	
Perfluorooctanesulfonic acid (PFOS)							
Well 1	N/A	70	9/19/2018	8.14	N/A	No	See attached fact sheet
Well 3	N/A	70	9/19/2018	8.43	N/A	No	
Well 5	N/A	70	9/19/2018	12.7	N/A	No	
Well 6	N/A	70	9/19/2018	3.99	N/A	No	
POE	N/A	70	9/19/2018	7.52	N/A	No	
Perfluorobutanesulfonic acid (PFBS)							
Well 1	N/A	N/A	9/19/2018	2.10	N/A	No	See attached fact sheet
Well 3	N/A	N/A	9/19/2018	2.14	N/A	No	
Well 4	N/A	N/A	9/19/2018	1.93	N/A	No	
Well 6	N/A	N/A	9/19/2018	2.02	N/A	No	
POE	N/A	N/A	9/19/2018	2.14	N/A	No	
Perfluorohexanesulfonic acid (PFHxS)							
Well 1	N/A	N/A	9/19/2018	2.78	N/A	No	See attached fact sheet
Well 3	N/A	N/A	9/19/2018	3.81	N/A	No	
Well 5	N/A	N/A	9/19/2018	3.83	N/A	No	
Well 6	N/A	N/A	9/19/2018	1.91	N/A	No	
POE	N/A	N/A	9/19/2018	2.81	N/A	No	

Footnotes

1 – Water containing more than 20 ppm of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 ppm of sodium should not be used for drinking by people on moderately restricted sodium diets.

2 – The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below it. The 90th percentile is equal to or greater than 90% of the lead and copper values detected at your water system.

3 – The amount detected is the average of all samples taken in 2018.

4 – See attached fact sheet regarding these contaminants.

Definitions:
Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible.
Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.
Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.
Non-Detects (ND): Laboratory analysis indicates that the constituent is not present.
Milligrams per liter (mg/l): Corresponds to one part of liquid in one million parts of liquid (parts per million - ppm).
Micrograms per liter (ug/l): Corresponds to one part of liquid in one billion parts of liquid (parts per billion - ppb).

WHAT DOES THIS INFORMATION MEAN?

As you can see by the table, our system had no violations. We have learned through our testing that some contaminants have been detected; however, these contaminants were detected below the level allowed by the State.

We are required to present the following information on lead in drinking water:

If present, elevated levels of lead can cause serious health problems, especially for pregnant women, infants, and young children. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. **CAMO Pollution Control, Inc.** is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at http://www.epa.gov/safewater/lead.

IS OUR WATER SYSTEM MEETING OTHER RULES THAT GOVERN OPERATIONS?

During 2018, our system was in compliance with applicable State drinking water operating, monitoring and reporting requirements.

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

Although our drinking water met or exceeded state and federal regulations, some people may be more vulnerable to disease causing microorganisms or pathogens in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice from their health care provider about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium, Giardia and other microbial pathogens are available from the Safe Drinking Water Hotline (800-426-4791).

WHY SAVE WATER AND HOW TO AVOID WASTING IT?

Although our system has an adequate amount of water to meet present and future demands, there are a number of reasons why it is important to conserve water:

- Saving water saves energy and some of the costs associated with both of these necessities of life;
- Saving water reduces the cost of energy required to pump water and the need to construct costly new wells, pumping systems and water towers; and
- Saving water lessens the strain on the water system during a dry spell or drought, helping to avoid severe water use restrictions so that essential fire fighting needs are met.

You can play a role in conserving water by becoming conscious of the amount of water your household is using, and by looking for ways to use less whenever you can. It is not hard to conserve water. Conservation tips include:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you can save almost 6,000 gallons per year.
- Check your toilets for leaks by putting a few drops of food coloring in the tank, watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from one of these otherwise invisible toilet leaks. Fix it and you save more than 30,000 gallons a year.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water using appliances, and check the meter after 15 minutes. If it moved, you have a leak.

SYSTEM IMPROVEMENTS

In 2013, the water main extension to the Chelsea/New York City water facility was completed at no expense to the district. This extension of water main, and the agreement with New York City, has given the Town the option of using New York City water when the City's upgrades are complete. In 2014 the water mains were extended to the hamlet of Chelsea.

As noted previously, the water quality in the United Wappinger Water District meets all standards and limits set forth by the State of New York, with no violations regarding water quality. The Dutchess County Health Department formulated a schedule which required the Town to have filters installed. In the fall of 2015, the filter project was completed. Now all the water for United Wappinger Water is filtered and this will improve quality and insure that dangerous viruses cannot enter thorough our source water. Along with the filter project, two separate distribution capital projects were completed in 2015; the MacFarlane Road Loop, and the Meadowood Loop. These additional loops will help to ensure water quality and quantity throughout the system.

In 2019 the emergency connection to the 82 homes of the Tall Trees Development was terminated and a permanent connection was installed. Additionally, the Town has an approved plan for 2020 to activate two (2) new wells and filters at the Meadowood Water Plant.

CLOSING

Thank you for allowing us to continue to provide your family with quality drinking water this year. In order to maintain a safe and dependable water supply, we sometimes need to make improvements that will benefit all of our customers. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements. We ask that all our customers help us protect our water sources, which are the heart of our community. Please call **CAMO Pollution Control, Inc. at (845) 463-7310** if you have questions.

WE ASK THAT ALL OF OUR RESIDENTS BE VIGILANT AND REPORT ANY SUSPICIOUS ACTIVITY IN THE AREA OF OUR WATER TREATMENT PLANT. PLEASE CONTACT LAW ENFORCEMENT AT 911.

EPA
United States
Environmental Protection
Agency

Emerging Contaminants – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)

March 2014

EMERGING CONTAMINANTS FACT SHEET – PFOS and PFOA

At a Glance

- Fully fluorinated compounds that are human-made substances and are not naturally found in the environment.
- Used as a surface-active agent and in a variety of products, such as firefighting foams, coating additives and cleaning products.
- Do not hydrolyze, photolyze or biodegrade under typical environmental conditions and are extremely persistent in the environment.
- Studies have shown they have the potential to bioaccumulate and biomagnify in wildlife.
- Readily absorbed after oral exposure and accumulate primarily in the serum, kidney and liver.
- Toxicological studies on animals indicate potential developmental, reproductive and systemic effects.
- Health-based advisories or screening levels for PFOS and PFOA have been developed by the EPA and state agencies.
- Standard detection methods include high-performance liquid chromatography and tandem mass spectrometry.
- Common ex situ water treatment technologies include activated carbon filters and reverse osmosis units.

Introduction

An "emerging contaminant" is a chemical or material that is characterized by a perceived, potential, or real threat to human health or the environment or by a lack of published health standards. A contaminant may also be "emerging" because a new source or a new pathway to humans has been discovered or a new detection method or treatment technology has been developed (DoD 2011). This fact sheet, developed by the U.S. Environmental Protection Agency (EPA) Federal Facilities Restoration and Reuse Office (FFRRO), provides a summary of the emerging contaminants perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), including physical and chemical properties; environmental and health impacts; existing federal and state guidelines; detection and treatment methods; and additional sources of information. This fact sheet is intended for use by site managers who may address PFOS and PFOA at cleanup sites or in drinking water supplies and for those in a position to consider whether these chemicals should be added to the analytical suite for site investigations.

PFOS and PFOA are extremely persistent in the environment and resistant to typical environmental degradation processes. As a result, they are widely distributed across the higher trophic levels and are found in soil, air and groundwater at sites across the United States. The toxicity, mobility and bioaccumulation potential of PFOS and PFOA pose potential adverse effects for the environment and human health.

What are PFOS and PFOA?

- PFOS and PFOA are fully fluorinated, organic compounds and are the two perfluorinated chemicals (PFCs) that have been produced in the largest amounts within the United States (ATSDR 2009; EFSA 2008).
- PFOS is a perfluoralkyl sulfonate that is commonly used as a simple salt (such as potassium, sodium or ammonium) or is incorporated into larger polymers (EFSA 2008; EPA 2009c).
- PFOA is a perfluoralkyl carboxylate that is produced synthetically as a salt. Ammonium salt is the most widely produced form (EFSA 2008; EPA 2009c).

What are PFOS and PFOA? (continued)

- PFOS synonyms include 1-octanesulfonic acid, heptadecafluoro-, 1-perfluorooctanesulfonic acid, heptadecafluoro-1-octanesulfonic acid, perfluoro-n-octanesulfonic acid, perfluoroctanesulfonic acid and perfluoroctylsulfonic acid (ATSDR 2009; UNEP 2005).
- PFOA synonyms include pentadecafluoro1-octanoic acid, pentadecafluoro-n-octanoic acid, pentadecaflurooctanoic acid, perfluorocaprylic acid, perfluoroctanoic acid, perfluoroheptanecarboxylic acid and octanoic acid (ATSDR 2009).
- They are stable chemicals that include long carbon chains. Because of their unique lipid- and water-repellent characteristics, PFOS and PFOA are used as surface-active agents in various high-temperature applications and as a coating on surfaces that contact with strong acids or bases (Schultz and others 2003; UNEP 2005).
- PFCs are used in a wide variety of industrial and commercial products such as textiles and leather products, metal plating, the photographic industry, photolithography, semi-conductors, paper and packaging, coating additives, cleaning products and pesticides (ATSDR 2009; EPA 2009c; OECD 2002).
- Through 2001, PFCs were used to manufacture Aqueous Film Forming Foam (AFFF). PFOS-based AFFF is used to extinguish flammable liquid fires (for example, hydrocarbon fueled), such as fires involving gas tankers and oil refineries (EPA 2013a; DoD SERDP 2012).
- They are human-made compounds and do not occur naturally in the environment (ATSDR 2009; EPA 2009c).
- PFOS and PFOA can also be formed by environmental microbial degradation or by metabolism in larger organisms from a large group of related substances or precursor compounds (ATSDR 2009; UNEP 2006).
- The 3M Company, the primary manufacturer of PFOS, completed a voluntary phase-out of PFOS production in 2002 (ATSDR 2009; 3M 2008).

Exhibit 1: Physical and Chemical Properties of PFOS and PFOA
(ATSDR 2009; Brooke and others 2004; EFSA 2008; Environment Canada 2012; EPA 2002b; OECD 2002; UNEP 2006)

Property	PFOS (Potassium Salt)	PFOA (Free Acid)
Chemical Abstracts Service (CAS) Number	2795-39-3	335-67-1
Physical Description (physical state at room temperature and atmospheric pressure)	White powder	White powder/ waxy white solid
Molecular weight (g/mol)	538	414
Water solubility at 25°C (mg/L)	550 to 570 (purified), 370 (fresh water), 25 (filtered sea water)	9.5 X 10^3(purified)
Melting Point (°C)	> 400	45 to 54
Boiling point (°C)	Not measurable	188 to 192
Vapor pressure at 20 °C (mm Hg)	2.48 X10^{-6}	0.017[1]
Octanol-water partition coefficient (log K_{ow})	Not measurable	Not measurable
Organic-carbon partition coefficient (log K_{oc})	2.57 (Value estimated based on anion and not the salt)	2.06
Henry's law constant (atm-m^3/mol)	3.05 × 10^{-9}	Not measurable
Half-Life	Atmospheric: 114 days Water: > 41 years (at 25° C)	Atmospheric: 90 days[2] Water: > 92 years (at 25° C)

Abbreviations: g/mol – grams per mole; mg/L – milligrams per liter; °C – degree Celsius; mm Hg – millimeters of mercury; atm-m^3/mol – atmosphere-cubic meters per mole.
[1] Extrapolation from measurement.
[2] The atmospheric half-life value identified for PFOA is estimated based on available data determined from short study periods.

What are PFOS and PFOA? (continued)

- PFOS chemicals are no longer manufactured in the United States; however, EPA significant new use rules (SNURs) allow for the continuation of a few, limited, highly technical applications of PFOS-related substances where no known alternatives are available. In addition, existing stocks of PFC-based chemicals that were manufactured or imported into the United States before the effective date of the SNURs (for example, PFOS-based AFFF produced before the rules took effect in 2002) can still be used (EPA 2009c, 2013a).
- PFOA as its ammonium salt is manufactured primarily for use as an aqueous dispersion agent and in the manufacture of fluoropolymers (which are used in a wide variety of mechanical and industrial components) such as electrical wire casings, fire- and chemical-resistant tubing and plumbing seal tape. They are also produced unintentionally by the degradation of some fluorotelomers (ATSDR 2009; EPA 2009c).
- As part of the EPA's PFOA stewardship program, eight companies committed to achieve the following by 2010: (1) reduce global facility emissions of PFOA to all media; (2) reduce precursor chemicals that break down to PFOA and related higher homologue chemicals; and (3) PFOA product content (95 percent). The companies also agreed to work toward eliminating these chemicals from emissions and products by 2015 (EPA 2013a).

What are the environmental impacts of PFOS and PFOA?

- During past manufacturing processes, large amounts of PFOS and PFOA were released to the air, water and soil in and around fluorochemical facilities (ATSDR 2009).
- PFOS and PFOA have been detected in a number of U.S. cities in surface water and sediments downstream of former fluorochemical production facilities and in wastewater treatment plant effluent, sewage sludge and landfill leachate (EPA 2002b; OECD 2002).
- The environmental release of PFOS-based AFFF may also occur from tank and supply line leaks, use of aircraft hangar fire suppression systems and firefighting training (DoD SERDP 2012).
- Both PFOS and PFOA are the stable end products resulting from the degradation of precursor substances through a variety of abiotic and biotic transformation pathways (Conder and others 2010).
- Because of their chemical structure, PFCs, including PFOS and PFOA, are chemically and biologically stable in the environment and resist typical environmental degradation processes, including atmospheric photooxidation, direct photolysis and hydrolysis. As a result, these chemicals are extremely persistent in the environment (OECD 2002; Schultz and others 2003).
- PFOS and PFOA have very low volatility because of their ionic nature. Therefore, they will be persistent in water and soil (3M 2000; ATSDR 2009).
- When released directly to the atmosphere, PFCs are expected to adsorb to particles and settle to the ground through wet or dry deposition (Barton and others 2007; Hurley and others 2004).
- In their anionic forms, PFOA and PFOS are water-soluble and can migrate readily from soil to groundwater, where they can be transported long distances (Davis and others 2007; Post and others 2012).
- Monitoring data from the Arctic region and at sites remote from known point sources have shown levels of PFOS and PFOA in environmental media and biota, indicating that long-range transport has occurred. For example, PFOA and PFOS have been detected in concentrations from the low- to mid- picograms per liter (pg/L) range in remote regions of the Arctic caps. In addition, PFOS concentrations detected in the liver of the Canadian Arctic polar bear range from 1,700 to more than 4,000 nanograms per gram (ng/g) (Lau and others 2007; Martin and others 2004; Young and others 2007).
- Causes of long-range PFC transport include (1) atmospheric transport of precursor compounds (such as perfluoroalkyl sulfonamides), followed by degradation to form PFCs and (2) direct, long-range transport of PFCs via ocean currents or in the form of marine aerosols (Armitage and others 2006; Post and others 2012).

What are the environmental impacts of PFOS and PFOA? (continued)

- The wide distribution of PFCs increases the potential for bioaccumulation and bioconcentration as they are transferred from low to higher trophic level organisms. Because of their persistence and long-term accumulation, higher trophic level wildlife such as fish, piscivorous birds and other biota can continue to be exposed to PFOS and PFOA (EPA 2006a; UNEP 2006).
- The bioaccumulation potential of PFCs increases with increasing carbon chain length (ATSDR 2009; Furdui and others 2007).
- PFOS is the only PFC that has been shown to accumulate to levels of concern in fish tissue. The estimated bioconcentration factor in fish ranges from 1,000 to 4,000 (EFSA 2008; MDH 2011; OECD 2002).
- As of 2013, the Superfund Information Systems Database indicates PFCs have been reported in the 5-year reviews of 14 hazardous waste sites on the EPA National Priorities List (EPA 2013b).
- Data gathered in 2008 from the DoD Knowledge Based Corporate Reporting System show that 594 DoD facilities have been categorized as Fire/Crash/Training Sites and, therefore, have the potential for PFC contamination based on historical use of AFFF (DoD 2008; DoD SERDP 2012).

What are the routes of exposure and the health effects of PFOS and PFOA?

- Studies have found PFOS and PFOA in the blood samples of the general human population and wildlife nationwide, indicating that exposure to the chemicals is widespread (ATSDR 2009; EPA 2006a).
- Reported data indicate that serum concentrations of PFOS and PFOA are higher in workers and individuals living near fluorochemical production facilities than for the general population (Calafat and others 2007; EPA 2009c).
- Potential pathways, which may lead to widespread exposure, include ingestion of food and water, use of commercial products or inhalation from long-range air transport of PFC-containing particulate matter (ATSDR 2009; EPA 2009c).
- Based on the limited information available, fish and fishery products seem to be one of the primary sources of human exposure to PFOS (EFSA 2008).
- While a federal screening level or toxicity value for the consumption of fish has not yet been established, the Dutch National Institute for Public Health and the Environment has calculated a maximum permissible concentration for PFOS of 0.65 nanograms per liter (ng/L) for fresh water (based on consumption of fish by humans as the most critical route) (Moermond and others 2010).
- Studies also indicate that continued exposure to low levels of PFOA in drinking water may result in adverse health effects (Post and others 2012).
- Toxicology studies show that PFOS and PFOA are readily absorbed after oral exposure and accumulate primarily in the serum, kidney and liver. No further metabolism is expected (EPA 2006a, 2009c).
- PFOS and PFOA have half-lives in humans ranging from 2 to 9 years, depending on the study. This half-life results in continued exposure that could increase body burdens to levels that would result in adverse outcomes (ATSDR 2009; EPA 2009c; Kärrman and others 2006; Olsen and others 2007).
- Acute- and intermediate-duration oral studies on rodents have raised concerns about potential developmental, reproductive and other systemic effects of PFOS and PFOA (Austin and others 2003; EPA 2006a).
- The ingestion of PFOA-contaminated water was found to cause adverse effects on mammary gland development in mice (Post and others 2012).
- One study indicated that exposure to PFOS can affect the neuroendocrine system in rats; however, the mechanism by which PFOS affects brain neurotransmitters is still unclear (Austin and others 2003).
- Both PFOS and PFOA have a high affinity for binding to B-lipoproteins and liver fatty acid-binding protein. Several studies on animals have shown that these compounds can interfere with fatty acid metabolism and may deregulate metabolism of lipids and lipoproteins (EFSA 2008; EPA 2009c).

What are the routes of exposure and the health effects of PFOS and PFOA? (continued)

- In May 2006, the EPA Science Advisory Board suggested that PFOA cancer data are consistent with the EPA guidelines for the Carcinogen Risk Assessment descriptor "likely to be carcinogenic to humans." EPA is still evaluating this information and additional research pertaining to the carcinogenicity of PFOA (EPA 2006b, 2013a).
- The American Conference of Governmental Industrial Hygienists (ACGIH) has classified PFOA as a Group A3 carcinogen — confirmed animal carcinogen with unknown relevance to humans (ACGIH 2002).
- The chronic exposure to PFOS and PFOA can lead to the development of tumors in the liver of rats; however, more research is needed to determine if there are similar cancer risks for humans (ATSDR 2009; OECD 2002).
- In a retrospective cohort mortality study of more than 6,000 PFOA-exposed employees at one plant, results identified elevated standardized mortality ratios for kidney cancer and a statistically significant increase in diabetes mortality for male workers. The study noted that additional investigations are needed to confirm these findings (DuPont 2006; Lau and others 2007).
- Studies have shown that PFCs may induce modest effects on reactive oxygen species and deoxyribonucleic acid (DNA) damage in the cells of the human liver (Eriksen and others 2010; Reistad and others 2013).
- Analysis of U.S. National Health and Nutrition Examination Survey representative study samples indicate that higher concentrations of serum PFOA and PFOS are associated with thyroid disease in the U.S. general adult population. Further analysis is needed to identify the mechanisms underlying this association (Melzer and others 2010).
- Epidemiologic studies have shown an association between PFOS exposure and bladder cancer; however, further research and analysis are needed to understand this association (Alexander and others 2004; Lau and others 2007).

Are there any federal and state guidelines and health standards for PFOS and PFOA?

- In January 2009, the EPA's Office of Water established a provisional health advisory (PHA) of 0.2 micrograms per liter (µg/L) for PFOS and 0.4 µg/L for PFOA to assess the potential risk from short-term exposure of these chemicals through drinking water. PHAs reflect reasonable, health-based hazard concentrations above which action should be taken to reduce exposure to unregulated contaminants in drinking water (EPA 2009d, 2013a).
- EPA Region 4 calculated a residential soil screening level of 6 milligrams per kilogram (mg/kg) for PFOS and 16 mg/kg for PFOA (EPA Region 4 2009).
- Various states have established drinking water and groundwater guidelines, including the following:
  - Minnesota has established a chronic health risk limit of 0.3 µg/L for PFOS and PFOA in drinking water (MDH 2011).
  - New Jersey has established a preliminary health-based guidance value of 0.04 µg/L for PFOA in drinking water (NJDEP 2013).
  - North Carolina has established an interim maximum allowable concentration (IMAC) of 2 µg/L for PFOA in groundwater (NCDENR 2006).
    - In 2010, the North Carolina Secretary's Science Advisory Board (NCSAB) on Toxic Air Pollutants recommended that the IMAC be reduced to 1 µg/L based on a review of the toxicological literature and discussions with scientists conducting research on the health effects associated with exposure to PFOA. As of February 2014, the NCSAB's recommendation was still pending review by the North Carolina Division of Water Quality (NCSAB 2010).
- Under the Toxic Substances Control Act (TSCA), the EPA finalized two SNURs in 2002 for 88 PFOS-related substances, which require companies to notify the EPA 90 days before starting to manufacture or importing these substances for a significant new use; this pre-notification allows time to evaluate the new use (EPA 2002a, 2013a).
- In 2007, the SNURs were amended to include 183 additional PFOS-related substances (EPA 2006a, 2013a).

Are there any federal and state guidelines and health standards for PFOS and PFOA? (continued)

- On September 30, 2013, the EPA issued a final SNUR requiring companies to report 90 days in advance of all new uses of long-chain perfluoroalkyl carboxylic (LCPFAC) chemicals (defined as having perfluorinated carbon chain lengths equal to or greater than seven carbons and less than or equal to 20 carbons) for use as part of carpets or to treat carpets, including the import of new carpet containing LCPFACs. In addition, the EPA is amending the existing SNUR to add PFOS-related substances that have completed the TSCA new chemical review process but have not yet commenced production or importation, and to designate processing as a significant new use (EPA 2012, 2013a).
- The SNURs allow for continued use for a few highly technical applications of PFOS-related substances where no alternatives are available; these specialized uses are characterized by very low volume, low exposure and low releases (EPA 2009c, 2013a).
- The Agency for Toxic Substances and Disease Registry has not established a minimal risk level (MRL) for PFOS or PFOA; when the draft toxicological profile was published, human studies were insufficient to determine with a sufficient degree of certainty that the effects are either exposure-related or adverse (ATSDR 2009).
- The EPA has not derived a chronic oral reference dose (RfD) or chronic inhalation reference concentration (RfC) for PFOS or PFOA and has not classified PFOS or PFOA carcinogenicity.
- The EPA removed PFOS and PFOA from the Integrated Risk Information System (IRIS) agenda in a Federal Register notice released on October 18, 2010. At this time, EPA is not conducting an IRIS assessment for these chemicals (EPA 2010).
- PFOS and PFOA were included on the third drinking water contaminant candidate list, which is a list of unregulated contaminants that are known to, or anticipated to, occur in public water systems and may require regulation under the Safe Drinking Water Act (EPA 2009a).

What detection and site characterization methods are available for PFOS and PFOA?

- PFOS and PFOA are commonly deposited in the environment as discrete particles with strongly heterogeneous spatial distributions. Unless precautions are taken, this distribution causes highly variable soil data that can lead to confusing or contradictory conclusions about the location and degree of contamination. Proper sample collection (using an incremental field sampling approach), sample processing (which includes grinding) and incremental subsampling are required to obtain reliable soil data (EPA 2003, 2013c).
- PFOS and PFOA in anionic form can be extracted from environmental media by conventional methods using either acidification or ion pairing to obtain a neutral form of the analyte. Sample preparation methods used for PFCs have included solvent extraction, ion-pair extraction, solid-phase extraction and column-switching extraction (Flaherty and others 2005).
- Precursors and intermediate degradation products can be extracted using solvents (Dasu and others 2012; Ellington and others 2009).
- Air samples may be collected using high-volume air samplers that employ sampling modules containing glass-fiber filters and glass columns with a polyurethane foam (Jahnke and others 2007a).
- Detection methods for PFCs are primarily based on high-performance liquid chromatography (HPLC) coupled with tandem mass spectrometry (MS/MS). HPLC-MS/MS has allowed for more sensitive determinations of individual PFOS and PFOA in air, water and soil (EFSA 2008; Jahnke and others 2007b; Washington and others 2008).
- Both liquid chromatography (LC)-MS/MS and gas chromatography-mass spectrometry (GC-MS) can be used to identify the precursors of PFOS and PFOA (EFSA 2008).
- EPA Method 537, Version 1.1, is an LC-MS/MS method used to analyze selected perfluorinated alkyl acids in drinking water. While most sampling protocols for organic compounds require sample collection in glass, this method requires plastic sample bottles because PFCs are known to adhere to glass (EPA 2009b).
- The development of LC - electrospray ionization (ESI) MS and LC-MS/MS has improved the analysis of PFOS and PFOA (EFSA 2008).
- Reported sensitivities for the available detection methods include low picograms per cubic meter (pg/m^3) levels in air, high picograms per liter (pg/L) to low ng/L levels in water and high picogram per gram to low ng/g levels in soil (ATSDR 2009).

What technologies are being used to treat PFOS and PFOA?

- Because of their unique physicochemical properties (strong fluorine-carbon bond and low vapor pressure), PFOS and PFOA resist most conventional in situ treatment technologies, such as direct oxidation (Hartten 2009; Vectis and others 2009).
- Factors to consider when selecting a treatment method in all media include: (1) initial concentration of PFCs; (2) the background organic and metal concentration; (3) available degradation time; and (4) other site-specific conditions (Vectis and others 2009).
- Ex situ treatments including activated carbon filters, nanofiltration and reverse osmosis units have been shown to remove PFCs from water; however, incineration of the concentrated waste would be needed for the complete destruction of PFCs (Hartten 2009; MDH 2008; Vectis and others 2009).
- Research into a cost-effective treatment approach for PFOS and PFOA is ongoing (DoD SERDP 2012).
- Alternative technologies studied for PFOS and PFOA degradation in water, soil and solid waste include photochemical oxidation and thermally induced reduction, which have achieved some bench-scale success (Hartten 2009; Vectis and others 2009).
- Laboratory-scale studies have also evaluated sonochemical degradation (that is, ultrasonic irradiation) to treat PFOS and PFOA in groundwater and have reported a sonochemical degradation half-life less than 30 minutes for both PFOS and PFOA (Cheng and others 2008, 2010).
- Results from a laboratory-scale study suggested the promising potential of using a double-layer permeable reactive barrier (DL-PRB) system for the in situ containment of PFC-contaminated soil and groundwater. The DL-PRB system is composed of an oxidant-releasing material layer followed by a layer of quartz sands immobilized with humification enzymes. The system drives enzyme-catalyzed oxidative humification reactions to degrade PFCs in the PRB (DoD SERDP 2013).
- In situ chemical oxidation is being explored as a possible means to treat PFCs in water. Laboratory-scale study results indicate that heat-activated persulfate and permanganate can effectively degrade PFOS and PFOA in water (Liu and others 2012a, b).

Where can I find more information about PFOS and PFOA?

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Contact Information

If you have any questions or comments on this fact sheet, please contact: Mary Cooke, FFRRO, by phone at (703) 603-8712 or by email at cooke.maryt@epa.gov.

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

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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. AOC-7, ARFF / Maintenance Building: 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

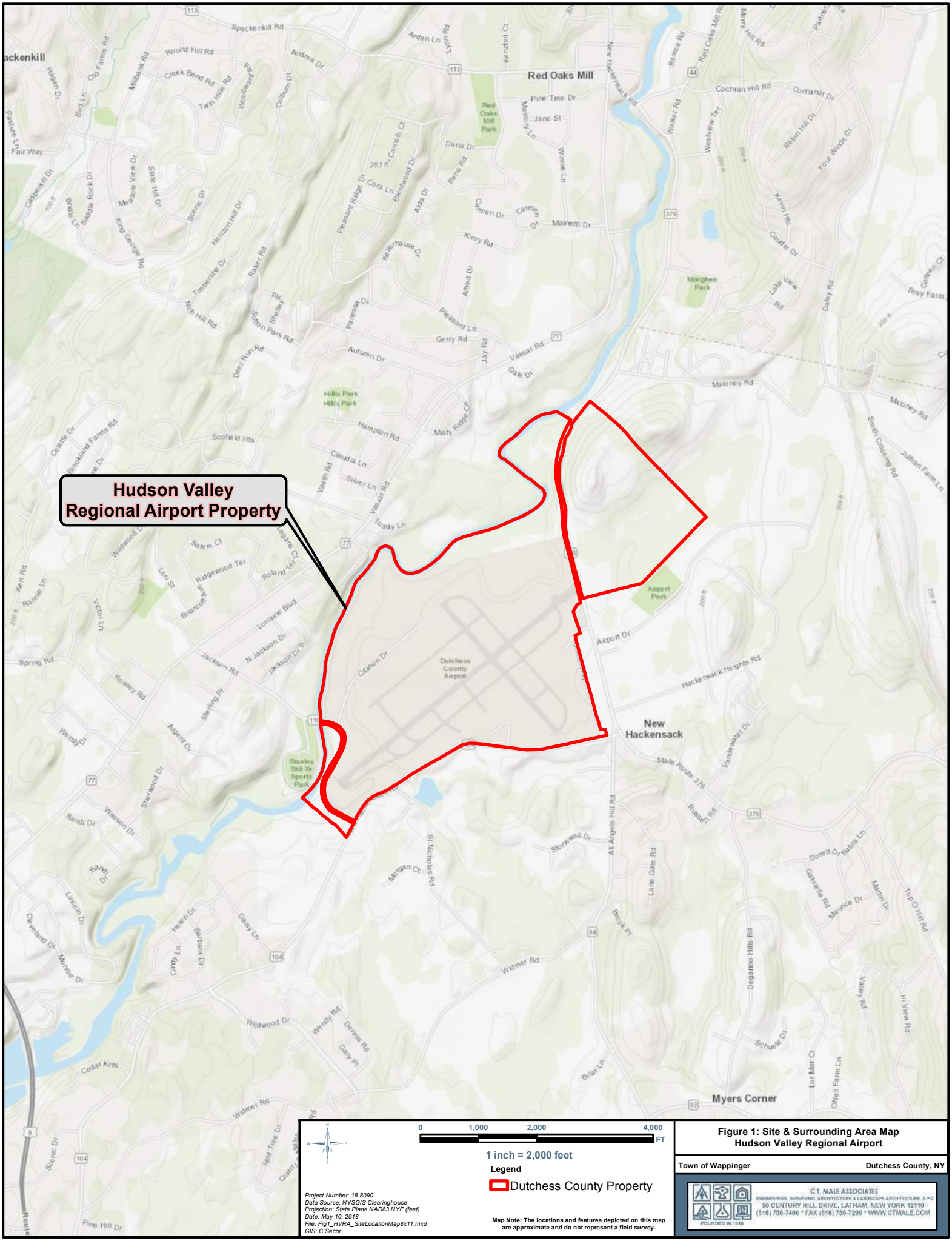

Figure 1: Site & Surrounding Area Map
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

C.T. MALE ASSOCIATES
ENGINEERING, SURVEYING, ARCHITECTURE & LANDSCAPE ARCHITECTURE, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NEW YORK 12110
(518) 786-7400 * FAX (518) 786-7299 * WWW.CTMALE.COM
FOUNDED IN 1910

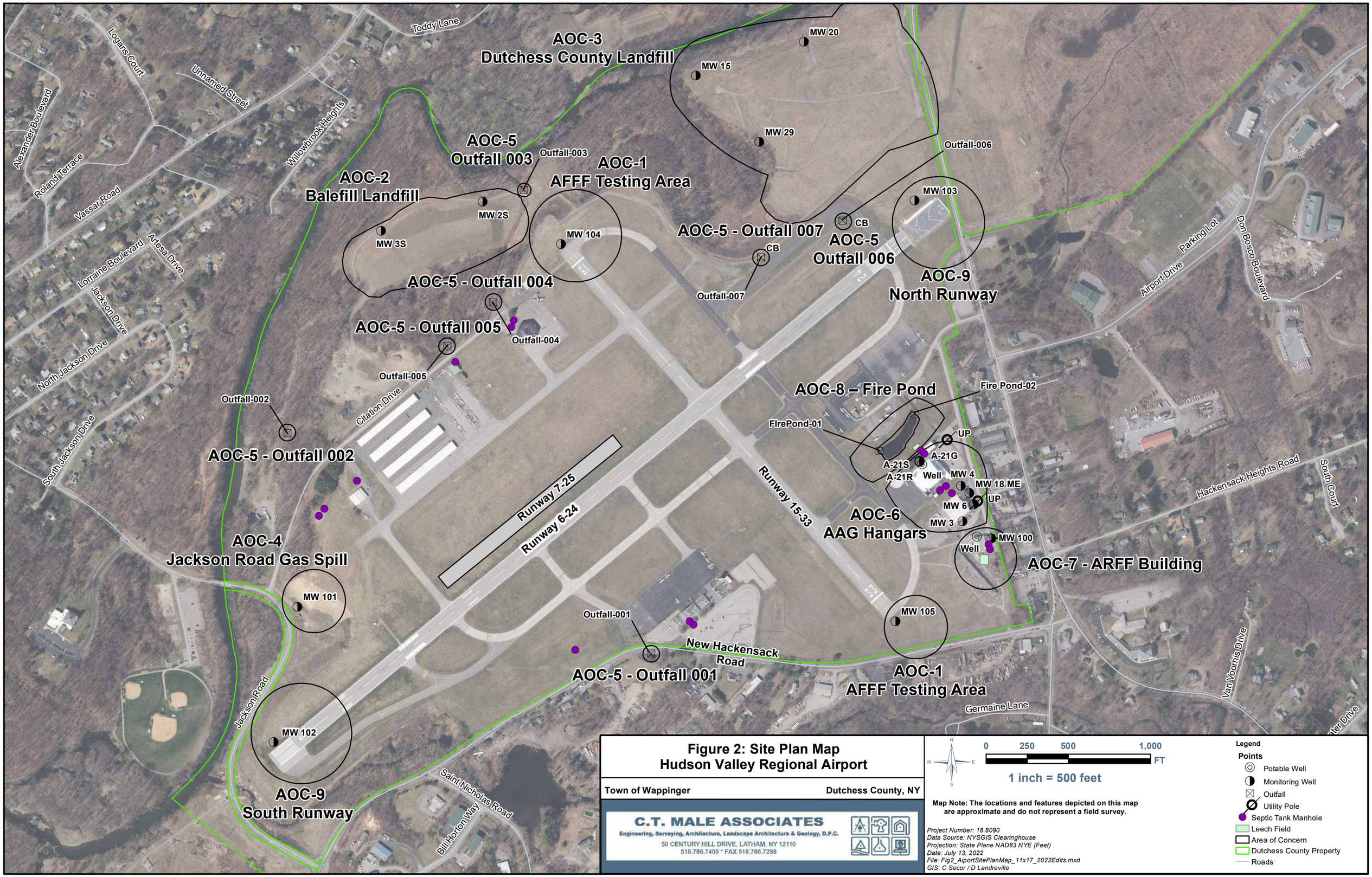

Figure 2: Site Plan Map
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110
518.786.7400 * FAX 518.786.7299

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.

Project Number: 18.8090
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (Feet)
Date: July 13, 2022
File: Fig2_AiportSitePlanMap_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend

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

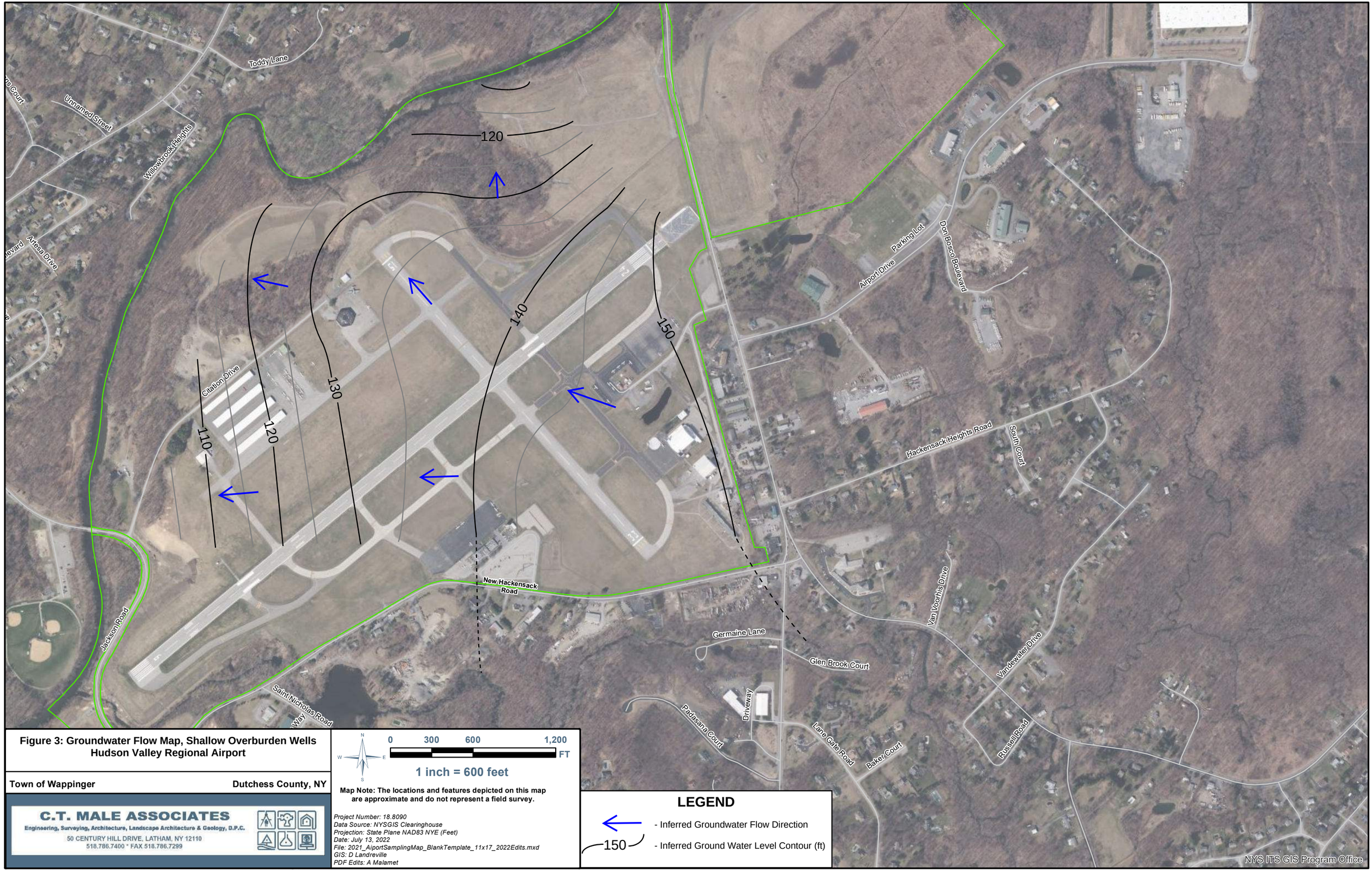

Figure 3: Groundwater Flow Map, Shallow Overburden Wells
Hudson Valley Regional Airport

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C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110
518.786.7400 * FAX 518.786.7299

N W E S

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)

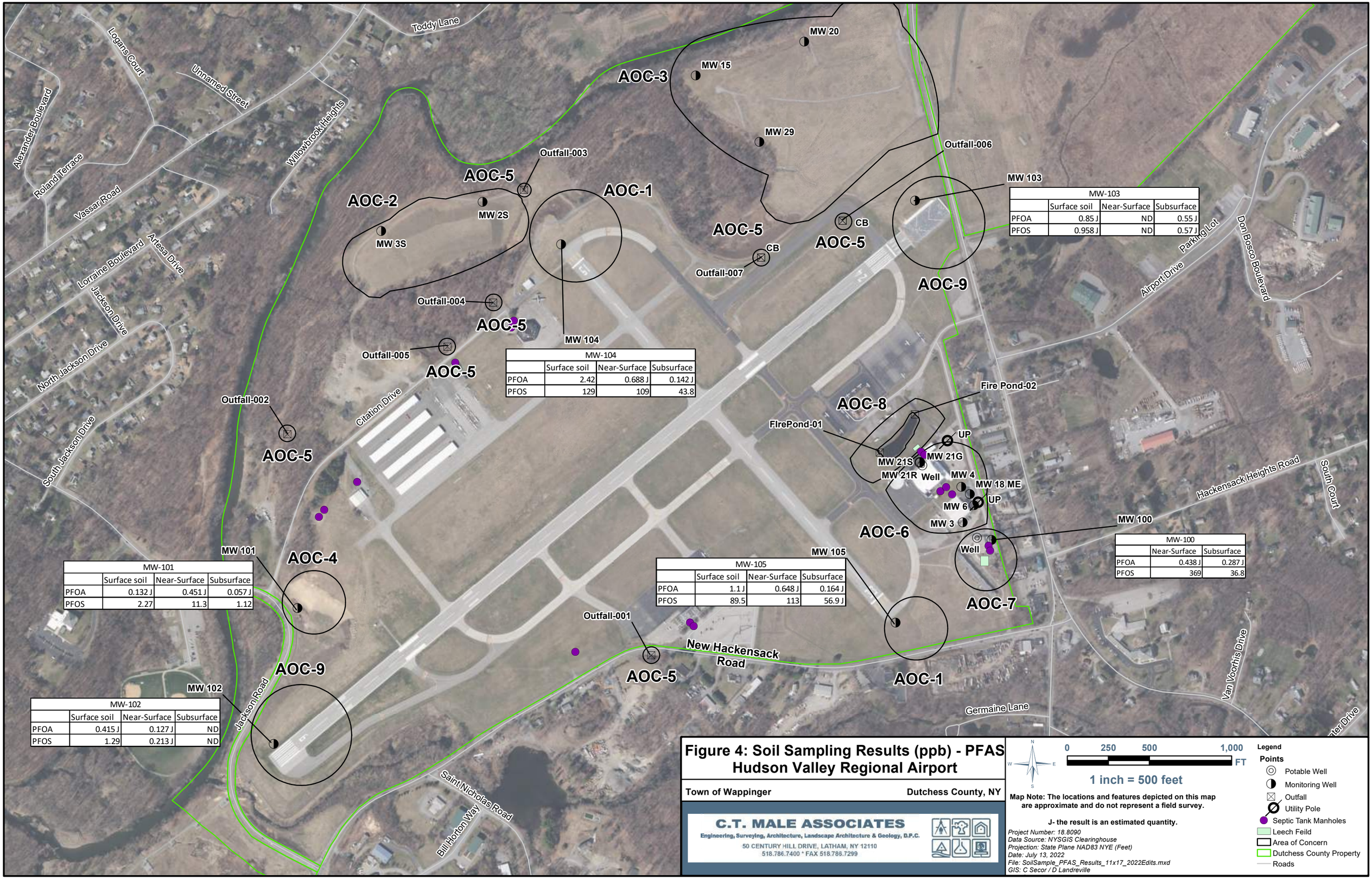

Figure 4: Soil Sampling Results (ppb) - PFAS
Hudson Valley Regional Airport

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C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
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: SoilSample_PFAS_Results_11x17_2022Edits.mxd
GIS: C Secor / D Landreville

Legend

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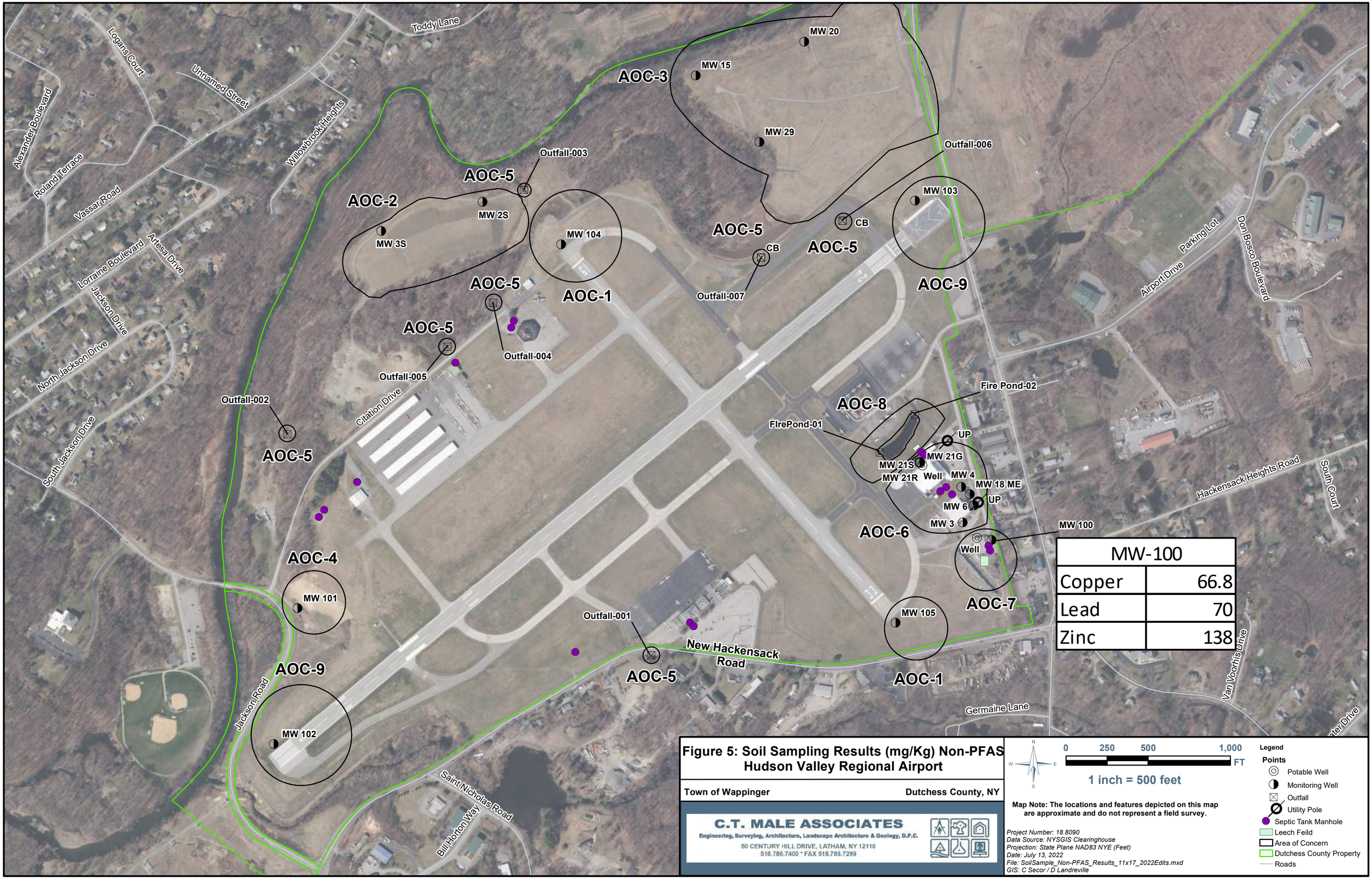
- Monitoring Well
- Outfall
- Utility Pole
- Septic Tank Manholes
- Leech Feild
- Area of Concern
- Dutchess County Property
- Roads



MW-100	
Copper	66.8
Lead	70
Zinc	138

Figure 5: Soil Sampling Results (mg/Kg) Non-PFAS
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
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.

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
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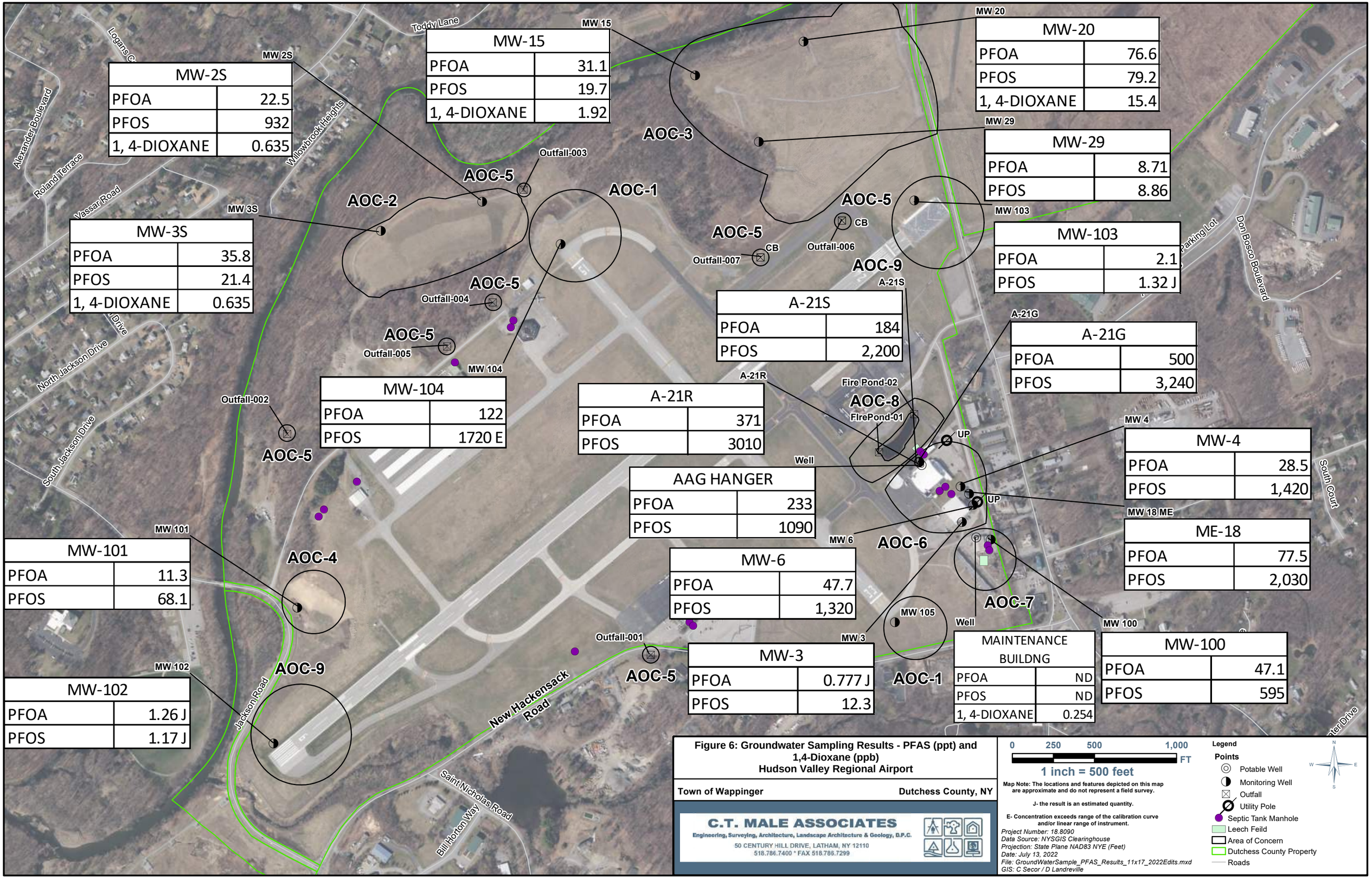

Figure 6: Groundwater Sampling Results - PFAS (ppt) and 1,4-Dioxane (ppb)
Hudson Valley Regional Airport

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C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
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.

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
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Legend

Points
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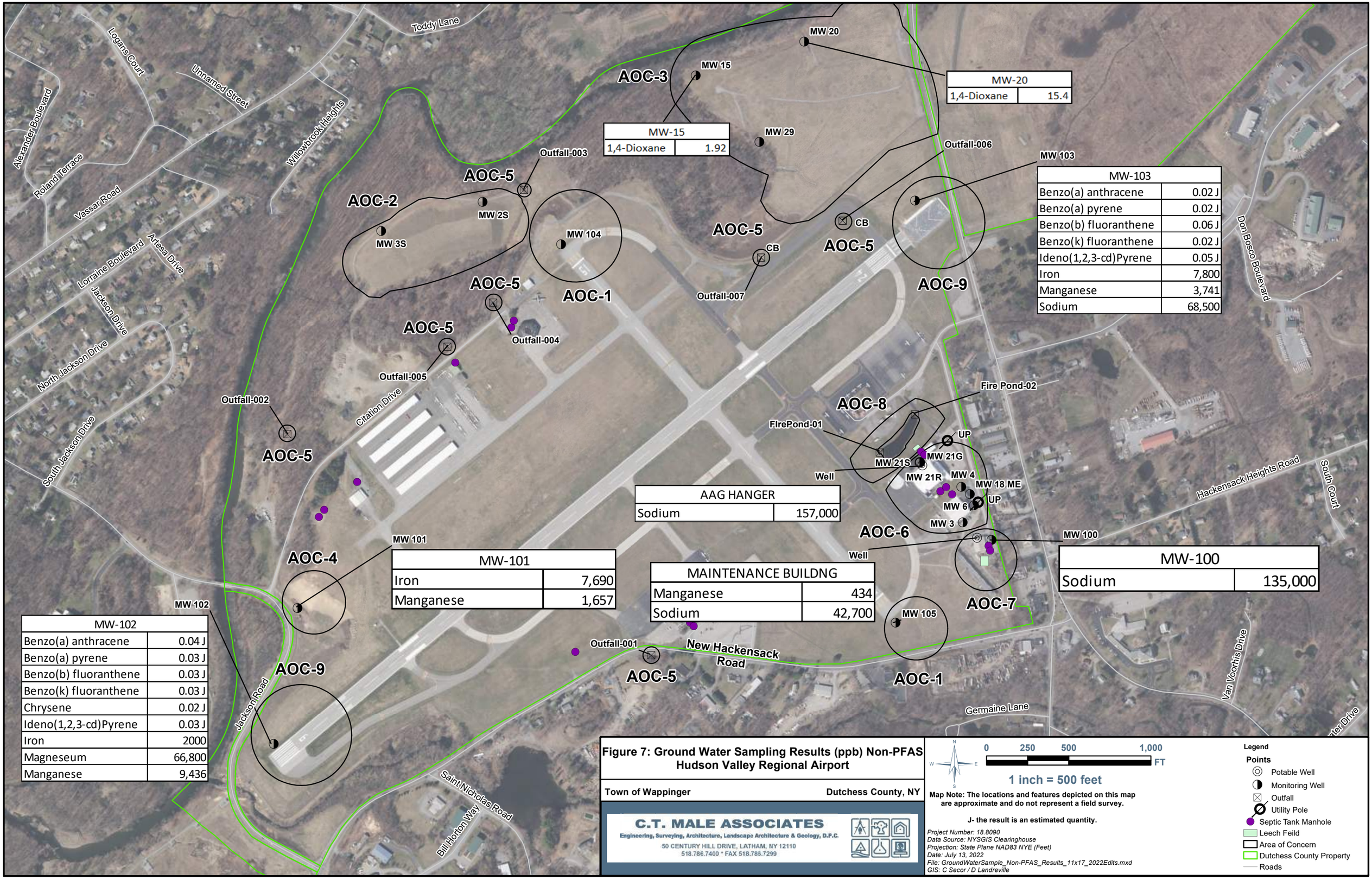

Figure 7: Ground Water Sampling Results (ppb) Non-PFAS
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

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Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110
518.786.7400 * FAX 518.783.7299

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

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

FIREPOND 01	
PFOA	26.1
PFOS	214

FIREPOND 02	
PFOA	23.8
PFOS	195

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**

B-1 Collected Offsite

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

NYS ITS GIS Program Office

Figure 8: Surface Water Sampling Results (ppt) - PFAS
Hudson Valley Regional Airport

Town of Wappinger **Dutchess County, NY**

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
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 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**

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
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 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

OUTFALL 003	
PFOA	0.085 J
PFOS	7.57

OUTFALL 006	
PFOA	0.137 J
PFOS	0.36 J

OUTFALL 002	
PFOA	0.109 J
PFOS	1.09 J

OUTFALL 005	
PFOA	0.637 J
PFOS	1.84

OUTFALL 004	
PFOA	0.462 J
PFOS	7.8

OUTFALL 007	
PFOA	ND
PFOS	ND

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

Figure 10: Sediment Sampling Results (ppb) - PFAS
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

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Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
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: Sed\Sample_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

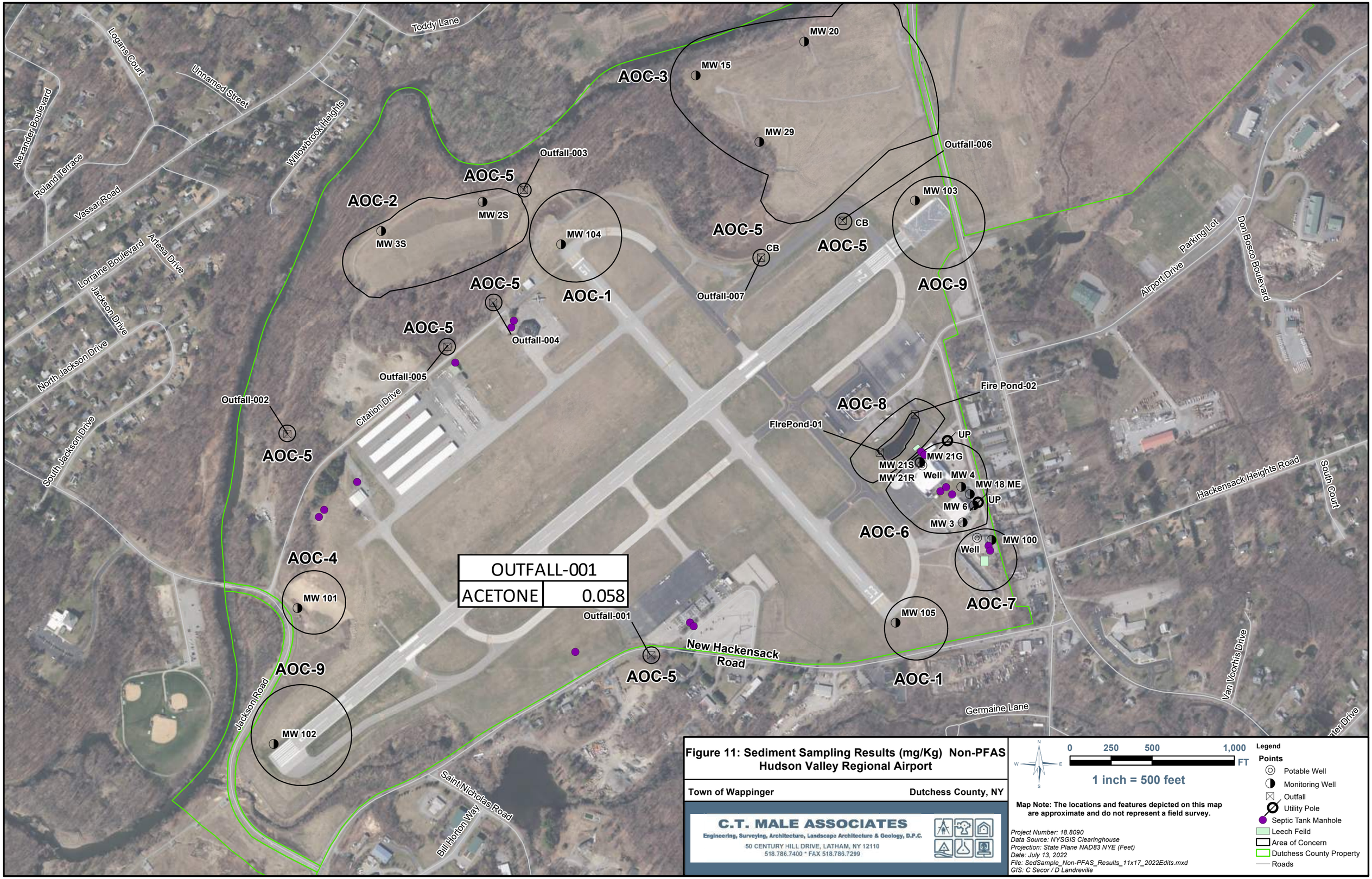

Figure 11: Sediment Sampling Results (mg/Kg) Non-PFAS
Hudson Valley Regional Airport

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

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

N W E S

0 250 500 1,000 FT

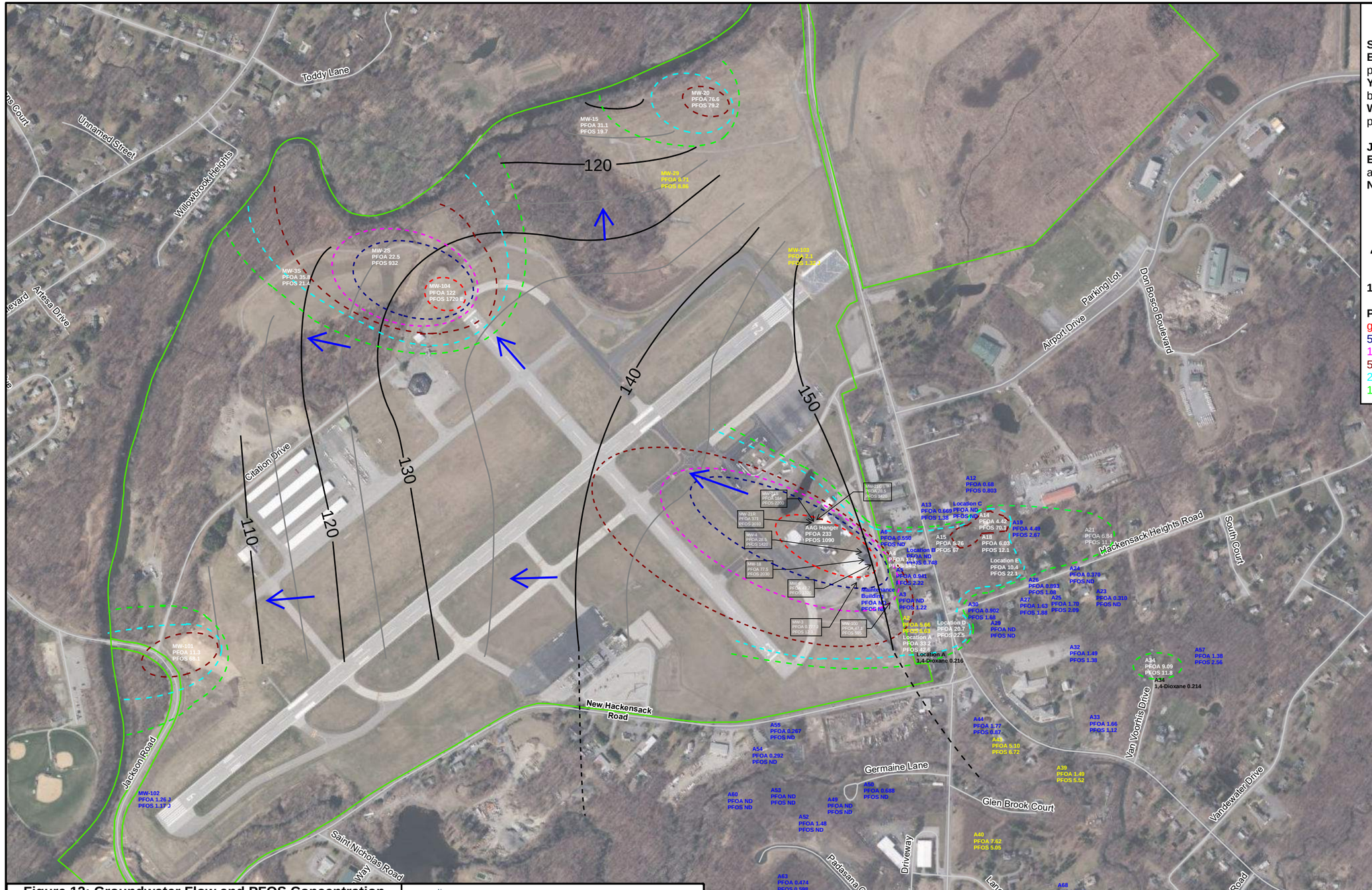
1 inch = 500 feet

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

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**

N W E S

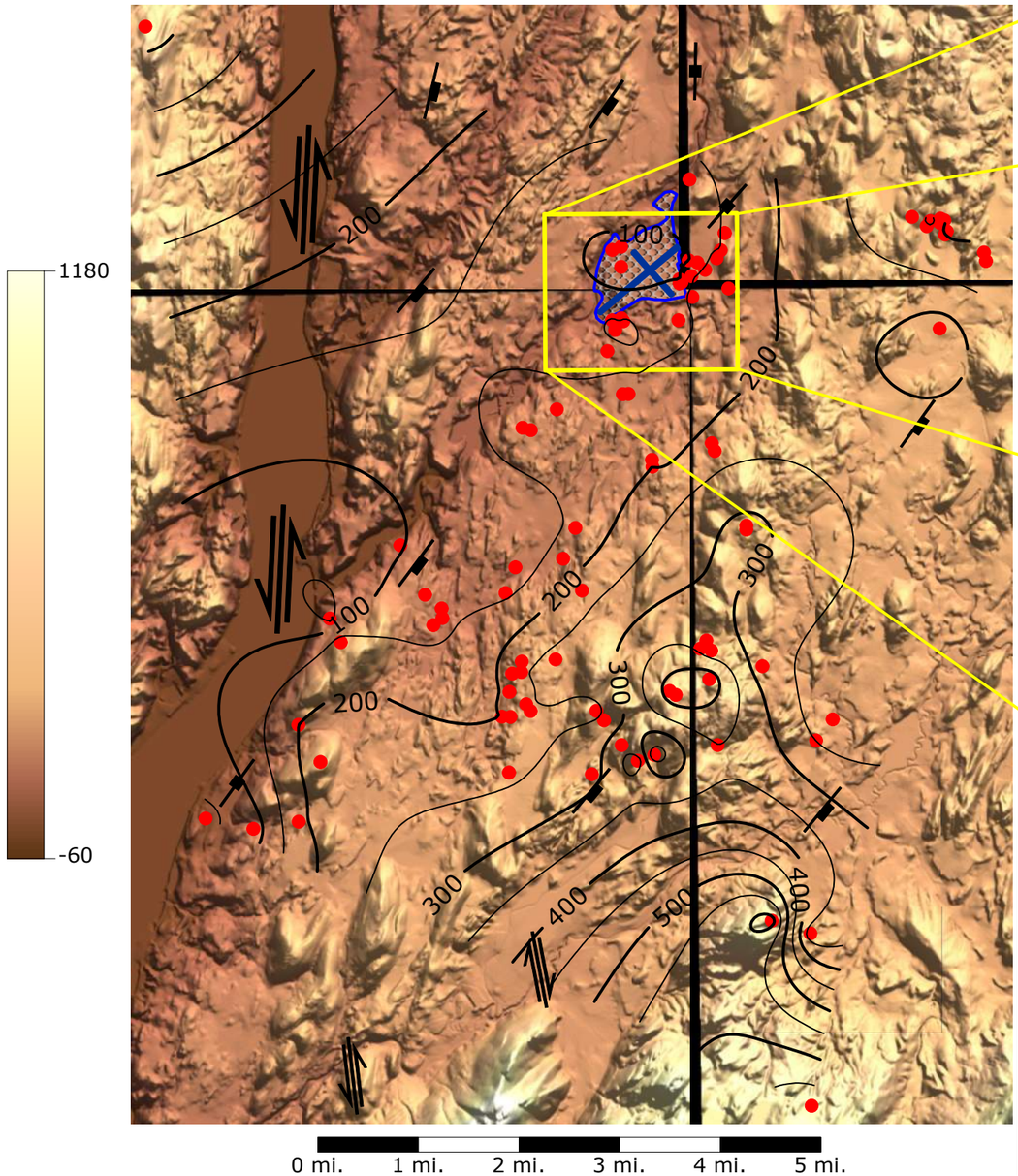
0 300 600 1,200 FT

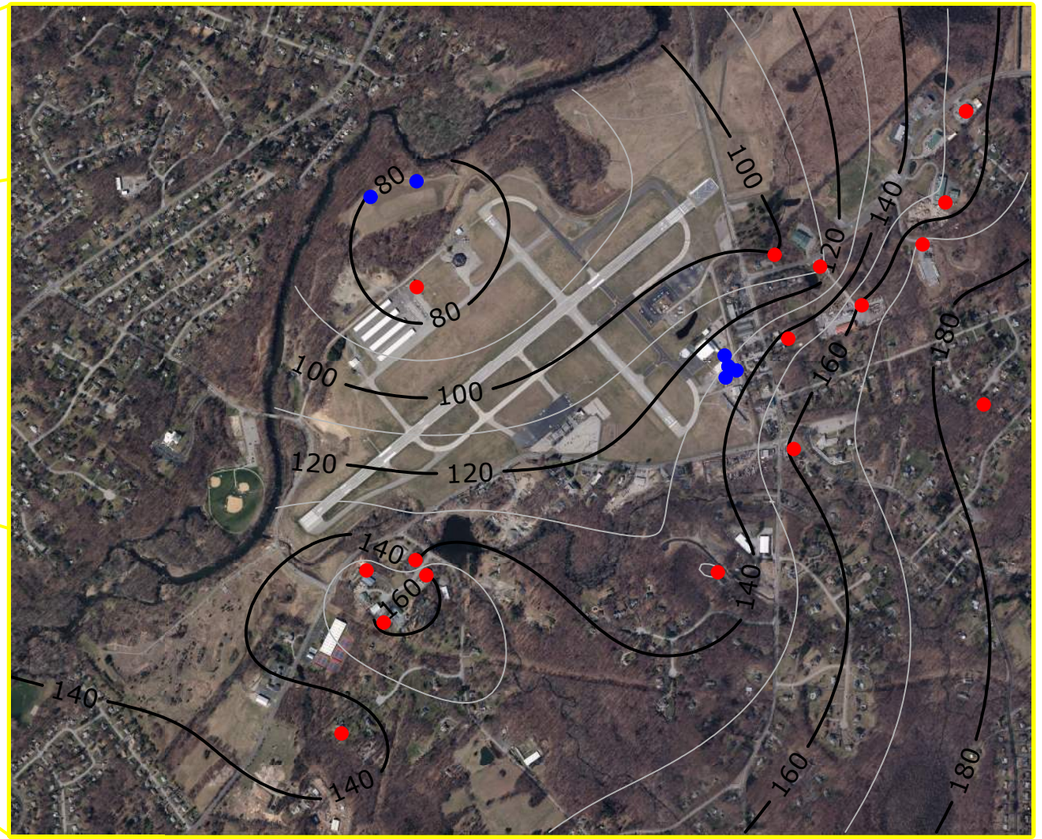
1 inch = 600 feet

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

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110
518.786.7400 * FAX 518.786.7299





- 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

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110 PH 518.786.7400
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JOHNSTOWN, NY · RED HOOK, NY · SYRACUSE, NY
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DWG. NO:

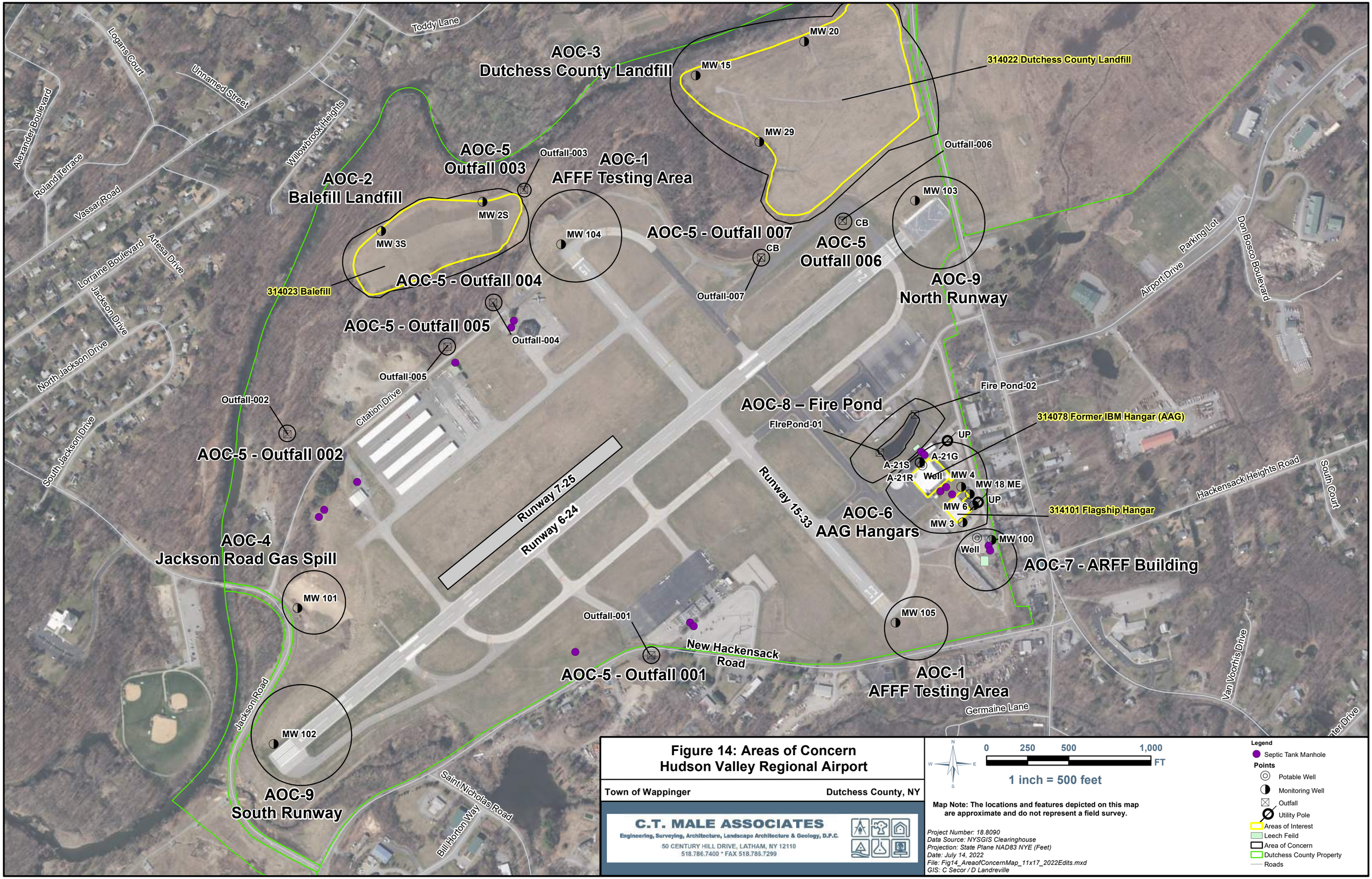

Figure 14: Areas of Concern
Hudson Valley Regional Airport

Town of Wappinger — Dutchess County, NY

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110
518.786.7400 * FAX 518.786.7299

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.

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 ≥ 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 ≥ 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 ≥ 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 ≥ 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 ≥ 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 ≥ 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 ≥ 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 $\geq$ 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 $\geq$ 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.

(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 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.

(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 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 ≥ 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 $\geq$ 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 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 ≥ 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 ≥ 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 ≥ 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

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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 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 ≥ 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.

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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.

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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

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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 $\geq$ 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 ≥ 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 ≥ 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 ≥ 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 ≥ 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				RB07-190716				RB08-190716				RB09-190716				TRIP BLANK			
		LAB ID:	L1931180-01				L1931180-04				L1931180-05				L1931180-06				L1931180-07				L1931180-08				L1931180-09				L1931180-10			
		COLLECTION DATE:	7/16/2019				7/16/2019				7/16/2019				7/16/2019				7/16/2019				7/16/2019				7/16/2019				7/16/2019			
		SAMPLE MATRIX:	SHOP WATER				SCREEN & RISER				DRILLING ROD				ACETATE LINER & SHOE				AUGER				MACRO CORE				TOTE				WATER			
ANALYTE	CAS	NY-AWQS (ng/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
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	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)	27619-97-2	NS	ND		1.97	1.31	ND		1.91	1.27	ND		1.92	1.28	ND		1.72	1.15	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)	2991-50-6	NS	ND		1.97	0.791	ND		1.91	0.767	ND		1.92	0.77	ND		1.72	0.693	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)	2355-31-9	NS	ND		1.97	0.638	ND		1.91	0.618	ND		1.92	0.621	ND		1.72	0.559	ND		1.75	0.566	ND		1.8	0.585	ND		1.77	0.574	ND		2.02	0.653
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	ND		1.75	0.208	ND		1.8	0.215	ND		1.77	0.211	ND		2.02	0.24
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	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)	335-77-3	NS	ND		1.97	0.964	ND		1.91	0.935	ND		1.92	0.939	ND		1.72	0.845	ND		1.75	0.857	ND		1.8	0.884	ND		1.77	0.869	ND		2.02	0.988
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	ND		1.75	0.266	ND		1.8	0.274	ND		1.77	0.27	ND		2.02	0.306
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	ND		1.75	0.325	ND		1.8	0.336	ND		1.77	0.33	ND		2.02	0.375
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	ND		1.75	0.601	ND		1.8	0.621	ND		1.77	0.61	ND		2.02	0.694
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	ND		1.75	0.197	ND		1.8	0.203	ND		1.77	0.2	ND		2.02	0.227
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	ND		1.75	0.329	ND		1.8	0.339	ND		1.77	0.333	ND		2.02	0.379
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	ND		1.75	0.287	ND		1.8	0.296	ND		1.77	0.291	ND		2.02	0.331
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	ND		1.75	0.273	ND		1.8	0.282	ND		1.77	0.276	ND		2.02	0.314
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	ND		1.75	0.507	ND		1.8	0.523	ND		1.77	0.514	ND		2.02	0.585
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	ND		1.75	0.44	ND		1.8	0.455	ND		1.77	0.447	ND		2.02	0.508
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	ND		1.75	0.206	ND		1.8	0.213	ND		1.77	0.209	ND		2.02	0.238
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	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)	376-06-7	NS	ND		1.97	0.244	ND		1.91	0.237	ND		1.92	0.238	ND		1.72	0.214	ND		1.75	0.217	ND		1.8	0.224	ND		1.77	0.22	ND		2.02	0.25
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	ND		1.75	0.286	ND		1.8	0.295	ND		1.77	0.29	ND		2.02	0.33
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	ND		1.75	0.227	ND		1.8	0.235	ND		1.77	0.23	ND		2.02	0.262
PFOA/PFOS, Total			5.35		1.97	0.232	ND		1.91	0.225	ND		1.92	0.226	ND		1.72	0.203	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				Asphalt ±0.25'	
2		1	2.5	Brown coarse SAND and fine to coarse GRAVEL, trace brick,	Fill
4					
6				±6.0'	Moist
8		2	3.5	Brown medium and coarse SAND, firm, well sorted	Saturated at 6.0' bgs
10					
12		3	5.0		Saturated
14				±15.0'	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
				Topsoil ±1.5'	Moist
2		1	3.5	Light Brown fine SAND and SILT, Some medium and coarse Sand, firm, poorly sorted ±3.0'	Moist
4				Light Brown coarse SAND and fine to coarse GRAVEL, loose, poorly sorted	Moist
6					Moist
8		2	3.0		Saturated at 8.5' bgs
10				±10.5'	Gray/Black staining in soil at top of water table at 8.5' bgs - petroleum odor
12		3	3.5	Gray SILT and fine SAND, trace fine gravel, firm, well sorted	Saturated
14				±15.0'	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
				Topsoil ±1.0'	Moist
2		1	4.0	Brown fine SAND and fine to coarse GRAVEL, litte medium and coarse sand, firm, poorly sorted	Moist
4				±4.0'	Wet from 4.0' to 4.5' bgs
				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
6		2	4.5		Moist
8					
10					Wet from 9.0' to 10.0' bgs
12		3	4.0		Moist
14					Wet from 12.0' to 13.0' bgs
16		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
18		4	4.0	Gray and Brown Till, primarily - SILT, Some fine to coarse Gravel, little fine sand, dense, poorly sorted	Moist
20					
22		5	5.0		Wet from 20.0' to 21.0' bgs
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)
28				Refusal at 26.5' bgs - End of Boring	
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				Topsoil ±1.0'	Moist
2		1	4.0	Gray Till, primarily - SILT and fine SAND, Some fine to coarse Gravel, dense, poorly sorted	Moist Till is moderately weathered
4					
6		2	2.5		Moist Wet at 6.5' bgs
8					
10		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		1	5.0	Light Brown fine to coarse SAND and fine to coarse GRAVEL, loose, poorly sorted	Moist
4					
6		2	2.5		Moist
8					
10				±9.5'	
				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		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	Wet
20				±21.0'	Wet
22		5	5.0	Gray SILT, Some Clay, trace fine sand, dense, low plasticity, well sorted	Saturated at 21.0' bgs
24					
26					Saturated
28		6	5.0		
30				±30.0'	MW installed to 25.0' bgs with 10' screen (Casing refusal at 25.0' bgs)
32				End of Boring at 30.0' 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
		1	4.5	Topsoil ±1.0'	Moist
2				Brown fine to coarse SAND and fine to coarse GRAVEL, firm, poorly sorted	Moist
4				±4.0'	
		2	5.0	Brown Till, primarily - SILT and fine SAND, Some fine to coarse Gravel and Cobble, dense, poorly sorted	Moist
6					
8					
10				±9.5'	
		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

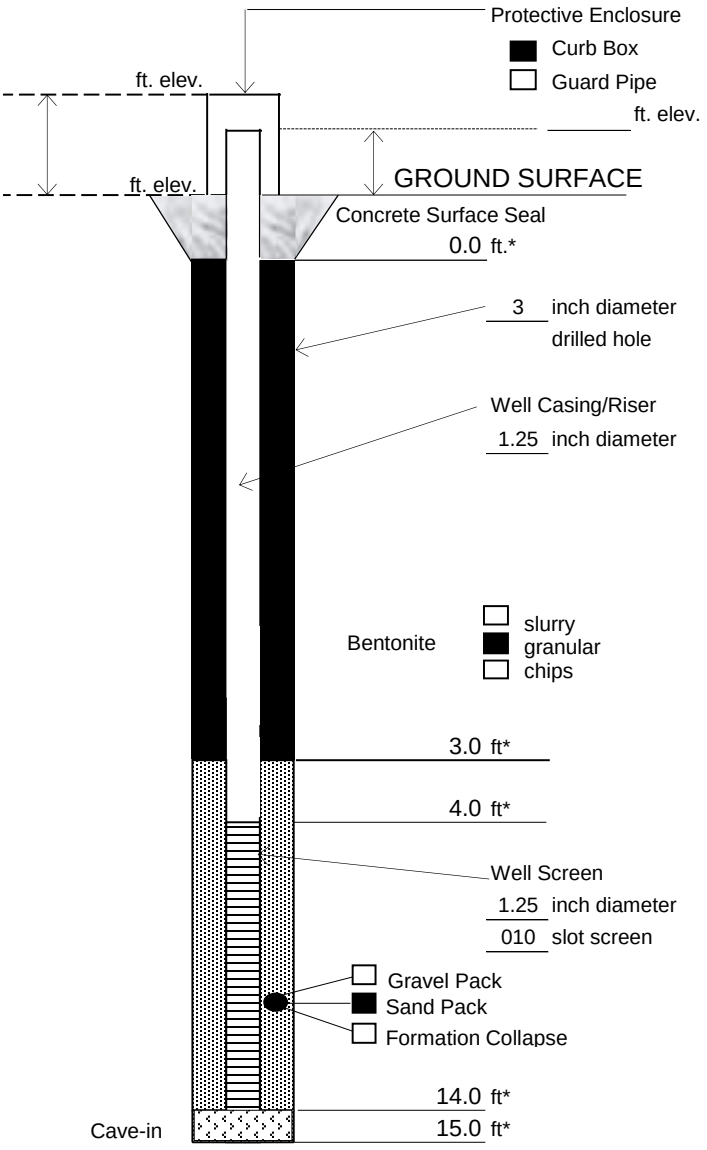
APPENDIX B

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.

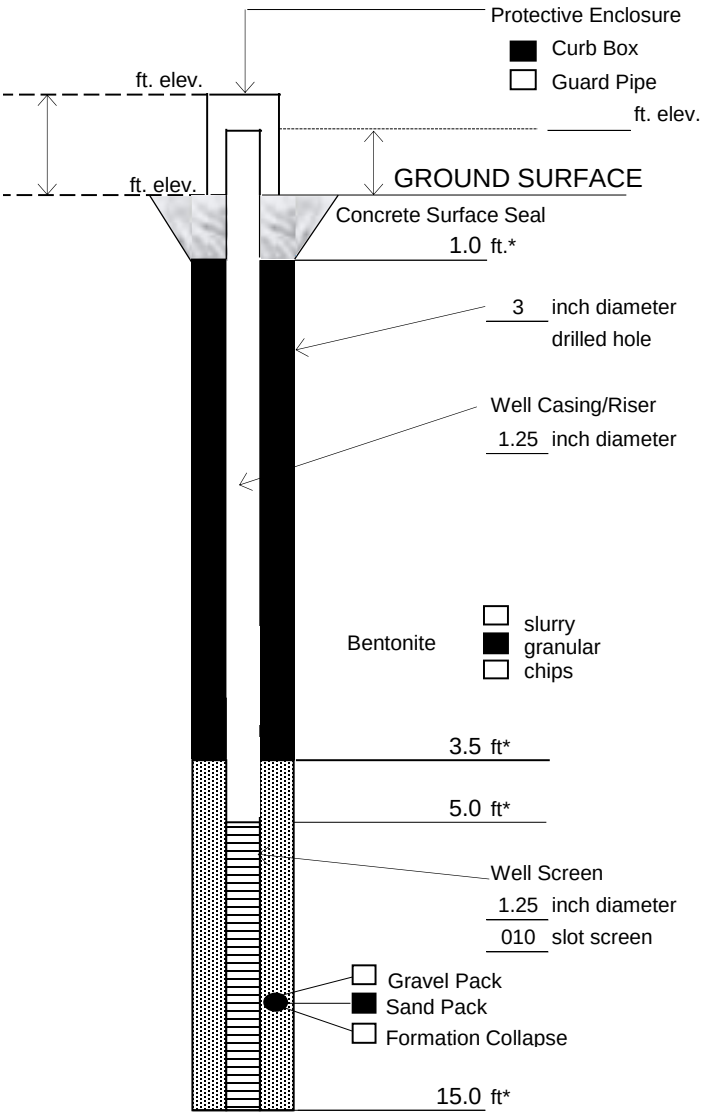
Notes:

Blacktop patched around roadbox following installation.

C.T. MALE ASSOCIATES

Well No. MW101

MONITORING WELL CONSTRUCTION LOG



* 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:

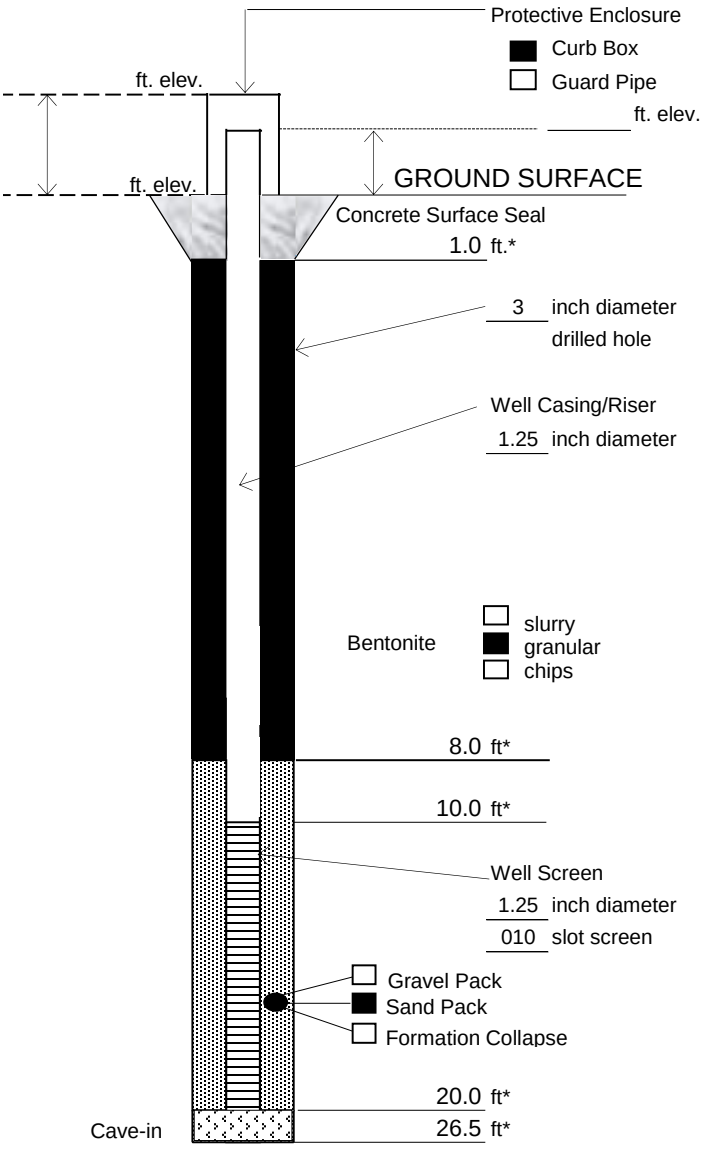
No grout used for monitoring well construction.

Notes:

C.T. MALE ASSOCIATES

Well No. MW102

MONITORING WELL CONSTRUCTION LOG



* 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:

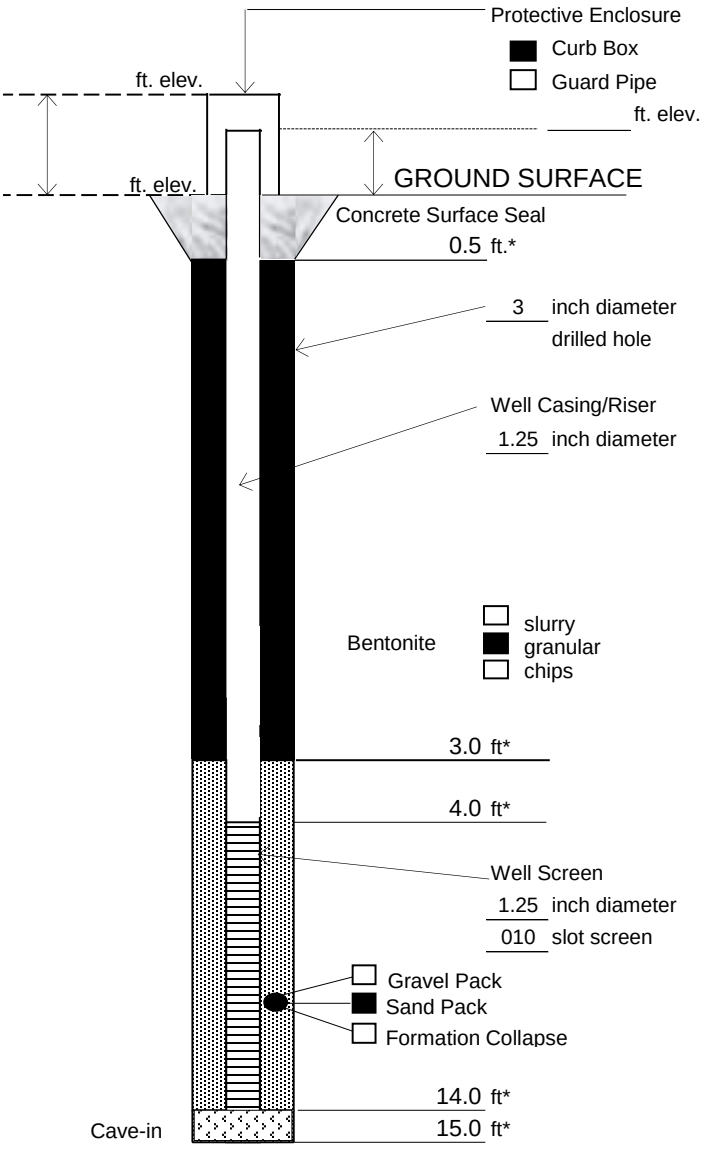
No grout used for monitoring well construction.

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:

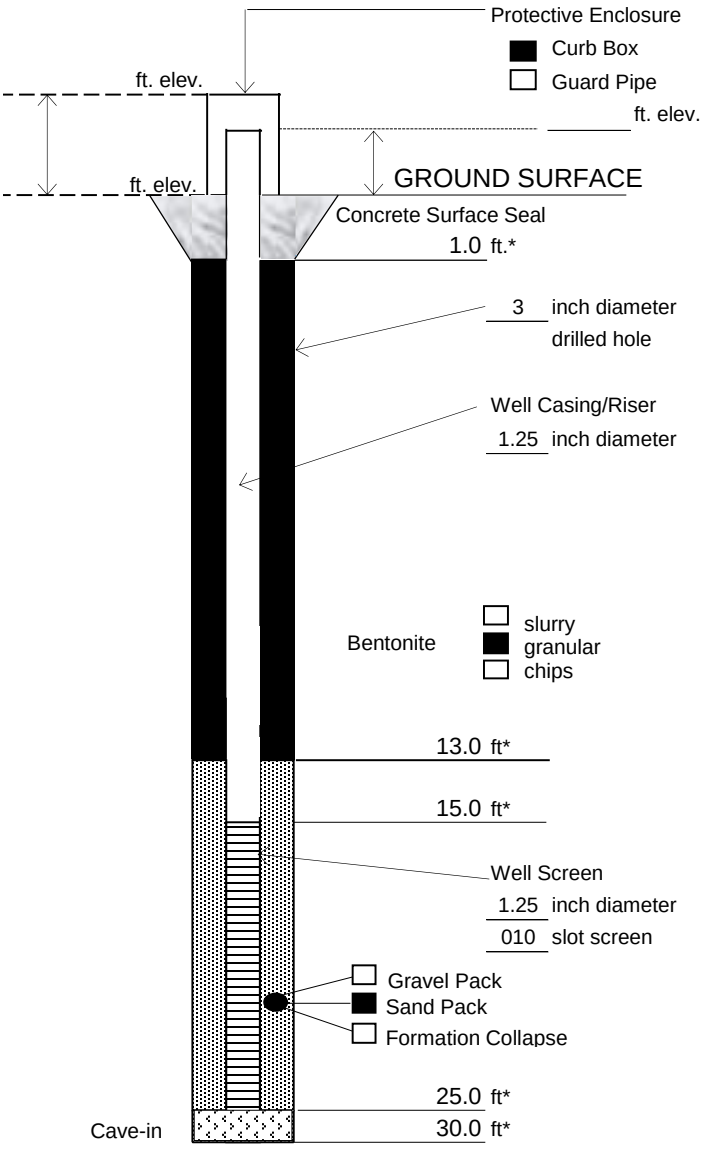
No grout used for monitoring well construction.

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:

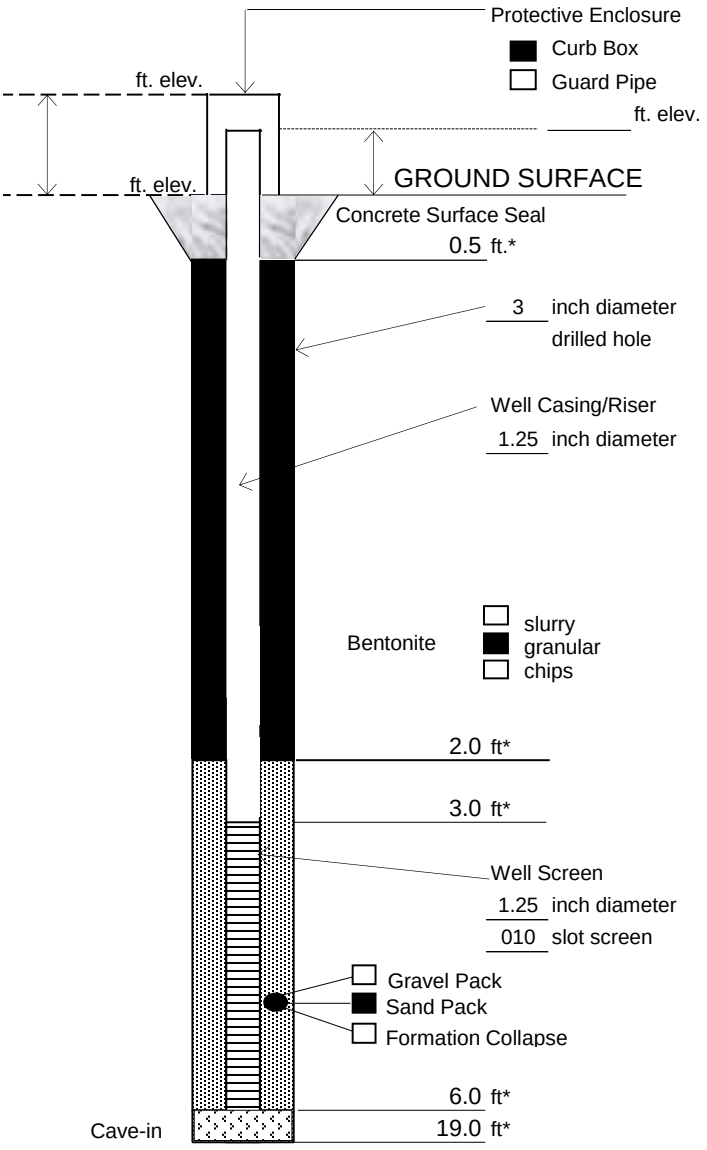
No grout used for monitoring well construction.

Notes:

C.T. MALE ASSOCIATES

Well No. MW105

MONITORING WELL CONSTRUCTION LOG



* 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

Project: HV Airport SC Investigation

Techinian Name(s): Dan King

C.T.M. Project #: 18.8090

Location: Wappingers Falls, NY

Ambient Temperature: ~70°F

Serial Number	Time	Temperature Accuracy	Pre-Cal Values	Calibration Values	Post-Cal or Bump Check Values
YSI: FA03966 Pro DSS	0840	Yes / No	pH: 4.07 / 7.03 / 10.12 Dissolved Oxygen: 98.9 % Sp. Conductivity: 6975 ORP: 225	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

Project Number: 18.8090

Date Started: 8/7/19

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	1194 AM	669 AM								

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 - total ~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)	808 AM	900 AM	604 AM								

Monitoring Well: ~~MW103~~ 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

WELL DEVEOPMENT LOG

Project Name: HV Airport SC Investigation

Project Number: 18.8090

Date Started: 8/7/19

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	~~4.93~~ 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	6.82	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 Notes: Start @ 1035 Well Pumps dry/recovery to finish development ~~1.5~~ 1.25" well

*Total Depth: 12.92 Stop @ 1205 4.5 gal Purged

Water Column: 6.42

One Well Volume: 6.41 gal 10 Volumes = 4.1 gal Peristaltic Pump YSI DSS Pro: FA 03966

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	~~19.0~~		18.7	~~18.2~~ 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			756	766
pH	10.00	8.82	8.41	8.26			7.94			7.48	6.92
ORP (mV)	-7.0	-93.3	-95.3	-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 Notes: Start @ 1315 *Purge too fast to collect all readings 1.25" well

* Total Depth: 12.29 Stop @ 1335 4.5 gal Purged

Water Column: 5.78

One Well Volume: 0.37 gal 10 Volumes = 3.7 gal Peristaltic Pump YSI DSS Pro: FA 03966

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: Notes:

Total Depth:

Water Column:

One Well Volume:

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: Notes:

Total Depth:

Water Column:

One Well Volume:

C.T. MALE ASSOCIATES

Residental Well Sampling Services Field Log

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:

- ☑ No clothing or boots containing Gore-Tex™
- ☑ All safety boots made from polyurethane and PVC
- ☑ No materials containing Tyvek®
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products this morning
- ☑ Field crew has not applied unauthorized sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® or LDPE containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-It Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene
- ☑ Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ Wet weather gear made of polyurethane and PVC only

Equipment Decontamination:

- ☑ "PFC-free" water on-site for decontamination of sample equipment. No other water sources to be used.
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ 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: _____ 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
2) Ser.No. ___ Time ___ Reading ___ NTU
3) Ser.No. ___ Time ___ Reading ___ NTU
4) Ser.No. ___ Time ___ Reading ___ NTU
5) 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
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

PROJECT NAME: HV Airport SC Investigation
PROJECT LOCATION: Wappingers Falls, NY
NOTES CHECKED BY:
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	12.98	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	6.39	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: ~110mL/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: ~~Sample collection~~ 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
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

PROJECT NAME: HV Airport SC Investigation
PROJECT LOCATION: Wappingers Falls, NY
NOTES CHECKED BY:
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	@8									
Water Level (ft)	± 0.00	17.91	16.9	DRY									
Temperature (C)	± 3%	18.3	16.9										
DO (mg/L)	±10% or < 0.5	7.63	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	7924	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
PRT @ TIME FINISHED: 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
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

PROJECT NAME: HV Airport SC Investigation
PROJECT LOCATION: Wappingers Falls, NY
NOTES CHECKED BY:
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	4.24	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: 110mL/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%	852	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	14.35

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 P/O : FA03966

WELL LOW-FLOW PURGING LOG

Sampling Activity (check all that apply):

☐ Initial / 3 Vol. ☑ Low-Flow ☑ ~~Sample~~ (EB)

DATE: 8/8/19 PROJECT NAME: HV Airport SC Investigation

PROJECT NO.: 18.8096 PROJECT LOCATION: Wappingers Falls, NY

SAMPLING PERSONNEL: Cliff Bond:

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) ~~0.99~~ 0.47 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	6.45	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	5.15	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	6.91	6.94	6.95			
ORP (mV)	30.1	48.48	51.4	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	266.29	245.32			

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: FIVRA

Field Clothing and PPE:

- ☑ No clothing or boots containing Gore-Tex™
- ☑ All safety boots made from polyurethane and PVC
- ☑ No materials containing Tyvek®
- ☑ Field crew has not used fabric softener on clothing
- ☑ Field crew has not used cosmetics, moisturizers, hand cream, or other related products this morning
- ☑ Field crew has not applied unauthorized sunscreen or insect repellant

Field Equipment:

- ☑ No Teflon® or LDPE containing materials on-site
- ☑ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☑ No waterproof field books on-site
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☑ No adhesives (Post-It Notes) on-site
- ☑ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

Sample Containers:

- ☑ All sample containers made of HDPE or polypropylene
- ☑ Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- ☑ Wet weather gear made of polyurethane and PVC only

Equipment Decontamination:

- ☑ "PFC-free" water on-site for decontamination of sample equipment. No other water sources to be used.
- ☑ Alconox and Liquinox to be used as decontamination materials

Food Considerations:

- ☑ 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: _____ 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 NO.: 18.809
SAMPLING PERSONNEL: D. King
NOTES TAKEN BY: D. King
MONITORING WELL ID#: MW102
DEPTH TO WATER (ft): 10.49 FROM: TPVC
DEPTH TO BOTTOM (ft): 19.35 FROM: TPVC
WATER COLUMN HEIGHT: 8.86 ft
WELL VOLUME: 0.57 GALLONS

PROJECT NAME: HV Airport SC Investigation
PROJECT LOCATION: Wappingers Falls, NY
NOTES CHECKED BY:
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										
Water Level (ft)	± 0.00	10.49										
Temperature (C)	± 3%	16.6										
DO (mg/L)	±10% or < 0.5	5.24										
Conductivity (uS)	± 3%	1137										
pH (SU)	± 0.1	6.54										
ORP (mV)	±10 mV	119.9										
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: ☑ 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
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

PROJECT NAME: HV Airport SC Investigation
PROJECT LOCATION: Wappingers Falls, NY
NOTES CHECKED BY:
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											
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 ODOR None
SHEEN 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: D. King
NOTES TAKEN BY: D. King
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

PROJECT NAME: HV Airport SC Investigation
PROJECT LOCATION: Wappingers Falls, NY
NOTES CHECKED BY:
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										
Water Level (ft)	± 0.00	4.68										
Temperature (C)	± 3%	11.2										
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
↳ 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 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:

MONITORING WELL ID#: MW-101 WELL CASING DIAMETER: 1.25 in.

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

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? YES ☐ NO ☒ NAME: _____ (All) ~~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 (Como Pollution Control) 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

C.T. MALE ASSOCIATES

Residental Well Sampling Services Field Log

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 / items over crawlspace entrance. 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: Harold 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
Project Number: 18.8090

Lab Number: L1931312
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

Project Name:	HVRA	**Lab Number:**	L1931312
Project Number:	18.8090	**Report Date:**	07/31/19

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
Project Number: 18.8090
Lab Number: L1931312
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
Project Number: 18.8090
Lab Number: L1931312
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-SIM
Analytical Date: 07/18/19 14:54
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 07/17/19 15:47

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
Project Number: 18.8090
Lab Number: L1931312
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-SIM
Analytical Date: 07/25/19 11:30
Analyst: MA

Extraction Method: EPA 3510C
Extraction Date: 07/23/19 08:50

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
Project Number: 18.8090
Lab Number: L1931312
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
Project Number: 18.8090
Lab Number: L1931312
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
Project Number: 18.8090
Lab Number: L1931312
Report Date: 07/31/19

SAMPLE RESULTS

Lab ID: L1931312-06
Client ID: FIELD 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 15:28
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	1.80	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
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					
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
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					

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
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								

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
Project Number: 18.8090
Lab Number: L1931312
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
Project Number: 18.8090

Lab Number: L1931312
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
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	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
Project Number: 18.8090
Lab Number: L1931312
Report Date: 07/31/19

SAMPLE RESULTS

Lab ID: L1931312-01
Client ID: HVRA-AAG-PW01
Sample Location: AAG HANGAR
Sample Depth:
Matrix: Water

Date Collected: 07/16/19 13:20
Date Received: 07/16/19
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	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
Project Number: 18.8090

Lab Number: L1931312
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

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
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
Project Number: 18.8090

Lab Number: L1931312
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
Project Number: 18.8090

Lab Number: L1931312
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

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
Project Number: 18.8090

Lab Number: L1931312
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

Project Name:	HVRA	**Lab Number:**	L1931312
Project Number:	18.8090	**Report Date:**	07/31/19

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:	HVRA	**Lab Number:**	L1931312
Project Number:	18.8090	**Report Date:**	07/31/19

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

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 of

Date Rec'd in Lab: 7/16/19

ALPHA Job #: L1931312

Client Information
Client: CT Male
Address: 12 Raymond Avenue
Poughkeepsie, NY 12603
Phone: 914-743-7400
Fax:
Email:

Project Information
Project Name: HVRA
Project Location: AAG Hangar
Project #: 18.8090
(Use Project name as Project #) ☐
Project Manager: ~~Tim M~~ DJM David Lent
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☒ ASP-B
☐ EQuIS (1 File) ☒ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS 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.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS	1,4 Dioxane	TCL - SVOCs	TCL - PCBs	TAL Metals	TCN			Sample Specific Comments	Total Bottle
31312-01	HVRA - AAG - AW01	07/16/19	1320	Water	DJM	X	X	X	X	X	X				

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
	7/16/19 17:40		7/16/19 17:40
	7/16/19 19:20		7/16/19 1945
	7/16 2555		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

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:
Send results to dlent@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	ANALYSIS: 1535DEC PFAS 537								Sample Specific Comments	Total Bottles
31312 -4	HVRA-AAG-PW01	7/17/19	10:00	W	DL	X									
-5	~~FB~~ Field Blank	7/17/19	10:00	W	DC	X									
-6	~~FB~~ Trip Blank	7/17/19	10:00	W	DL	X									

Container Type: P
Preservative: O

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

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.)

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

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

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:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

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

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
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
Analytical Method: 1,8270D-SIM
Analytical Date: 07/31/19 03:32
Analyst: PS
Percent Solids: 71%

Extraction Method: EPA 3570
Extraction Date: 07/28/19 09:35

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
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
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 06:59
Analyst: JW
Percent Solids: 71%

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)	0.033	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
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: 1,8270D-SIM
Analytical Date: 07/31/19 03:59
Analyst: PS
Percent Solids: 82%

Extraction Method: EPA 3570
Extraction Date: 07/28/19 09:35

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
Client ID: OUTFALL-004-S
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 12:10
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 07:49
Analyst: JW
Percent Solids: 25%

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)	0.278	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
Client ID: OUTFALL-004-S
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 12:10
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 07/31/19 04:26
Analyst: PS
Percent Solids: 25%

Extraction Method: EPA 3570
Extraction Date: 07/28/19 09:35

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
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: 1,8270D-SIM
Analytical Date: 07/31/19 04:53
Analyst: PS
Percent Solids: 68%

Extraction Method: EPA 3570
Extraction Date: 07/28/19 09:35

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
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: 1,8270D-SIM
Analytical Date: 07/31/19 05:20
Analyst: PS
Percent Solids: 80%

Extraction Method: EPA 3570
Extraction Date: 07/28/19 09:35

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
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: 1,8270D-SIM
Analytical Date: 07/31/19 05:47
Analyst: PS
Percent Solids: 88%

Extraction Method: EPA 3570
Extraction Date: 07/28/19 09:35

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
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: 1,8270D-SIM
Analytical Date: 07/31/19 06:13
Analyst: PS
Percent Solids: 73%

Extraction Method: EPA 3570
Extraction Date: 07/28/19 09:35

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
Client ID: FIRE POND-01-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 14:10
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 07/27/19 02:26
Analyst: MA

Extraction Method: EPA 3510C
Extraction Date: 07/26/19 18:55

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
Client ID: FIRE POND-01-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 14:10
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 03:24
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)	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
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: 1,8270D-SIM
Analytical Date: 07/31/19 06:39
Analyst: PS
Percent Solids: 82%

Extraction Method: EPA 3570
Extraction Date: 07/28/19 09:35

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
Client ID: FIRE POND-02-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 14:35
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 03:40
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)	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
Client ID: FIRE POND-02-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 14:35
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 07/27/19 02:50
Analyst: MA

Extraction Method: EPA 3510C
Extraction Date: 07/26/19 18:55

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
Client ID: TRIP BLANK
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 14:50
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 04:30
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	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
Analytical Date: 07/27/19 00:49
Analyst: MA

Extraction Method: EPA 3510C
Extraction Date: 07/26/19 18:55

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 **Lab Number:** L1932867

Project Number: 18.8090 **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)
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

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					

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
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): 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
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
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
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

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
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
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
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
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 ***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): 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 ***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): 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 ***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												
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
Lab Number: L1932867
Project Number: 18.8090
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
Sample Depth:
Matrix: Soil

Date Collected: 07/24/19 11:50
Date Received: 07/24/19
Field Prep: Not Specified

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
Project Number: 18.8090
Lab Number: L1932867
Report Date: 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-03
Client ID: OUTFALL-004-S
Sample Location: WAPPINGERS FALLS, NY
Sample Depth:
Matrix: Soil

Date Collected: 07/24/19 12:10
Date Received: 07/24/19
Field Prep: Not Specified

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
Project Number: 18.8090
Lab Number: L1932867
Report Date: 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-04
Client ID: OUTFALL-005-S
Sample Location: WAPPINGERS FALLS, NY
Sample Depth:
Matrix: Soil

Date Collected: 07/24/19 12:30
Date Received: 07/24/19
Field Prep: Not Specified

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
Project Number: 18.8090
Lab Number: L1932867
Report Date: 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-05
Client ID: OUTFALL-006-S
Sample Location: WAPPINGERS FALLS, NY
Sample Depth:
Matrix: Soil

Date Collected: 07/24/19 13:15
Date Received: 07/24/19
Field Prep: Not Specified

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
Project Number: 18.8090
Lab Number: L1932867
Report Date: 08/02/19

SAMPLE RESULTS

Lab ID: L1932867-06
Client ID: OUTFALL-007-S
Sample Location: WAPPINGERS FALLS, NY
Sample Depth:
Matrix: Soil

Date Collected: 07/24/19 13:30
Date Received: 07/24/19
Field Prep: Not Specified

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
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

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

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932867
Report Date: 08/02/19

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

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

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

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

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:**	L1932867
Project Number:	18.8090	**Report Date:**	08/02/19

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 ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

NEW 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: 7/25/19

ALPHA Job #: L1932567

Client Information
Client: C.T. Male Associates
Address: 12 Raymond Avenue
Poughkeepsie, NY 12603
Phone: 845-454-4400
Fax:
Email: d.lent@ctmale.com

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 [X] Due Date:
Rush (only if pre approved) [ ] # of Days:

Deliverables
[ ] ASP-A [X] 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:

Email results to d.lent@ctmale.com

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
[ ] Done
[ ] Lab to do
Preservation
[ ] Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS	1,4 dioxane	Total Solids	PFAS					Sample Specific Comments	Total Bottle
L1932567-01	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	1455	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
	07/24/19		7/24/19
	7/24/19 1800		7/25/19 01:16
	7/24/19		7/24/19 1530
	7/25/19 17:9		7/25/19 11:19

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 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 2 of 2

Date Rec'd in Lab: 7/25/19

ALPHA Job #: L1932867

Client Information

Client: C.T. Male Associates
Address: 12 Raymond Avenue
Poughkeepsie, NY 12603
Phone: 845-454-4420
Fax:
Email: J.lent@ctmale.com

Project Information

Project Name: Hudson Valley Regional Airport
Project Location: Wappingers Falls, NY
Project #: 18.8090
(Use Project name as Project #): ☐
Project Manager: Dave Lent
ALPHAQuote #:

Turn-Around Time

Standard: ☒ Due Date:
Rush (only if pre approved): ☐ # of Days:

Deliverables

☐ ASP-A ☒ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information

☐ Same as Client Info
PO #

Regulatory Requirement

☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Email d.lent@ctmale.com with results

Please specify Metals or TAL.

ANALYSIS

PFAS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS	Total Bottle
-11	Field Blank	7/24	1445	W	NM	X	2
-12	Trip Blank	7/24	1450	W	NM	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

Container Type	P									
Preservative	O									

Relinquished By:	Date/Time	Received By:	Date/Time
	07/24/19 1611		7/24/19 1611
	7/24/19 1800		7/25/19 0610
	7/24/19		7/25/19 1537
	7/25/19 1709		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

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

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:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

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

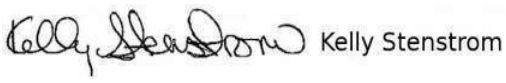
Case Narrative (continued)

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

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
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:** 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

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								
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
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: 1,8270D-SIM
Analytical Date: 07/30/19 14:40
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	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
Client ID: OUTFALL-006-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/23/19 14:15
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 07/30/19 15:17
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	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
Client ID: OUTFALL-006-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/23/19 14:15
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/07/19 10:05
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)	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
Client ID: OUTFALL-003-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/23/19 14:30
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 07/30/19 16:40
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	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
Client ID: OUTFALL-003-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/23/19 14:30
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/07/19 10:22
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)	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
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: 1,8270D-SIM
Analytical Date: 07/30/19 17:30
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	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
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: 122,537(M)
Analytical Date: 08/07/19 10:55
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)	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
Client ID: OUTFALL-005-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/23/19 15:20
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 07/30/19 18:50
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	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
Client ID: OUTFALL-005-W
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/23/19 15:20
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/07/19 11:44
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)	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
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: 07/31/19 15:56
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 07/30/19 22:34

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
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: 122,537(M)
Analytical Date: 08/07/19 11:28
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)	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 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
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 **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					
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 **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					

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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
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 ***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												

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
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: 1,8082A
Analytical Date: 07/31/19 03:02
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 07/27/19 03:59
Cleanup Method: EPA 3665A
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
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	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
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						

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
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	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
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
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

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
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

Project Number: 18.8090

Lab Number: L1932869

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
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
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
Project Number: 18.8090

Lab Number: L1932869
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

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	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
Project Number: 18.8090

Lab Number: L1932869
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

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
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

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1932869
Report Date: 08/07/19

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(*)
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

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1932869
Project Number:	18.8090	**Report Date:**	08/07/19

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

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 of

Date Rec'd in Lab: 7/25/19

ALPHA Job #: L1932869

Client Information

Client: CT Male Associates
Address: 12 Raymond Avenue
Poughkeepsie, NY 12603
Phone: 845-454-4400
Fax:
Email: d.lent@CTMale.com

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 #:

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.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS	1,4 Dioxane	TCL VOC	TCL SVOC	TCL Pest.	TCL PCB	TAL Metals	TCN	Sample Specific Comments	Total Bottle
32469(01	Outfall-007-W	07/23	~~0900~~ 0900	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	Field 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

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	P	A	G	A	A	A	P	P
Preservative	O	A	B	A	A	A	C	E

Relinquished By:	Date/Time	Received By:	Date/Time
David Mayo	07/24/19	[illegible] KAL	7/24/19 1611
Bob Wagner	7/24/19 1800	[illegible]	7/25/19 0810

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

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1934423
Project Number:	18.8090	**Report Date:**	08/16/19

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

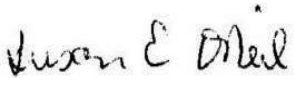
All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

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 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
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: 1,8270D-SIM
Analytical Date: 08/06/19 21:47
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	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
Client ID: HVRA-LTB01-190731
Sample Location: WAPPINGERS FALLS

Date Collected: 07/31/19 00:00
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/15/19 03:53
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	1.84	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
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: 1,8270D-SIM
Analytical Date: 08/06/19 22:41
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: L1934423-05
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
Client ID: HVRA-ME-18-190801
Sample Location: WAPPINGERS FALLS

Date Collected: 08/01/19 10:10
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 08/06/19 23:07
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: L1934423-06
Client ID: HVRA-ME-18-190801
Sample Location: WAPPINGERS FALLS

Date Collected: 08/01/19 10:10
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/15/19 04:44
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)	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
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: 122,537(M)
Analytical Date: 08/15/19 05:01
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)	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
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: 1,8270D-SIM
Analytical Date: 08/07/19 00:26
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: L1934423-09
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 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:

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

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
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
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								
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

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1934423
Report Date: 08/16/19

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(*)
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

Project Name: HUDSON VALLEY REGIONAL AIRPORT
Project Number: 18.8090

Lab Number: L1934423
Report Date: 08/16/19

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

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1934423
Project Number:	18.8090	**Report Date:**	08/16/19

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

Project Name:	HUDSON VALLEY REGIONAL AIRPORT	**Lab Number:**	L1934423
Project Number:	18.8090	**Report Date:**	08/16/19

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

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

Client Information

Client: CT Male Associates
Address: 50 Century Hill Dr.
Latham, NY
Phone: (518) 786-7400
Fax:
Email: K.moline@ctmale.com

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:

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.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	A2-537 (PFAS)	A2-1,4 Dioxane	Sample Specific Comments	Total # Bottles
L1934423-01	HVRA-A-21S-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-21G-190731	7/31/19	1435	Groundwater	DPM	✓	✓		4
-06	HVRA-ME-18-190801	8/1/19	1010		CB	✓	✓		4
-07	HVRA-MW-6-190801		1100		DPM	✓	✓		4
-08	HVRA-MW-4-190801		1315		CB	✓	✓		4
-09	HVRA-MW-3-190801		1410		DPM	✓	✓		4

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	P	A							
Preservative	A/O	A							

Relinquished By:	Date/Time	Received By:	Date/Time
	8/1/19 1500		8/1/19 1500
	8/1/19 1645		8/1/19 16:45
	8/1/19 18:30		8/1/19 2000
	8/2/19 00:40		8/2/19 00:40
	08/02/19 0550		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
Project Number: 18.8090

Lab Number: L1934623
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
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: 1,8270D
Analytical Date: 08/08/19 14:46
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: L1934623-01 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
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: 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
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: 1,8270D-SIM
Analytical Date: 08/10/19 21:10
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	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
Project Number: 18.8090
Lab Number: L1934623
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
Project Number: 18.8090
Lab Number: L1934623
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-SIM
Analytical Date: 08/07/19 21:08
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	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	30		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
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-SIM
Analytical Date: 08/10/19 21:26
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	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
Project Number: 18.8090
Lab Number: L1934623
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: 122,537(M)
Analytical Date: 08/16/19 01:17
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)	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
Project Number: 18.8090
Lab Number: L1934623
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
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:

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
Project Number: 18.8090
Lab Number: L1934623
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
Analytical Date: 08/08/19 15:37
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: L1934623-03 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
Project Number: 18.8090
Lab Number: L1934623
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: 08/07/19 21:38
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	15400		ng/l	139	31.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	28		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
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
Project Number: 18.8090
Lab Number: L1934623
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
Project Number: 18.8090
Lab Number: L1934623
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: 1,8270D
Analytical Date: 08/08/19 16:03
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: L1934623-04 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
Project Number: 18.8090
Lab Number: L1934623
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: 1,8270D-SIM
Analytical Date: 08/07/19 22:09
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	1920		ng/l	139	31.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	30		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934623
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: 1,8270D-SIM
Analytical Date: 08/10/19 21:59
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	0.04	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
Project Number: 18.8090
Lab Number: L1934623
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: 122,537(M)
Analytical Date: 08/16/19 10:40
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)	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
Project Number: 18.8090
Lab Number: L1934623
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
Project Number: 18.8090
Lab Number: L1934623
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
Project Number: 18.8090
Lab Number: L1934623
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: 08/10/19 22:16
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	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
Project Number: 18.8090
Lab Number: L1934623
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
Project Number: 18.8090
Lab Number: L1934623
Report Date: 08/21/19

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:** 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
Project Number: 18.8090
Lab Number: L1934623
Report Date: 08/21/19

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 **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
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: 08/07/19 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
Project Number: 18.8090

Lab Number: L1934623
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
Project Number: 18.8090

Lab Number: L1934623
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					
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
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: 08/08/19 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
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: 08/08/19 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					

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
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: 08/15/19 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
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: 08/15/19 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
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					

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
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					
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
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
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
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								
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
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): 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
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): 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
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												
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
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: 1,8082A
Analytical Date: 08/10/19 17:26
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	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
Project Number: 18.8090
Lab Number: L1934623
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: 1,8082A
Analytical Date: 08/10/19 17:39
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	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
Project Number: 18.8090
Lab Number: L1934623
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: 1,8082A
Analytical Date: 08/10/19 17:53
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	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
Project Number: 18.8090
Lab Number: L1934623
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
Project Number: 18.8090
Lab Number: L1934623
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
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: 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
Project Number: 18.8090
Lab Number: L1934623
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: 1,8081B
Analytical Date: 08/16/19 05:23
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: L1934623-02 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
Project Number: 18.8090
Lab Number: L1934623
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: 1,8081B
Analytical Date: 08/16/19 05:36
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: L1934623-03 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
Project Number: 18.8090
Lab Number: L1934623
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: 1,8081B
Analytical Date: 08/16/19 05:48
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: L1934623-04 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
Project Number: 18.8090
Lab Number: L1934623
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: 1,8081B
Analytical Date: 08/16/19 06:39
Analyst: AMC

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: L1934623-05 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
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						

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
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
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

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934623
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
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

Project Name:	HVRA	**Lab Number:**	L1934623
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

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

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.

Report Format: DU Report with 'J' Qualifiers

Project Name:	HVRA	**Lab Number:**	L1934623
Project Number:	18.8090	**Report Date:**	08/21/19

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

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

Page 1 of 1

Date Rec'd in Lab: 8/2/19

ALPHA Job #: L1934623

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
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: CT 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:
BFL = Balefill Landfill FTB = Field Trip Blank
DL = Dutchess Landfill LTB = Lab Trip Blank
★ On bottle labeled 190208 not 190802 ★

Please specify Metals or TAL.

ANALYSIS: A2-537 (PFAS) | NYTCL-8270-LVI | NYTCL-8081 | NYTCL-8082-LVI | A2-1,4Dioxane

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)	NYTCL-8270-LVI	NYTCL-8081	NYTCL-8082-LVI	A2-1,4Dioxane				Sample Specific Comments	Total Bottles
34623-01	HVRA-BFL-~~[illegible]~~3S-190801	8/1/19	1635	Ground water	CB	✓	✓	✓	✓	✓				~~BFL-3~~ (CB)	10
02★	HVRA-BFL2S-190801	↓	1616		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 Bud [signature]	8/2/19 1500	[signature] AAL	8-2-19 1600
[signature]	8-2-19 1900	P.S. 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
Project Number: 18.8090

Lab Number: L1934860
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.

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

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

Title: Technical Director/Representative Date: 08/21/19

ORGANICS

VOLATILES

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
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: 1,8260C
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
Project Number: 18.8090

Lab Number: L1934860
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
Project Number: 18.8090

Lab Number: L1934860
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
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								
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
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
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
Project Number: 18.8090
Lab Number: L1934860
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
Project Number: 18.8090
Lab Number: L1934860
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: 122,537(M)
Analytical Date: 08/14/19 10:43
Analyst: JW
Percent Solids: 94%

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)	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
Project Number: 18.8090
Lab Number: L1934860
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 **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
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: L1934860-03 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
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

SAMPLE RESULTS

Lab ID: L1934860-04
Client ID: HVRA-RB01-190805
Sample Location: WAPPINGER'S FALLS, NY

Date Collected: 08/05/19 14:25
Date Received: 08/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/16/19 16:57
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)	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
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

Date Collected: 08/05/19 15:00
Date Received: 08/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 08/12/19 17:22
Analyst: IM
Percent Solids: 95%

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						
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

Date Collected: 08/05/19 15:00
Date Received: 08/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/14/19 10:59
Analyst: JW
Percent Solids: 95%

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
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: 08/13/19 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

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: 08/13/19 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
Project Number: 18.8090

Lab Number: L1934860
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
Project Number: 18.8090

Lab Number: L1934860
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
Project Number: 18.8090

Lab Number: L1934860
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
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					

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
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

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
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												
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
Project Number: 18.8090
Lab Number: L1934860
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
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

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
Project Number: 18.8090

Lab Number: L1934860
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
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
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
Project Number: 18.8090
Lab Number: L1934860
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: 1,8081B
Analytical Date: 08/14/19 17:04
Analyst: SL
Percent Solids: 94%

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	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
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

Date Collected: 08/05/19 15:00
Date Received: 08/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 08/14/19 16:51
Analyst: SL
Percent Solids: 95%

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	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
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						

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
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
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

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
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
Project Number: 18.8090
Lab Number: L1934860
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
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
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
Date Collected: 08/05/19 15:00
Date Received: 08/05/19
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
Project Number: 18.8090
Lab Number: L1934860
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
Project Number: 18.8090

Lab Number: L1934860
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

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
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

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
Project Number: 18.8090
Lab Number: L1934860
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

Project Name:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

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.

Report Format: DU Report with 'J' Qualifiers

Project Name:	HVRA	**Lab Number:**	L1934860
Project Number:	18.8090	**Report Date:**	08/21/19

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 1

Date Rec'd in Lab: 08/06/19

ALPHA Job #: L1934860

Client Information
Client: C.T. Male Associates
Address: 50 Century Hill Dr.
Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

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 #

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.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TCL VOCs	TCL PCBs	TCL SVOCs	TCL Pest.	TAL Metals	PFAS, moisture	1,4-Dioxane	CN	Sample Specific Comments	Total Bottle
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

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
	16:40 8/5/19	GTAC (AAL)	8/5/19@16:40
GTAC /	8/5/19@18:40		8/5/19 1930
	8/6/19 00:15		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.)

Form No: 01-25 HC (rev. 30-Sept-2013)

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.

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

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.

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

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

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

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 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

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
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: 1,8260C
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
Project Number: 18.8090
Lab Number: L1935085
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: 1,8260C
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
Project Number: 18.8090

Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
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
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								
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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-01
Client ID: HVRA-FTB01-190806
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 10:00
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/19/19 12:34
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	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
Project Number: 18.8090
Lab Number: L1935085
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:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/19/19 12:51
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	1.96	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 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
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
Project Number: 18.8090
Lab Number: L1935085
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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-04
Client ID: HVRA-MW102-4.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 09:45
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 08/17/19 16:02
Analyst: RC
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 08/16/19 04:15

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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-04
Client ID: HVRA-MW102-4.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 09:45
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/13/19 14:43
Analyst: JW
Percent Solids: 89%

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	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
Project Number: 18.8090
Lab Number: L1935085
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: 1,8270D
Analytical Date: 08/17/19 02:53
Analyst: RC
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 08/16/19 04:15

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
Project Number: 18.8090
Lab Number: L1935085
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: 122,537(M)
Analytical Date: 08/13/19 14:59
Analyst: JW
Percent Solids: 89%

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	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
Project Number: 18.8090
Lab Number: L1935085
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
Project Number: 18.8090
Lab Number: L1935085
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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

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:** 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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

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:** 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
Project Number: 18.8090
Lab Number: L1935085
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
Analytical Method: 1,8270D
Analytical Date: 08/18/19 18:37
Analyst: RC
Percent Solids: 95%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 01:31

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
Project Number: 18.8090
Lab Number: L1935085
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
Analytical Method: 122,537(M)
Analytical Date: 08/13/19 15:32
Analyst: JW
Percent Solids: 95%

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	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
Project Number: 18.8090
Lab Number: L1935085
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
Project Number: 18.8090
Lab Number: L1935085
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-SIM
Analytical Date: 08/09/19 15:18
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 08/08/19 17:30

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	37		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935085
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-SIM
Analytical Date: 08/12/19 13:29
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 15:37

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
Project Number: 18.8090
Lab Number: L1935085
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: 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:** 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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

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:** 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
Project Number: 18.8090
Lab Number: L1935085
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
Analytical Method: 1,8270D
Analytical Date: 08/18/19 19:02
Analyst: RC
Percent Solids: 94%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 01:31

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
Project Number: 18.8090
Lab Number: L1935085
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
Analytical Method: 122,537(M)
Analytical Date: 08/13/19 15:49
Analyst: JW
Percent Solids: 94%

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)	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
Project Number: 18.8090

Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/13/19 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
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/13/19 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
Project Number: 18.8090

Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
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
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					

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
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					
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
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					
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
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					
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

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					
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
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								
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

Lab Number: L1935085
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
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								

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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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-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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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-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
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								
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
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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

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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

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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								

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
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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): 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
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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): 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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-04
Client ID: HVRA-MW102-4.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 09:45
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 08/18/19 20:04
Analyst: WR
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 08/16/19 03:25
Cleanup Method: EPA 3665A
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/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
Project Number: 18.8090
Lab Number: L1935085
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: 1,8082A
Analytical Date: 08/18/19 20:16
Analyst: WR
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 08/16/19 03:25
Cleanup Method: EPA 3665A
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/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
Project Number: 18.8090
Lab Number: L1935085
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: 1,8082A
Analytical Date: 08/18/19 20:29
Analyst: WR
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 08/16/19 03:25
Cleanup Method: EPA 3665A
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/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
Project Number: 18.8090
Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/16/19 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
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): 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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-04
Client ID: HVRA-MW102-4.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 09:45
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 08/17/19 23:42
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	1.76	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
Project Number: 18.8090
Lab Number: L1935085
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
Project Number: 18.8090
Lab Number: L1935085
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: 1,8081B
Analytical Date: 08/18/19 00:05
Analyst: SL
Percent Solids: 91%

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	1.67	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
Project Number: 18.8090
Lab Number: L1935085
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: 1,8081B
Analytical Date: 08/16/19 13:21
Analyst: SL

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 23:58

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
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): 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
Project Number: 18.8090
Lab Number: L1935085
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
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
Project Number: 18.8090
Lab Number: L1935085
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

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
Project Number: 18.8090
Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
Report Date: 08/20/19

SAMPLE RESULTS

Lab ID: L1935085-04
Client ID: HVRA-MW102-4.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 09:45
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	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
Project Number: 18.8090

Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
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

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
Project Number: 18.8090

Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
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

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
Project Number: 18.8090

Lab Number: L1935085
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
Project Number: 18.8090

Lab Number: L1935085
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

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
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(*)
L1935085-10G	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

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

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.

Report Format: DU Report with 'J' Qualifiers

Project Name:	HVRA	**Lab Number:**	L1935085
Project Number:	18.8090	**Report Date:**	08/20/19

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: 8/6/19

ALPHA Job #: L1935085

Client Information
Client: C.T. Male Associate
Address: 50 Century Hill Dr. Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

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

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.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pest	TAL Metals	CN	PFAS, Moisture	1,4-Dioxane	Sample Specific Comments	Total Bottle
35085-01	HVRA-FTB01-190806	8/6/19	1000	Water	DK							✓			1
-02	HVRA-LTB01-190806		—	Water	DK	✓						✓			3 (2)
-03	HVRA-RB01-190806		0835	Water	~~DK~~ CB							✓			1
-04	HVRA-MW102-4.5		0945	Soil	CB	✓	✓	✓	✓	✓	✓	✓	✓		8
8/7 -06	~~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
	8/6/19-1700		8-6-19 1700
	8-6-19 18:45		8/6/19 1945
	8/6/19 23:50		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 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: 2 of 2

Date Rec'd in Lab: 8/6/19

ALPHA Job #: L1935085

Client Information
Client: C.T. Male Associates
Address: 50 Century Hill Dr. Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

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:

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.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pest.	TAL Metals	CN	PFAS, Moisture	1,4-Dioxane	Sample Specific Comments	Total Bottle
35085-10	HVRA-EB01-190806	8/6/19	1320	Water	DK	✓	✓	✓	✓	✓	✓	✓	✓	(Ziploc Bag)	15
-11	HVRA-RB04-190806	↓	1445	Water	CB							✓			1
-12	HVRA-MW103-4.0	↓	1550	Soil	CB							✓	✓		3

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	VA	A	A	A	A	A	P	A
Preservative	F	A	A	A	A	A	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
	8/6/19-1700		8-6-19 17:00
	8-6-19 18:45		8/6/19 21:30
	8/6/19 2355		8/7/19 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.

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

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

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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%),

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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 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
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
Project Number: 18.8090
Lab Number: L1935927
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 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:** 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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8260C
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
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 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
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 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
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 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
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								
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
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												
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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-01
Client ID: HVRA-LTB01-190807
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
Analytical Method: 122,537(M)
Analytical Date: 08/20/19 20:28
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/16/19 09:53

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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-02
Client ID: HVRA-FTB01-190807
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/07/19 14:35
Date Received: 08/09/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/22/19 05:25
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)	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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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-SIM
Analytical Date: 08/13/19 15:54
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/12/19 08:25

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
Project Number: 18.8090
Lab Number: L1935927
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-SIM
Analytical Date: 08/14/19 12:01
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	254.		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	37		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
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: 122,537(M)
Analytical Date: 08/22/19 05:42
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)	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
Project Number: 18.8090
Lab Number: L1935927
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
Analytical Method: 1,8270D
Analytical Date: 08/15/19 19:23
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	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
Project Number: 18.8090
Lab Number: L1935927
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
Analytical Method: 1,8270D-SIM
Analytical Date: 08/13/19 16:10
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/12/19 08:25

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
Project Number: 18.8090
Lab Number: L1935927
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
Analytical Method: 1,8270D-SIM
Analytical Date: 08/14/19 14:20
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	284.		ng/l	150	33.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	42		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
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
Analytical Method: 122,537(M)
Analytical Date: 08/20/19 20:45
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/16/19 09:53

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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8270D
Analytical Date: 08/15/19 18:32
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	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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8270D-SIM
Analytical Date: 08/13/19 16:27
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/12/19 08:25

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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8270D-SIM
Analytical Date: 08/14/19 13:11
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	41		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8270D
Analytical Date: 08/15/19 19:49
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	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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8270D-SIM
Analytical Date: 08/13/19 16:44
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/12/19 08:25

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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8270D-SIM
Analytical Date: 08/14/19 15:05
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
Project Number: 18.8090
Lab Number: L1935927
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: 122,537(M)
Analytical Date: 08/22/19 07:24
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)	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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8270D
Analytical Date: 08/16/19 22:39
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/14/19 16:04

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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8270D-SIM
Analytical Date: 08/14/19 15:28
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	163	36.8	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	35		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
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: 1,8270D-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 **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
Project Number: 18.8090
Lab Number: L1935927
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: 122,537(M)
Analytical Date: 08/22/19 07:41
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)	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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

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: 1,8270D
Analytical Date: 08/18/19 19:27
Analyst: RC
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 01:31

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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

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: 122,537(M)
Analytical Date: 08/21/19 02:59
Analyst: AJ
Percent Solids: 84%

Extraction Method: EPA 537(M)
Extraction Date: 08/16/19 10:37

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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8270D
Analytical Date: 08/18/19 19:53
Analyst: RC
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 08/17/19 01:31

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
Project Number: 18.8090
Lab Number: L1935927
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: 122,537(M)
Analytical Date: 08/21/19 03:50
Analyst: AJ
Percent Solids: 86%

Extraction Method: EPA 537(M)
Extraction Date: 08/16/19 10:37

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
Project Number: 18.8090
Lab Number: L1935927
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
Analytical Date: 08/16/19 23:05
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: L1935927-10 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
Project Number: 18.8090
Lab Number: L1935927
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: 08/14/19 15:50
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	39		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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: 122,537(M)
Analytical Date: 08/22/19 07:58
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)	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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

SAMPLE RESULTS

Lab ID: L1935927-11 RE
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: 08/28/19 21:02
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						
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: 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
Project Number: 18.8090
Lab Number: L1935927
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-SIM
Analytical Date: 08/14/19 18:02
Analyst: MA

Extraction Method: EPA 3510C
Extraction Date: 08/13/19 14:48

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
Project Number: 18.8090
Lab Number: L1935927
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-SIM
Analytical Date: 08/15/19 15:17
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	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
Project Number: 18.8090
Lab Number: L1935927
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: 122,537(M)
Analytical Date: 08/22/19 08:32
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)	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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8270D-SIM
Analytical Date: 08/14/19 18:23
Analyst: MA

Extraction Method: EPA 3510C
Extraction Date: 08/13/19 14:48

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
Project Number: 18.8090
Lab Number: L1935927
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: 122,537(M)
Analytical Date: 08/22/19 08:49
Analyst: AJ

Extraction Method: EPA 537
Extraction Date: 08/20/19 08:37

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
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					
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
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: 08/13/19 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
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: 08/13/19 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					

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
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: 08/14/19 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
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/16/19 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
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/16/19 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
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					
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
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: 08/19/19 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
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: 08/19/19 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					

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
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: 08/20/19 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: 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
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/18/19 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
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/18/19 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
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 08/18/19 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
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: 08/22/19 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
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: 08/22/19 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					

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
Project Number: 18.8090

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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
Project Number: 18.8090

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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): 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

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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
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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

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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): 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
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								

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
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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

Project Name: HVRA
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Lab Number: L1935927
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): 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

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
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

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
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

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
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

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
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Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1273531-2 WG1273531-3

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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

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): 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

Lab Control Sample Analysis
Batch Quality Control

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-09 Batch: WG1273531-2 WG1273531-3

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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

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): 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
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
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

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
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

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
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

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
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
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												
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
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												
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

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

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
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: WG1274408-6 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
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: WG1274408-6 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

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): 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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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
Analytical Method: 1,8082A
Analytical Date: 08/17/19 13:19
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	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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8082A
Analytical Date: 08/14/19 13:27
Analyst: HT

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	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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8082A
Analytical Date: 08/16/19 04:28
Analyst: HT

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	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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8082A
Analytical Date: 08/16/19 04:41
Analyst: HT

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	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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

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: 1,8082A
Analytical Date: 08/19/19 10:00
Analyst: HT
Percent Solids: 84%

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	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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8082A
Analytical Date: 08/19/19 01:04
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 08/17/19 13:59
Cleanup Method: EPA 3665A
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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8082A
Analytical Date: 08/17/19 16:29
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 08/15/19 02:19
Cleanup Method: EPA 3665A
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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8082A
Analytical Date: 08/17/19 16:42
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 08/15/19 02:19
Cleanup Method: EPA 3665A
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

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

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/16/19 09:59
Analyst: KB

Extraction Method: EPA 3510C
Extraction Date: 08/14/19 18:02
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/19/19 01:45
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 08/17/19 13:59
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

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Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8081B
Analytical Date: 08/16/19 09:34
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: L1935927-07 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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

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:** 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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8081B
Analytical Date: 08/19/19 14:30
Analyst: AMC
Percent Solids: 86%

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	1.81	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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8081B
Analytical Date: 08/16/19 08:44
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: L1935927-10 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
Project Number: 18.8090
Lab Number: L1935927
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: 1,8081B
Analytical Date: 08/16/19 08:57
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: L1935927-12 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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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	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
Project Number: 18.8090
Lab Number: L1935927
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	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
Project Number: 18.8090
Lab Number: L1935927
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	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
Project Number: 18.8090
Lab Number: L1935927
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

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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 08/29/19

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
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
Project Number: 18.8090
Lab Number: L1935927
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	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
Project Number: 18.8090
Lab Number: L1935927
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	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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090
Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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

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
Project Number: 18.8090

Lab Number: L1935927
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

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

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 08/29/19

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

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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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
Project Number: 18.8090

Lab Number: L1935927
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

Lab Duplicate Analysis

Batch Quality Control

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1935927

Report Date: 08/29/19

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

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

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

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
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(*)
L1935927-13K	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

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

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

Project Name:	HVRA	**Lab Number:**	L1935927
Project Number:	18.8090	**Report Date:**	08/29/19

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 ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

NEW 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: 8/9/19

ALPHA Job #: L1935917

Client Information
Client: C.T. Male Associates
Address: 50 Century Hill Dr.
Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

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

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:

Run VOCs ☑

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pest.	TAL Metals	CN	PFAS	1,4-Dioxane	Sample Specific Comments	Total Bottle
35927-01	HVRA-LTB01-190807	8/7/19	—	Water	CB	~~X~~						✓		~~MS/MSD~~	
-02	HVRA-FTB01-190807	8/7/19	1435	Water	CB							✓			1
-03	HVRA-MaintBldg-190807	8/7/19	1500	Water	DK		✓	✓		✓	✓	✓	✓	MS/MSD here	2
-04	HVRA-FD01-190807	8/7/19	—	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
	8/9/19 - 11:35		8/9/19 - 11:35
	8/9/19 - 14:40		8/9/19 14:40
MEATOUDES (AAL)	8/9/19 17:00		8/9/19 19:30
D.S.	8/9/19 23:05		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)

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

NEW 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: 8/9/19

ALPHA Job #: L1935927

Client Information
Client: C.T. Male Associates
Address: 50 Century Hill Dr.
Latham, NY
Phone: 518-786-7400
Fax:
Email: K.Moline@ctmale.com

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

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.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pest.	TAL Metals	CN	PFAS	1,4-Dioxane	Sample Specific Comments	Total Bottle
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

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	V	A	A	A	P	P	P	A
Preservative	B	A	A	A	C	E	O	A

Relinquished By:	Date/Time	Received By:	Date/Time
	8/9/19-11:35		8/9/19-11:35
	8/9/19-14:40	NEATOUROS (AAL)	8/9/19 14:40
NEATOUROS (AAL)	8/9/19-17:00	P.S., AWL	8/9/19 19:30
P.S.	8/9/19 23:05		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.

Project Name: HVRA **Lab Number:** L1936143
Project Number: 18.8090 **Report Date:** 08/26/19

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
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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:  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 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
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
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					
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
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					

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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
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: 1,8270D
Analytical Date: 08/20/19 06:09
Analyst: IM
Percent Solids: 92%

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	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
Project Number: 18.8090
Lab Number: L1936143
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: 1,8270D-SIM
Analytical Date: 08/21/19 18:46
Analyst: MA
Percent Solids: 92%

Extraction Method: EPA 3570
Extraction Date: 08/14/19 22:00

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
Project Number: 18.8090
Lab Number: L1936143
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: 122,537(M)
Analytical Date: 08/21/19 05:48
Analyst: AJ
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						
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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-03
Client ID: HVRA-RB02-190812
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 10:00
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/23/19 15:46
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	1.89	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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-04
Client ID: HVRA-MW101-1.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 10:20
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 08/23/19 14:39
Analyst: MA
Percent Solids: 97%

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	7.24	1.85	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	65		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-04
Client ID: HVRA-MW101-1.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 10:20
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/21/19 06:22
Analyst: AJ
Percent Solids: 97%

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)	0.072	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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-06
Client ID: HVRA-RB03-190812
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 11:00
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/23/19 16:03
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	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
Project Number: 18.8090
Lab Number: L1936143
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-SIM
Analytical Date: 08/23/19 15:28
Analyst: MA
Percent Solids: 93%

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	7.70	1.96	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	83		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
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: 122,537(M)
Analytical Date: 08/21/19 07:13
Analyst: AJ
Percent Solids: 93%

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)	0.176	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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-09
Client ID: HVRA-FTB01-190812
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 12:50
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/23/19 16:19
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	1.76	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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-10
Client ID: HVRA-LTB01-190812
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 00:00
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/23/19 16:36
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	1.78	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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
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-SIM
Analytical Date: 08/23/19 16:20
Analyst: MA
Percent Solids: 65%

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	10.3	2.63	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	82		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
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: 122,537(M)
Analytical Date: 08/21/19 07:47
Analyst: AJ
Percent Solids: 65%

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)	0.252	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 **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
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
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-SIM
Analytical Date: 08/23/19 16:45
Analyst: MA
Percent Solids: 87%

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	7.67	1.96	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	82		15-110

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: 122,537(M)
Analytical Date: 08/21/19 08:04
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)	0.093	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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-14
Client ID: HVRA-RB05-190812
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 12:10
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/26/19 12:32
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	1.95	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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-15
Client ID: HVRA-MW104-0.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 12:15
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D-SIM
Analytical Date: 08/23/19 17:10
Analyst: MA
Percent Solids: 93%

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	7.56	1.93	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	83		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-15
Client ID: HVRA-MW104-0.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 12:15
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 122,537(M)
Analytical Date: 08/21/19 08:21
Analyst: AJ
Percent Solids: 93%

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)	0.934	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
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
Analytical Method: 1,8270D-SIM
Analytical Date: 08/23/19 17:35
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	7.43	1.89	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	81		15-110

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
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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-17
Client ID: HVRA-RB06-190812
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 12:30
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/26/19 12:49
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	1.91	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
Project Number: 18.8090
Lab Number: L1936143
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: 1,8270D-SIM
Analytical Date: 08/23/19 18:00
Analyst: MA
Percent Solids: 69%

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	10.8	2.76	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	79		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
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: 1,8270D-SIM
Analytical Date: 08/23/19 18:25
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	8.24	2.10	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	85		15-110

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
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
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: 08/21/19 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
Project Number: 18.8090

Lab Number: L1936143
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
Project Number: 18.8090

Lab Number: L1936143
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
Project Number: 18.8090

Lab Number: L1936143
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
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: 08/21/19 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
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: 08/21/19 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
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					

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
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): 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
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								
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

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03,06,09-11,14,17 Batch: WG1275389-2 WG1275389-3

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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

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								

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
Project Number: 18.8090
Lab Number: L1936143
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: 1,8082A
Analytical Date: 08/20/19 10:51
Analyst: JW
Percent Solids: 92%

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	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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-04
Client ID: HVRA-MW101-1.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 10:20
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 08/20/19 01:03
Analyst: WR
Percent Solids: 97%

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	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
Project Number: 18.8090
Lab Number: L1936143
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: 1,8082A
Analytical Date: 08/20/19 10:39
Analyst: JW
Percent Solids: 87%

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	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
Project Number: 18.8090
Lab Number: L1936143
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: 1,8082A
Analytical Date: 08/20/19 11:03
Analyst: JW
Percent Solids: 93%

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	35.6	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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
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: 1,8082A
Analytical Date: 08/20/19 11:28
Analyst: JW
Percent Solids: 65%

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	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
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: 1,8082A
Analytical Date: 08/20/19 11:40
Analyst: JW
Percent Solids: 87%

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	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
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/20/19 01:15
Analyst: WR

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	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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-04
Client ID: HVRA-MW101-1.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 10:20
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 08/20/19 03:04
Analyst: BM
Percent Solids: 97%

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	1.64	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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
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: 1,8081B
Analytical Date: 08/20/19 03:41
Analyst: BM
Percent Solids: 94%

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	1.67	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
Project Number: 18.8090
Lab Number: L1936143
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
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: 1,8081B
Analytical Date: 08/20/19 04:06
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	1.80	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
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						
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
Project Number: 18.8090
Lab Number: L1936143
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
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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-04
Client ID: HVRA-MW101-1.5
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/12/19 10:20
Date Received: 08/12/19
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
Project Number: 18.8090
Lab Number: L1936143
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
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
Project Number: 18.8090
Lab Number: L1936143
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
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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090
Lab Number: L1936143
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
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
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
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
Project Number: 18.8090
Lab Number: L1936143
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
Project Number: 18.8090

Lab Number: L1936143
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
Project Number: 18.8090

Lab Number: L1936143
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

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
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-04
Client ID: HVRA-MW101-1.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 10:20
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	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
Project Number: 18.8090

Lab Number: L1936143
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

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
Project Number: 18.8090

Lab Number: L1936143
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

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
Project Number: 18.8090

Lab Number: L1936143
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
Project Number: 18.8090

Lab Number: L1936143
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

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
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

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
Project Number: 18.8090

Lab Number: L1936143
Report Date: 08/26/19

SAMPLE RESULTS

Lab ID: L1936143-15
Client ID: HVRA-MW104-0.5
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 12:15
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	93.2		%	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
Project Number: 18.8090

Lab Number: L1936143
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

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
Project Number: 18.8090

Lab Number: L1936143
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

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
Project Number: 18.8090

Lab Number: L1936143
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

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
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
Project Number: 18.8090

Lab Number: L1936143
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

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

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

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.

Report Format: DU Report with 'J' Qualifiers

Project Name:	HVRA	**Lab Number:**	L1936143
Project Number:	18.8090	**Report Date:**	08/26/19

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:08261922:55

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 Mtls	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 ~~4~~
-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 Mtls	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. Mm [signature]	08/12/19	NFARRIS (AAL)	8/12/19 15:28
NFARRIS (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)

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 2 of 2

Date Rec'd in Lab: 8/13/19

ALPHA Job #: L1936143

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:

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	↓	1246	Soil	DM						X	X			3
					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
[signature]	08/12/19	NEABOUROS (AAL)	8/12/19 15:28
NEABOUROS (AAL)	8/12/19 17:15	[signature] AAL	8/12/19 23:25
[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

Project Name:	HVRA	**Lab Number:**	L1940308
Project Number:	18.8090	**Report Date:**	09/20/19

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.

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
Project Number: 18.8090
Lab Number: L1940308
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: 1,8270D-SIM
Analytical Date: 09/08/19 02:27
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 09/06/19 18:00

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
Project Number: 18.8090
Lab Number: L1940308
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
Client ID: HVRA-7_HACKENSACK_HTS_RD-190904
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/04/19 14:00
Date Received: 09/04/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 09/08/19 02:47
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 09/06/19 18:00

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
Project Number: 18.8090
Lab Number: L1940308
Report Date: 09/20/19

SAMPLE RESULTS

Lab ID: L1940308-02
Client ID: HVRA-7_HACKENSACK_HTS_RD-190904
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/04/19 14:00
Date Received: 09/04/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 09/20/19 01:51
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)	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
Project Number: 18.8090
Lab Number: L1940308
Report Date: 09/20/19

SAMPLE RESULTS

Lab ID: L1940308-03
Client ID: HVRA-FTB01-190904
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/04/19 14:04
Date Received: 09/04/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 09/20/19 02:07
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)	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
Project Number: 18.8090
Lab Number: L1940308
Report Date: 09/20/19

SAMPLE RESULTS

Lab ID: L1940308-04
Client ID: HVRA-1610_RT_376-190904
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/04/19 14:41
Date Received: 09/04/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 09/08/19 03:06
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 09/06/19 18:00

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
Project Number: 18.8090
Lab Number: L1940308
Report Date: 09/20/19

SAMPLE RESULTS

Lab ID: L1940308-04
Client ID: HVRA-1610_RT_376-190904
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/04/19 14:41
Date Received: 09/04/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 09/20/19 02:24
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)	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
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					

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

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940308
Report Date: 09/20/19

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(*)
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

Project Name:	HVRA	**Lab Number:**	L1940308
Project Number:	18.8090	**Report Date:**	09/20/19

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

Project Name:	HVRA	**Lab Number:**	L1940308
Project Number:	18.8090	**Report Date:**	09/20/19

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

Project Name:	HVRA	**Lab Number:**	L1940308
Project Number:	18.8090	**Report Date:**	09/20/19

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

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 1

Date Rec'd in Lab: 9/5/19

ALPHA Job #: L1940308

Client Information
Client: C.T. Male Assoc
Address: 50 Century Hill Dr
Latham, NY
Phone: 518-786-7400
Fax:
Email: K.moline@ctmale.com

Project Information
Project Name: HVRA
Project Location: Wappingers Falls, NY
Project #: 18.8090J
(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 #

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.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PFAS	1,4 Dioxane							Sample Specific Comments	Total Bottle
40308.01	HVRA-158I_Rt_376-190904	9/4/19	1333		AH	X	X								4
.02	HVRA-7_HackensackHts_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

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
	09-04-19/1800		9/4/19 2150
	9/4/19 2150		9/5/19 0150
T. Hurdle	9/5/19 0400		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
Project Number: 18.8090
Lab Number: L1940894
Report Date: 09/25/19

SAMPLE RESULTS

Lab ID: L1940894-01
Client ID: HVRA-1601RT376-190906
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/06/19 15:15
Date Received: 09/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 09/12/19 12:47
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 09/11/19 12:00

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
Project Number: 18.8090
Lab Number: L1940894
Report Date: 09/25/19

SAMPLE RESULTS

Lab ID: L1940894-01
Client ID: HVRA-1601RT376-190906
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/06/19 15:15
Date Received: 09/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 09/24/19 21:39
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)	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
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: 1,8270D-SIM
Analytical Date: 09/12/19 13:08
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 09/11/19 12:00

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
Project Number: 18.8090
Lab Number: L1940894
Report Date: 09/25/19

SAMPLE RESULTS

Lab ID: L1940894-03
Client ID: LTB01-190906
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/06/19 00:00
Date Received: 09/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 09/24/19 22:12
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)	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
Project Number: 18.8090

Lab Number: L1940894
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
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

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					

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
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

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

Project Name:	HVRA	**Lab Number:**	L1940894
Project Number:	18.8090	**Report Date:**	09/25/19

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

Project Name:	HVRA	**Lab Number:**	L1940894
Project Number:	18.8090	**Report Date:**	09/25/19

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

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

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

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: HVLA
Project Location: Wappingers Falls, NY
Project #: 18.8090
(Use Project name as Project #) ☐
Project Manager: David Lent
ALPHAQuote #:

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 #

Client Information
Client: C.T. Male Associates
Address: 12 Raymond Ave
Poughkeepsie NY
Phone: (845) 454-4400
Fax:
Email: d.lent@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	ANALYSIS: PFAS	ANALYSIS: 1,4 Dioxane						Sample Specific Comments	Total Bottles
40894.01	HVRA-1601 LT376-190906	9/6/19	1515	W	DC	X	X							4
.02	HVRA-2 Hackensack-190906	9/6/19	1600	W	DC	X	X							4
.03	LTB01-190906	9/6/19	1610	W	DC	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. Lhmeda AAL	9/6/19 1700
D. Lhmeda 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 **Lab Number:** L1931180

Project Number: 18.8090 **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

ATTACHMENT_PFAS_3

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1931180
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

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								

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

resourceful. naturally.
engineering and environmental consultants

BARR

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		

ATTACHMENT_SVOC_1

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

Project Number: 18.8090

Lab Number: L1931312

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
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: L1932867-12
Client ID: TRIP BLANK
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 07/24/19 14:50
Date Received: 07/24/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/01/19 04:30
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	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
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:

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

Project Number: 18.8090

Lab Number: L1932869

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

Project Number: 18.8090

Lab Number: L1932869

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
Project Number: 18.8090
Lab Number: L1932869
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
Client ID: HVRA-LTB01-190731
Sample Location: WAPPINGERS FALLS

Date Collected: 07/31/19 00:00
Date Received: 08/01/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/15/19 03:53
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	1.84	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

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

ATTACHMENT_SVOC_SIM_1

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

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-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
Project Number: 18.8090
Lab Number: L1934623
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
Project Number: 18.8090
Lab Number: L1934623
Report Date: 11/13/19

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:

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

ATTACHMENT_PFAS_5

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1934623
Report Date: 11/13/19

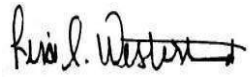
Case Narrative (continued)

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

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

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

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

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

ATTACHMENT_SVOC_2

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												
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												
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
Project Number: 18.8090
Lab Number: L1934860
Report Date: 08/21/19

SAMPLE RESULTS

Lab ID: L1934860-04
Client ID: HVRA-RB01-190805
Sample Location: WAPPINGER'S FALLS, NY

Date Collected: 08/05/19 14:25
Date Received: 08/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/16/19 16:57
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)	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

ATTACHMENT_PFAS_5

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

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1934860
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:

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: L1934860-05 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
Project Number: 18.8090
Lab Number: L1935085
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
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:

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
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-SIM
Analytical Date: 08/12/19 13:29
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 08/11/19 15:37

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:** 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
Project Number: 18.8090
Lab Number: L1935085
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
Project Number: 18.8090
Lab Number: L1935085
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
Project Number: 18.8090
Lab Number: L1935085
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
Project Number: 18.8090
Lab Number: L1935085
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:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/19/19 12:51
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	1.96	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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 11/06/19

SAMPLE RESULTS

Lab ID: L1935085-01
Client ID: HVRA-FTB01-190806
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/06/19 10:00
Date Received: 08/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/19/19 12:34
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	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

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: 08/19/19 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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 11/06/19

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:

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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 11/06/19

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:

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
Project Number: 18.8090
Lab Number: L1935085
Report Date: 11/06/19

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:

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 **Lab Number:** L1935085
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 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

ATTACHMENT_METALS_1

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

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.

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 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.

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 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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 11/06/19

SAMPLE RESULTS

Lab ID: L1935927-01
Client ID: HVRA-LTB01-190807
Sample Location: WAPPINGERS FALLS, NY
Date Collected: 08/07/19 00:00
Date Received: 08/09/19
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	7.2		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
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
Project Number: 18.8090
Lab Number: L1935927
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:

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
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 Client ID: HVRA-MW100-190808	Associated sample(s): 01,05-07,10,12			QC Batch ID: WG1272314-6		WG1272314-7			QC Sample: L1935927-05			
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
Project Number: 18.8090
Lab Number: L1935927
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
Analytical Date: 08/16/19 22:39
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 08/14/19 16:04

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
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): 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: 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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 11/06/19

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:

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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 11/06/19

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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 11/06/19

SAMPLE RESULTS

Lab ID: L1935927-11 RE
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: 08/28/19 21:02
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						
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

ATTACHMENT_PFAS_3

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 **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: 08/19/19 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

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: WG1274408-6 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

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): 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
Project Number: 18.8090
Lab Number: L1935927
Report Date: 11/06/19

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:

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

ATTACHMENT_PFAS_10

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

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1935927
Report Date: 11/06/19

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

ATTACHMENT_PCB_1

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
Report Date: 11/06/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
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

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	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
Project Number: 18.8090
Lab Number: L1935927
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

ATTACHMENT_METALS_2

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1935927
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

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

Project Name: HVRA

Project Number: 18.8090

Lab Number: L1940894

Report Date: 09/25/19

SAMPLE RESULTS

Lab ID: L1940894-03
Client ID: LTB01-190906
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/06/19 00:00
Date Received: 09/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 09/24/19 22:12
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)	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

ATTACHMENT_PFAS_3

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 **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

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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 11/04/19

SAMPLE RESULTS

Lab ID: L1936143-17
Client ID: HVRA-RB06-190812
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 08/12/19 12:30
Date Received: 08/12/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 08/26/19 12:49
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	1.91	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

Project Number: 18.8090

Lab Number: L1936143

Report Date: 11/04/19

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

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

Project Name: HVRA
Project Number: 18.8090
Lab Number: L1936143
Report Date: 11/04/19

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

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
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
Project Number: 18.8090
Lab Number: L1936143
Report Date: 11/04/19

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

Project Number: 18.8090

Lab Number: L1936143

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
Client ID: HVRA-FTB01-190904
Sample Location: WAPPINGERS FALLS, NY

Date Collected: 09/04/19 14:04
Date Received: 09/04/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 122,537(M)
Analytical Date: 09/20/19 02:07
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)	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

ATTACHMENT_PFAS_2

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

ATTACHMENT_PFAS_3

Project Name: HVRA
Project Number: 18.8090

Lab Number: L1940308
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

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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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

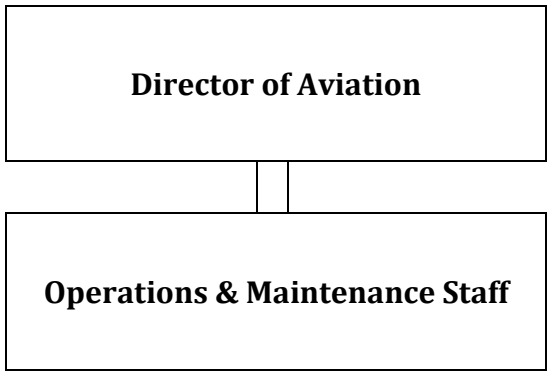
The Pollution Prevention Team for the facility was designed to identify a specific group within the facility organization that is responsible for assisting the facility in the implementation, maintenance, and revision of the SWPPP. This section of the SWPPP identifies the personnel associated with the 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:

Drainage Area A

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.

STATE DISCHARGE NOTIFICATION PROCEDURES

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 annual basis 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

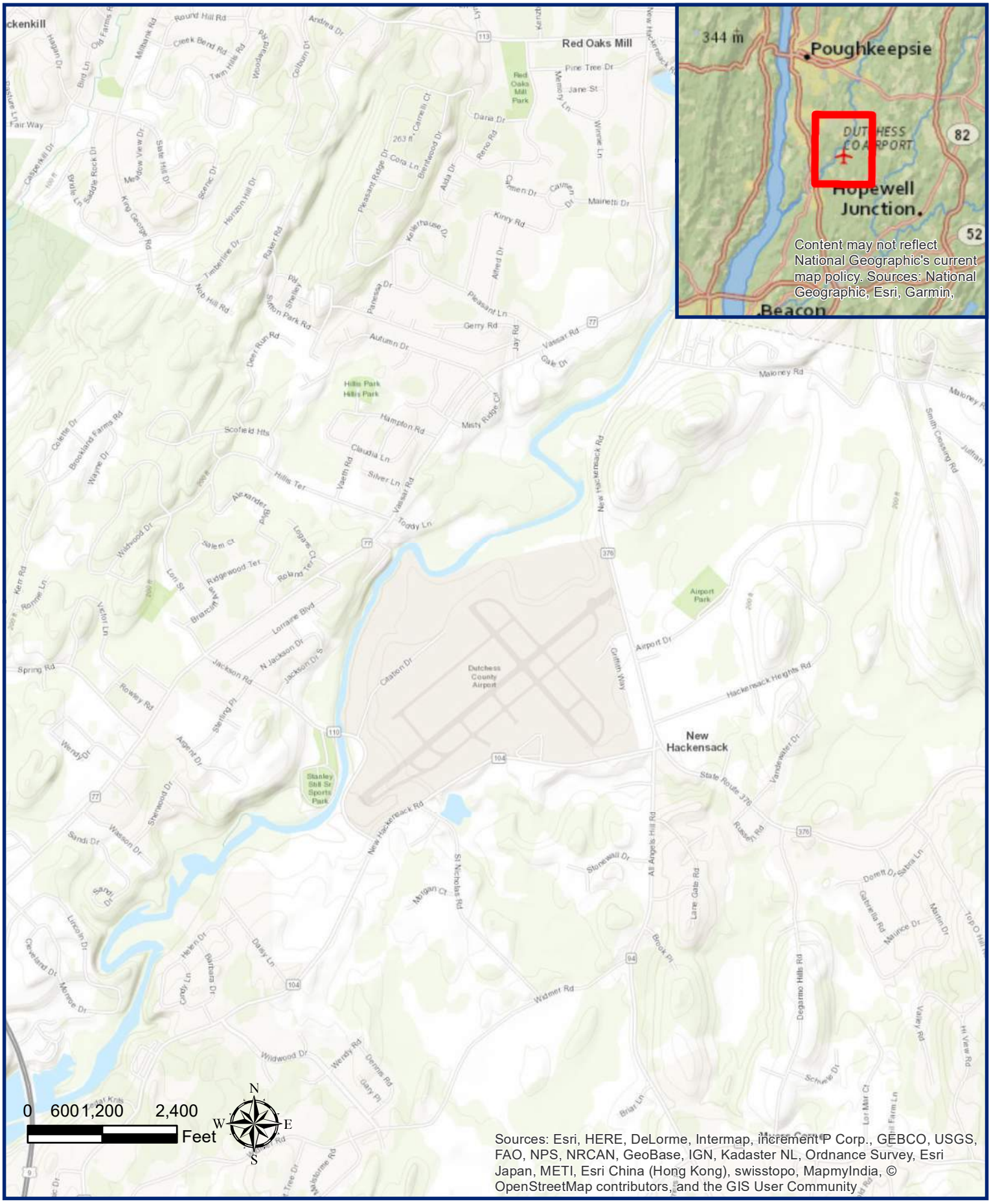
The following Schedule of Implementation is a summary of key action items described in this Plan. The following items must be performed and / or addressed in order to comply with the MSGP.

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®

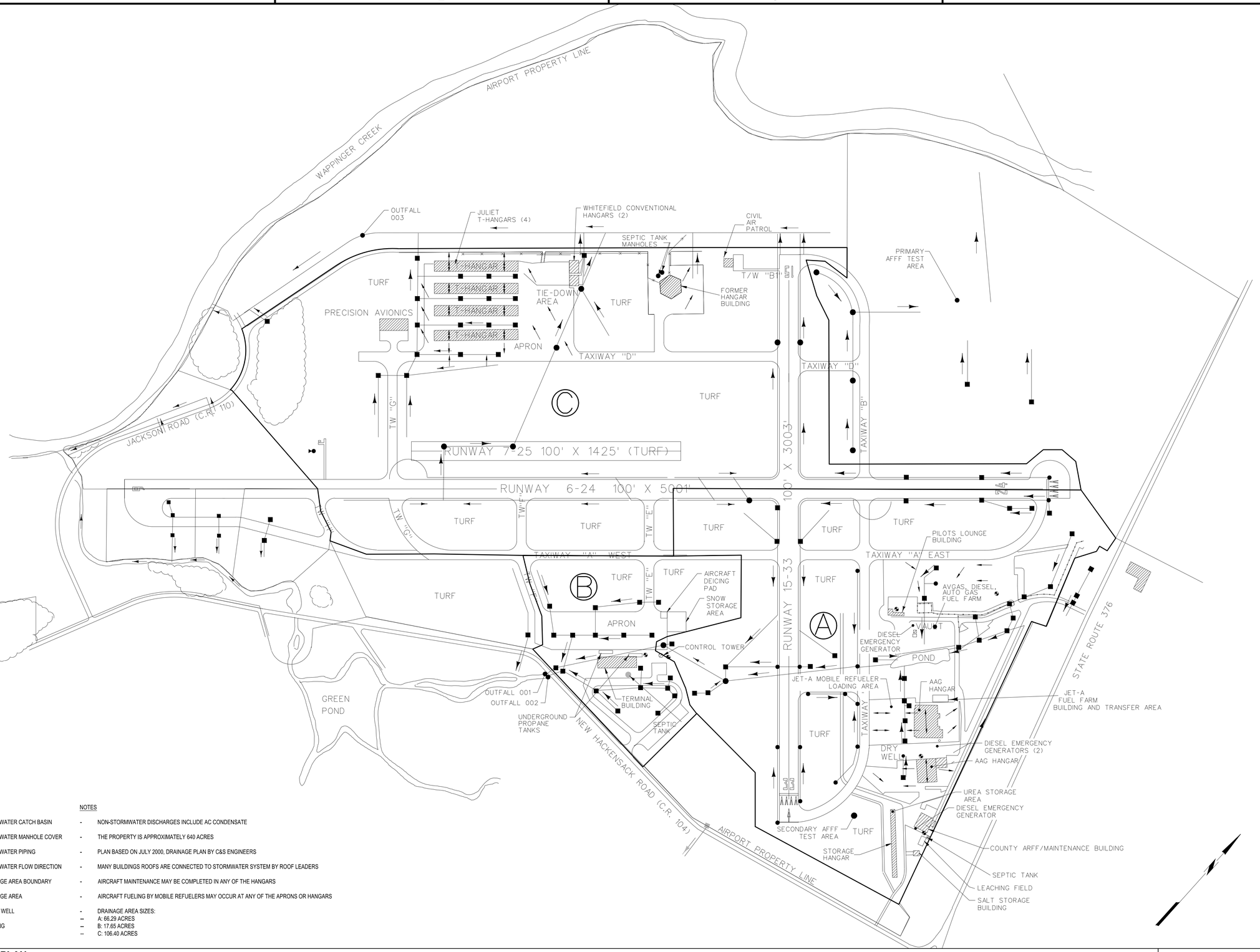
Sormwater Pollution Prevention Plan (SWPPP)
Hudson Valley Airport
263 New Hackensack Road
Wappingers Falls, NY 12590

Figure 1

C&S COMPANIES®

Sormwater Pollution Prevention Plan (SWPPP)
Hudson Valley Airport
263 New Hackensack Road
Wappingers Falls, NY 12590

Figure 2



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"

May 22, 2018 - 8:48am
F:\Projekt\128 - DUTCHESS COUNTY\128325001 - Hudson Valley Airport Industrial SWPPP\Planning-Study\CADD\Hudson Valley Drainage 2018.dwg

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

MARK	DATE	DESCRIPTION
REVISIONS		

PROJECT NO:	128.325.001
DATE:	MAY 2018
DRAWN BY:	JCT
DESIGNED BY:	JCT
CHECKED BY:	MDH

SWPPP SITE PLAN

FIGURE 3

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 *discharge*rs 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:

$$\frac{\text{(Area of Roofs + Area of Paved and Other Impervious Surfaces) x100}}{\text{Total Area of Facility}}$$

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) Activities - A list of the activities occurring in the area (e.g., material storage, equipment fueling and cleaning, cutting steel beams, etc.); and

(2) *Pollutants* - 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) Potential for presence in *stormwater* - 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;

[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 New York Standards and Specifications for

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

[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. Representative *outfalls* - 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	Period 1 - *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.
	Period 2 - *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 *discharge*r 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.