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NAVAL REACTORS LABORATORY FIELD OFFICE
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NRLFO:AMO-S:ESH:22-067
30 June 2022

Mrs. Lynn Winterberger
Chief, RCRA Permitting Section
New York State
Department of Environmental Conservation
625 Broadway
Albany, New York 12233

Dear Mrs. Winterberger:

KNOLLS ATOMIC POWER LABORATORY, KNOLLS LABORATORY AND KESSELRING SITE EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORTS; FOR APPROVAL

References:
(a) KAPL. 2021. Emerging Contaminants Sampling Scope of Work for the Knolls Laboratory, April 2021
(b) KAPL. 2021. Emerging Contaminants Sampling Scope of Work for the Kesselring Site, April 2021
(c) NRLFO Letter NRFLO:AMO-S:ESH:22-050, dated 13 May 2022; Subject: Knolls Atomic Power Laboratory, Knolls Laboratory and Kesselring Site Emerging Contaminants Groundwater Monitoring Reports Schedule; For Information
(d) NYSDEC (Winterberger) letter to NRLFO (Delwiche) dated September 2, 2021; Re: Knolls Atomic Power Laboratory (KAPL) – Knolls Laboratory, Emerging Contaminants Scope of Work (SOW)
(e) NYSDEC (Winterberger) letter to NRLFO (Delwiche) dated September 2, 2021; Re: Knolls Atomic Power Laboratory (KAPL) – Kesselring Site, Emerging Contaminants Scope of Work (SOW)

In accordance with references (a) and (b), and the schedule provided in reference (c), transmitted herewith for New York State Department of Environmental Conservation (NYSDEC) approval are the Emerging Contaminants Groundwater Monitoring Reports (Monitoring Reports) for the Knolls Laboratory and Kesselring Site, Enclosures (1) and (2), respectively.

The Scopes of Work (SOWs) were implemented in accordance with references (a) and (b), as approved by NYSDEC by references (d) and (e). The SOWs were implemented in the fall of 2021 and consisted of an initial groundwater sampling phase and a supplemental sampling phase. The supplemental sampling phase was performed

based on the findings of the initial sampling phase and did not include the analysis for 1,4-dioxane, as it was not detected in any samples in the initial phase.

Criteria for comparing analytical results continue to evolve since the issuance of the SOWs. In consideration of the focus on per- and polyfluoroalkyl substances (PFAS) in drinking water, the analytical results for the two reports for perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) are compared to the current New York State Department of Health maximum contaminant level (MCL) of 10 parts per trillion (ppt) for each of these PFAS. In addition, the NYS Drinking Water Quality Council has recently recommended that the 10 ppt be adopted as the MCL for four additional PFAS based on overall persistence in the environment and toxicity similar to PFOS and PFOA. KAPL proactively included evaluation of these four PFAS in the Monitoring Reports. NRLFO and KAPL acknowledge the interim updated lifetime drinking water health advisories for PFOS and PFOA and final health advisories for hexafluoropropylene oxide (HFPO) and its ammonium salt (together referred to as "GenX chemicals") and perfluorobutane sulfonic acid (PFBS) recently issued by the U.S. Environmental Protection Agency (USEPA) at the time of publication of the Monitoring Reports and the potential for NYS water-quality criteria for PFOS, PFOA, and other PFAS to evolve further.

PFAS are present in groundwater at both Knolls Laboratory and Kesselring Site, including the Closed Landfill and Hogback Road Landfill at each Site, respectively. The highest PFAS concentrations are located in the interior of the developed portion of each site, and most concentrations decrease in downgradient groundwater to levels below 10 ppt. PFAS results at the Knolls Laboratory Closed Landfill and Kesselring Site Hogback Road Landfill are unremarkable with only one sample at Hogback Road Landfill above 10 ppt (PFOS: 13.6 ppt); concentrations in downgradient groundwater are less than 10 ppt. HFPO was not part of the SOW analytical suite, and PFBS is present in groundwater at both sites at concentrations below 5 ppt, which is less than the USEPA advisory level of 2,000 ppt.

Groundwater at the Knolls Laboratory is not used for drinking water and adjacent properties are serviced by municipal water provided by the Town of Niskayuna Consolidated Water District #11, which receives water from wells located upgradient of the Site in the Town of Rotterdam and the Niskayuna well field located approximately 1.8 miles east and downgradient of the Site. Both well fields are located near the Mohawk River and are hydrogeologically separated from the Site. The Latham Colonie Water District intake from the Mohawk River is approximately 6.3 miles downstream of the Knolls Laboratory. Groundwater in the developed portion of the Kesselring Site is not used for drinking water, and the Site's drinking water supply wells are approximately one mile away and are hydrogeologically separated from the Site. In addition, groundwater discharges to the Glowegee Creek, which acts as a hydrogeologic barrier to off-site migration of PFAS from the developed portion of the site. At the Hogback

Road Landfill, groundwater also flows into the Glowegee Creek and the nearest private downgradient well is approximately one-third mile from the landfill.

Consistent with previous transmittals, you are being provided with one hardcopy each of the Monitoring Report for the Knolls Laboratory and the Kesselring Site. Others on distribution will receive electronic copies of Enclosures (1) and (2) via email. In accordance with references (a) and (b), the separate electronic data deliverable associated with the groundwater monitoring will be submitted directly from Ramboll to NYSDEC. In addition, an electronic copy of the NYSDEC Analytical Service Protocol Category B data packages will be uploaded by Ramboll to the NYSDEC file transfer service.

Should you have any questions or need additional information, please contact me at (518) 395-6366.

Sincerely,

for

D. A. DELWICHE
Program Manager
Environment, Safety, and Health

Enclosures

Electronic copy to:
Mr. Daniel Evans, NYSDEC
Mr. Kevin Wood, NYSDEC
Mr. Brian Maglienti, NYSDEC
Mrs. Lynn Winterberger, NYSDEC
Mr. Adolph Everett, EPA
Mr. Andrew Park, EPA
Mr. Clifford Ng, EPA
Ms. Carlos Colombani, EPA
Ms. Sara Bogardus, NYSDOH

Enclosure (1)

Emerging Contaminants Groundwater Monitoring Report for the Knolls Laboratory

Emerging Contaminants Groundwater Monitoring Report for the Knolls Laboratory

Knolls Atomic Power Laboratory
Knolls Laboratory
Niskayuna, New York

June 2022

Prepared by

Fluor Marine Propulsion, LLC
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Operated for the United States Department of Energy

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amsl	Above Mean Sea Level
CVOC	Chlorinated Volatile Organic Compound
FTS	Fluorotelomer Sulfonate
HDPE	High Density Polyethylene
KAPL	Knolls Atomic Power Laboratory
MCL	Maximum Contaminant Level
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PFAS	Per- and Polyfluoroalkyl Substances
PFDA	Perfluorodecanoic Acid
PFHpA	Perfluoroheptanoic Acid
PFHxS	Perfluorohexanesulfonic Acid
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PPE	Personal Protective Equipment
ppt	Parts Per Trillion
QA	Quality Assurance
QC	Quality Control
SOW	Scope of Work
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

A Scope of Work (SOW), reference (1), was implemented to evaluate groundwater at the Knolls Atomic Power Laboratory (KAPL) – Knolls Laboratory (Site) in Niskayuna, New York for the presence of emerging contaminants, per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane, as identified by the United States Environmental Protection Agency (USEPA) and the New York State Department of Environmental Conservation (NYSDEC). The SOW was prepared in accordance with the reference (2) NYSDEC Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs. The SOW was provided to NYSDEC via email on April 6, 2021. Following resolution of NYSDEC and New York State Department of Health (NYSDOH) comments, NYSDEC approved the SOW by reference (3) on September 2, 2021. The SOW fieldwork was implemented in the fall of 2021.

The SOW specified that a Monitoring Report would be prepared to document the findings of the fieldwork. This Monitoring Report includes a site description, emerging contaminants groundwater analytical data summary and assessment, and conclusions.

1.1 Emerging Contaminants Groundwater Sampling Implementation Summary

The SOW was implemented in two phases - the Initial Phase that implemented the SOW and a Supplemental Phase that was performed based on the results of the Initial Phase and discussions with NYSDEC and NYSDOH. The objective of the SOW was to evaluate for the presence of emerging contaminants in groundwater at the Site.

The Initial Phase consisted of groundwater sample collection from the developed area of the Site which included four Hillside Area wells, one Former High Yard Area (HYA) well, and five Q3 Yard Wells. The initial phase also involved sampling in the Site's undeveloped area which includes: two Land Disposal Area (LDA) wells and three Closed Landfill wells. The Supplemental Phase consisted of groundwater sample collection from six Q3 Yard wells. An implementation summary is provided on Table 1.

2.0 SITE DESCRIPTION

As shown on Figure 1, the Site is located in the Town of Niskayuna, Schenectady County, New York, on the south bank of the Mohawk River. The Site is comprised of approximately 170 acres, most of which are located on a bluff approximately 115 to 120 feet above the Mohawk River surface (referred to as the upper level). Along the northern margin of the Site, the land surface slopes steeply to a natural bench (referred to as the lower level) approximately 15 to 20 feet above the river surface. The Site fronts approximately 4,200 feet of the Mohawk River. The Site is bounded to the north by the Mohawk River; to the east by a mixture of open land, parks, and the Town of Niskayuna closed municipal landfill; to the south by a low-density suburban residential area; and to the west by the General Electric Global Research Center.

Construction of the Site began in 1948 and Site operations began in 1949. The principal function of the Site is research and development in the design and operation of Naval nuclear propulsion plants. Facilities at the Site include administrative offices, machine shops, a sewage pumping station, wastewater treatment facilities, a boiler house, oil storage facilities, cooling towers, waste storage facilities, and chemistry, physics, and metallurgical laboratories. The developed area of the Site consists of buildings and support facilities that occupy approximately 60 acres of the property. The remainder of the Site (approximately 110 acres) is largely undeveloped and consists of woods and fields.

The Site's Closed Landfill, Solid Waste Management Unit-001, as shown on Figures 2 and 7, was closed in 1993 in accordance New York Codes, Rules and Regulations Part 360 Solid Waste Management regulations and a closure plan that was approved by NYSDEC in 1991. Since that time groundwater monitoring has been performed utilizing a network of wells at the landfill.

In May 2021, NYSDEC Division of Materials Management, issued their reference (4) Comprehensive Plan to Address Priority Solid Waste Sites for Potential Impacts on Drinking Water Quality, with emphasis on emerging contaminants. The Comprehensive Plan included the Inactive Landfill Initiative Program to assess potential impacts that inactive landfills may have on public drinking water supplies. The Closed Landfill was identified in this program as an "Initiate Investigation in 2024" List Site.

2.1 Environmental Setting

The Site is located in the Mohawk River Valley within the Hudson-Mohawk Lowlands Geomorphic Province. Ground elevations at the Site range from approximately 220 feet above mean sea level (amsl) at the lower level to approximately 330 feet amsl at the upper level. Elevations in the undeveloped area are comparable to the developed area. Ground elevations at the Closed Landfill range from 260 feet amsl to 310 feet amsl.

2.2 Geology

Bedrock underlying the Site consists of essentially horizontal shales and sandstones of the Upper-Middle Ordovician aged Schenectady Formation. The Schenectady Formation is comprised of a series of alternating beds of graywacke, sandstone, siltstone and shale about 2,000 feet thick, dipping gently to the west and southwest. These rocks are characteristically non-porous and impermeable, and form poor aquifers. The Schenectady Formation is underlain by the Canajoharie shale, which is a dark gray to black, thinly bedded fissile shale. Depth to bedrock at the Site generally ranges between 10 and 70 feet below grade, with shallower depths occurring along the lower level and deeper depths more central to the Site. Rock outcrops are visible on both banks of the Mohawk River in the vicinity of the Site.

The bedrock at the Site is overlain mainly by glacial deposits, most of which consist of thick (up to 70 feet) glacial till. Directly overlying the bedrock is the Mohawk Till, a grayish-blue, dense, compact till, commonly referred to as the gray till. The gray till extends from the bedrock typically to within 10 to 15 feet of the ground surface, where the gray till transitions into a yellowish-brown till commonly referred to as the brown till. Evidence suggests that the brown till is the weathered surface of the gray till and not a separate depositional sequence. Occasional lenses of graded material, usually fine to medium sand, exist within the till. Based on drilling records, it is believed that these lenses are small in size and isolated from one another. The gray till is almost entirely impermeable except for the occasional lenses of fine sand which are capable of transmitting small quantities of water. However, the water is rapidly depleted from these small isolated sand lenses with little or no recharge. The brown till also is relatively impermeable; however, perched water at the brown till/gray till contact indicates that water does infiltrate into and percolate through the brown till.

Glacial lake (lacustrine) silts and clays and discontinuous ice-contact deposits (sand and gravel) are found on top of the till mostly in the southern and southeast portions of the Site property.

The silt and clay deposits also are relatively impermeable. The ice-contact deposits are capable of transmitting water, but their limited extent diminishes the potential for yielding useable water volumes.

2.3 Groundwater

The groundwater resources at the Site are limited due to the limited extent of sand and gravel deposits and the low permeability of the silt and clay deposits and bedrock. Consequently, there are no principal or primary bedrock or overburden aquifers underlying the Site for development as commercial or public water supplies.

The overall direction of groundwater flow at the Site is predominantly northeast toward the Mohawk River. Based on the relatively low permeability of the bedrock and overlying glacial till at the Site, groundwater movement, overall, is generally relatively slow. Local variations in groundwater flow direction and velocities occur within less compact and more permeable material associated with natural geologic deposits, fill areas, and backfill along utility trenches and building foundations across the Site.

2.4 Drinking Water Supply and Niskayuna Well Field Evaluation

Groundwater at the Site is not used for drinking water. Drinking water for the Site and adjacent properties is provided by the Town of Niskayuna Consolidated Water District #11, which receives water from wells located upgradient of the Site in the Town of Rotterdam and the Niskayuna well field located approximately 1.8 miles east and downgradient of the Site. Both well fields are located near the Mohawk River and are hydrogeologically separated from the Site. The Latham Colonie Water District intake from the Mohawk River is approximately 6.3 miles downstream of the Site.

The reference (5) Hydrogeologic Evaluation of the Niskayuna Well Field, conducted by Dunn Geoscience Corporation (Dunn) in 1984 provided Niskayuna with hydrogeologic data, an evaluation of the data, and also recommendations to increase the usable life of the well field. The report states that the Niskayuna aquifer for which the well field is located within, is bounded to the southwest by impermeable shale, and till exists in the upland areas surrounding the aquifer. The evaluation concluded that recharge to the well field is from precipitation associated with the highlands to the southwest and from the Mohawk River. Dunn concluded that the aquifer is a leaky artesian system, getting most of its recharge from the Mohawk River, and the point of recharge is assumed to be some distance from the well field, most likely down gradient of the well field.

3.0 SCOPE OF WORK IMPLEMENTATION

As shown on Table 1, groundwater samples were collected from 16 developed area wells (D3D6-B16, D3D6-MW40, D3D6-MW45, D3D6-MW51, HYA-MW6R, Q3-MW03, Q3-MW19, Q3-MW23, Q3-MW26, Q3-MW34, Q3-MW99, Q3-MW103, Q3-MW104, Q3-MW121, Q3-MW122, and Q3-MW187), and five undeveloped area wells (LDA-LMW-103, LDA-LMW-142, NTH-1A, NTH-2A, and NTH-5A). Sampling locations are shown on Figures 2 through 7.

For the Initial Phase of sampling, groundwater samples were submitted to the Eurofins TestAmerica Laboratory in Sacramento, California for the analysis of PFAS in accordance with modified USEPA Method 537 and to the Eurofins TestAmerica Laboratory in Edison, New Jersey for analysis of 1,4-dioxane by USEPA Method 8270 selected ion monitoring. Both analytical laboratories are NYSDOH Environmental Laboratory Approval Program certified for the methods. For the Supplemental Phase of sampling, groundwater samples were analyzed only for PFAS, as 1,4-Dioxane was not detected in the Initial Phase of sampling and determined not to be a constituent of concern. NYSDEC Analytical Service Protocol Category B data packages were generated by TestAmerica and validated by an independent data validator. The data validation report is provided in Appendix A.

3.1 Groundwater Sampling Locations

Groundwater sampling locations in the developed area and undeveloped area, with the exception of the Closed Landfill, were determined based on an evaluation of past uses of potential emerging contaminants containing items, available groundwater chlorinated volatile organic compound (CVOC) analytical results for potential 1,4-dioxane indicator CVOCs and local groundwater flow patterns. Closed Landfill sample locations were determined based on available CVOC analytical results and local groundwater flow patterns. This detailed evaluation and sampling location rationale is described in the approved reference (1) SOW. Supplemental sampling locations were determined based on the initial sampling results and discussions with NYSDEC and NYSDOH.

3.2 Sample Collection and Handling

Prior to conducting groundwater sampling activities, monitoring well headspace was screened for organic vapors with a photoionization detector immediately upon opening the well. Any existing dedicated groundwater sampling equipment within the selected wells was removed prior to the start of the sampling to minimize the potential for anomalies in the emerging

contaminants analytical data. The depth to groundwater was then measured in the monitoring well and compared to a previously determined total well depth to calculate the volume of water to be purged during sampling activities. The water levels were obtained by using an electronic water level indicator probe graduated in 0.01-foot increments.

Groundwater monitoring wells were purged by removing three well volumes of water. In slowly recharging monitoring wells, the well was purged to dryness for a minimum of one well volume. Monitoring well purging and sampling was conducted using a peristaltic pump with dedicated high density polyethylene (HDPE) tubing for each well.

Groundwater purging and sampling was conducted while appropriate personal protective equipment (PPE) was donned by sampling personnel as described in the SOW.

Water quality parameters including temperature, conductivity, pH, oxidation-reduction potential, turbidity and dissolved oxygen were measured after each well volume purged. Visual observations were also noted at the start and end of purging; however, no odors or sheens were observed. Well purging information is provided in the field data forms in Appendix B.

Following purging activities, groundwater samples were collected for laboratory analysis. All sampling was performed in accordance with the SOW. Prior to each sample collection, a new pair of nitrile gloves were donned by sampling personnel. The groundwater sample for PFAS analysis was collected first by direct filling the HDPE laboratory-provided containers. The sample for 1,4-dioxane analysis was collected after the PFAS sample collection (including collection of any Quality Assurance/Quality Control (QA/QC) samples for PFAS analysis). The 1,4-dioxane samples were direct-filled into laboratory-provided containers. QA/QC samples including duplicates, matrix spikes/matrix spike duplicates, field reagent blanks, and equipment blanks were collected at the frequency and following the procedures as specified in the SOW. After collecting the sample, the sample identification, project name, date and time of sample collection, and sample analysis were placed on the sample container labels. The sample information was recorded on a laboratory provided chain of custody and placed with the sample containers in a cooler containing regular ice for transportation to the laboratory.

3.3 Equipment Decontamination

All non-dedicated sampling equipment (i.e., the water level indicator) was cleaned between each use. Equipment was cleaned using a spray bottle with laboratory provided water, followed by cleaning with a 1,4-dioxane free soap (i.e., Seventh Generation™) and laboratory provided water. Equipment was rinsed a second time with laboratory provided water and the equipment

was wiped with paper towels. Cleaning fluids were applied with a spray bottles and the minimal volume was absorbed with paper towels.

Investigation-derived waste including PPE, primarily nitrile gloves, and disposable sampling materials (e.g., tubing, paper towels) were managed as non-hazardous in accordance with Site waste management procedures.

4.0 EMERGING CONTAMINANTS RESULTS AND ASSESSMENT

Analytical results are provided on Tables 2 and 3. The data validation report is provided in Appendix A.

Analytical results are compared to the NYSDOH drinking water maximum contaminant level (MCL) of 10 parts per trillion (ppt) or nanograms per liter (ng/L) for perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) and 1 part per billion or micrograms per liter (ug/L) for 1,4-dioxane; there are no established NYS regulatory criteria for the other PFAS. For perspective, the PFOS and PFOA results are also compared to the NYSDEC proposed ambient water guidance values of 2.7 ppt and 6.7 ppt, respectively. For information the data are additionally compared to criteria in the SOW that are now outdated. This includes the May 2016 USEPA lifetime health advisory of 70 ppt for PFOA and PFOS, individually and combined; and the former NYSDEC screening levels of no individual PFAS detected greater than 100 ppt (excluding PFOA and PFOS), and no individual monitoring well with a sum of PFAS detections (including PFOA and PFOS) greater than 500 ppt.

While there are currently no established regulatory criteria for the other PFAS, the NYS Drinking Water Quality Council has recommended a 10 ppt MCL for perfluoroheptanoic acid (PFHpA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), and perfluorohexanesulfonic acid (PFHxS). This recommendation is based on the overall persistence in the environment and toxicity of these PFAS which is similar to PFOS and PFOA as indicated in reference (6). These additional four PFAS were proactively evaluated relative to the recommended 10 ppt MCL, as it is anticipated that NYSDOH will adopt the recommendation as a drinking water MCL. The frequency of these four PFAS detected in the developed area and undeveloped area and a comparison to the recommended 10 ppt MCL is provided in Table 4 and described herein.

4.1 Data Summary

4.1.1 1,4-Dioxane

1,4-Dioxane was not detected in any of the emerging contaminant groundwater samples. As a result, 1,4-dioxane was not analyzed for in the supplemental samples. The analytical results are presented on Tables 2 and 3.

4.1.2 PFAS – Developed Area

Various combinations of individual PFAS, including PFOS and PFOA, were detected in 17 groundwater samples (15 samples and 2 duplicate samples) collected from the developed area wells. The groundwater analytical results are presented in Table 2. PFOS and PFOA

concentrations in samples collected from developed area wells are shown on Figures 3 through 5. The figure for the Hillside Area does not show D3D6-B16; however, this well, in relation to the other Hillside Area wells, is shown on Figure 2.

Hillside Area

Various combinations of PFAS were detected in four of five groundwater samples. PFAS were not detected in the most downgradient location, D3D6-B16. PFOA concentrations in Hillside Area wells range from 2.01 ppt to 12.2 ppt; with the most elevated PFOA concentration noted in D3D6-MW40, which is the upgradient location. Groundwater flows to the north, preferentially along the storm sewer in this area. There is one PFOA exceedance of the MCL of 10 ppt in D3D6-MW40 as shown on Figure 3. PFOS concentrations in Hillside Area wells range from 1.94 ppt to 13.9 ppt with the most elevated concentration noted in the sample collected from D3D6-MW40. There is one PFOS exceedance of the MCL of 10 ppt in D3D6-MW40. The frequency of PFOS and PFOA results in the developed area compared to the NYSDOH drinking water MCL and the NYSDEC proposed guidance values is provided in Table 5.

6:2 Fluorotelomer Sulfonate (FTS) and 8:2 FTS were not detected in any Hillside Area groundwater samples.

PFHpA was detected in four Hillside Area samples at concentrations ranging from 1.32 ppt to 3.83 ppt. PFNA was detected in four groundwater samples at concentrations ranging from 0.8 ppt to 5.92 ppt. PFDA was detected in three groundwater samples at concentrations ranging from 0.33 ppt to 10.5 ppt. The recommended MCL of 10 ppt was exceeded in the sample collected from D3D6-MW40. PFHxS was detected in the sample collected from D3D6-MW40 at a concentration of 0.65 ppt. The most elevated concentrations of PFHpA, PFNA, PFDA, and PFHxS were detected in the groundwater sample collected from D3D6-MW40. The frequency of the four PFAS detected in the developed area and undeveloped area and a comparison to the recommended MCL is provided in Table 4.

High Yard Area

Multiple PFAS were detected in the single groundwater sample collected from High Yard Area well MW-6R. PFOA was detected in MW-6R at a concentration of 8.88 ppt. PFOS was detected in MW-6R at a concentration of 9.46 ppt as shown on Figure 4. PFOA and PFOS are both less than the NYSDOH MCL of 10 ppt.

6:2 FTS and 8:2 FTS were not detected.

PFHpA, PFNA, and PFHxS were detected at concentrations of 1.54 ppt, 0.34 ppt, and 5.65 ppt, respectively, which are all below the recommended MCL of 10 ppt. PFDA was not detected.

Q3 Yard

Various combinations of PFAS were detected in the 12 Q3 Yard groundwater samples. In the Q3 Yard, PFOA concentrations range from 1.01 ppt to 34.6 ppt; with the most elevated concentration noted in upgradient well Q3-MW03. There were four samples with exceedances of the NYSDEC proposed guidance value for groundwater of 6.7 ppt and the NYSDOH drinking water MCL of 10 ppt for PFOA in the samples collected from Q3-MW03, Q3-MW19, Q3-MW34, and Q3-MW187 as shown on Figure 5.

PFOS concentrations range from 0.99 ppt to 71.7 ppt; with the most elevated concentration noted in Q3-MW03. This single detection of PFOS at 71.7 ppt, exceeds than the USEPA health advisory of 70 ppt; however, there are no PFOA concentrations greater than the health advisory. There were two samples with exceedances of the NYSDOH drinking water MCL of 10 ppt for PFOS in Q3-MW03 and Q3-MW34. PFOS and PFOA were not detected in downgradient well Q3-MW122. The frequency of PFOS and PFOA results in the developed area compared to the NYSDOH drinking water MCL and the NYSDEC proposed guidance values is provided in Table 5. There are no samples with total PFAS concentrations in Q3 Yard groundwater above the NYSDEC redacted guidance criteria for PFAS of 500 ppt.

6:2 FTS was detected in the sample collected from Q3-MW99 at a concentration of 2.58 ppt. 8:2 FTS was not detected in any Q3 Yard samples.

PFHpA was detected in all Q3 Yard samples with the exception of Q3-MW122, at concentrations up to 11 ppt; with one exceedance of the recommended MCL of 10 ppt in the sample collected from Q3-MW03. PFNA was detected in eight Q3 Yard samples at concentrations ranging from 0.25 ppt to 2.55 ppt; with the most elevated concentration detected in the sample collected from Q3-MW03. PFDA was detected in Q3 Yard groundwater samples collected from Q3-MW03 and Q3-MW19 at concentrations of 0.75 ppt and 1.22 ppt, respectively. PFHxS was detected in six Q3 Yard groundwater samples at concentrations ranging from 0.87 ppt to 6.98 ppt with the most elevated concentration detected in the sample collected from Q3-MW03. There are no exceedances of the recommended MCL of 10 ppt for PFNA, PFDA, and PFHxS. The frequency of the four PFAS detected in the developed area and undeveloped area and a comparison to the recommended MCL is provided in Table 4.

4.1.3 Developed Area Assessment

PFAS are present in developed area groundwater and the results do not indicate a PFAS source area. The most notable PFAS concentrations were in the samples collected from well Q3-MW03 in the Q3 Yard and D3D6-MW40 located in the Hillside Area. Generally, PFOA and PFOS decrease in concentration at the downgradient locations in the Q3 Yard with the exception of Q3-MW187. PFAS were not detected in the downgradient Hillside Area monitoring location, well D3D6-B16.

Overall, the presence of PFAS in developed area groundwater indicates there may have been some onsite source; however, currently there is no known source for the PFAS detections. The four PFAS that are proposed for addition to NYSDOH list of drinking water MCLs were detected in two wells at concentrations exceeding 10 ppt. Downgradient developed area groundwater samples, with the exception of Q3-MW187 (in which PFOA is slightly above the MCL), are all below 10 ppt.

4.1.4 PFAS – Undeveloped Area

Various combinations of PFAS, including PFOS and PFOA, were detected in four of the five groundwater samples collected from the undeveloped area wells. The groundwater analytical results are presented in Table 3. PFOS and PFOA concentrations in samples collected from undeveloped area wells are shown on Figures 6 and 7.

LDA

Various combinations of PFAS were detected in the two groundwater samples collected from LMW103 and LMW142 in the LDA. Generally, the concentration and number of individual PFAS was greater in the sample collected from LMW103. PFOA was detected at concentrations of 2.19 ppt and 4.80 ppt in LMW142 and LMW103, respectively. PFOS was detected at a concentration of 2.28 ppt in LMW103 and not detected in LMW142. All results are below the applicable NYSDOH MCL and NYSDEC guidance values. The frequency of PFOS and PFOA detections and a comparison to the NYSDOH drinking water standards and NYSDEC proposed guidance values are provided in Table 6.

Fluorotelomer compounds 6:2 FTS and 8:2 FTS were not detected.

PFHpA was detected at 1.46 ppt and 0.80 ppt in LMW103 and LMW142, respectively. PFNA was detected in LMW103 at a concentration of 0.88 ppt. PFHxS was detected at 0.65 ppt in LMW103. PFDA was not detected. All results were below the recommended MCL of 10 ppt.

The frequency of these four PFAS detected in the developed area and undeveloped area and a comparison to the proposed 10 ppt MCL is provided in Table 4.

Closed Landfill

Various combinations of PFAS, including PFOS and PFOA, were detected in two of the three groundwater samples collected from the Closed Landfill. The groundwater analytical results are presented in Table 3. PFOS and PFOA concentrations in samples collected from Closed Landfill wells are shown on Figure 7.

PFAS were not detected in upgradient well NTH-1A. PFOA was detected at concentrations of 0.92 ppt and 4.16 ppt in NTH-5A and NTH-2A, respectively. PFOS was detected in one sample at a concentration of 5.35 ppt in NTH-2A. The frequency of PFOS and PFOA detections and a comparison to the NYSDOH drinking water standards and NYSDEC proposed guidance values are provided in Table 6.

Fluorotelomer compounds were not detected in the Closed Landfill groundwater samples.

PFHpA was detected in NTH-2A at a concentration of 1.06 ppt. PFNA, PFHxS, and PFDA were not detected in Closed Landfill samples. There are no exceedances of the proposed MCL of 10 ppt for these four PFAS. The frequency of these four PFAS detected in the developed area and undeveloped area and a comparison to the proposed 10 ppt MCL is provided in Table 4.

4.1.5 Undeveloped Area Assessment

Overall, PFAS are present in downgradient Closed Landfill and LDA groundwater samples at low concentrations with no exceedances of the MCL. Additionally, the four PFAS that are recommended for addition to the NYSDOH list of drinking water MCLs do not exceed the recommended MCL of 10 ppt. Fluorotelomer compounds, which were starting to be produced in the 1970s (reference (7)), were not detected in undeveloped area samples. Furthermore, the lack of PFAS derived from fluorotelomerization manufacturing processes, a more dominant process in the production of select PFAS in the early 2000s, correlates with the early 1990s landfill closure and the end of known LDA disposal operations in the mid to late 1970s.

5.0 CONCLUSION

1,4-Dioxane was not detected in any of the groundwater samples and is not considered a constituent of concern. PFAS are present in groundwater in the developed area and undeveloped area. A definitive source has not been identified for PFAS in groundwater at the Knolls Laboratory. The PFAS are generally attributed to a myriad of products and materials containing PFAS that may have been used onsite. Based on the composition detected, PFAS appear to be associated with electrochemical fluorination and would therefore be attributable to historical sources. The PFAS present in the undeveloped area are consistent with legacy PFAS formulations, which correlates with the closure of the landfill in the early 1990s and the end of known LDA disposal operations in the mid to late 1970s. Overall, the PFAS concentrations decrease in downgradient groundwater to levels below the drinking water MCL. Furthermore, groundwater at the Site is not used for drinking water and adjacent properties are serviced by the Town of Niskayuna well field, which is Niskayuna's drinking water source, and is hydrogeologically separated from the Site.

Due to the evolving nature of regulatory requirements associated with PFAS, any future additional characterization will be performed based on discussions and alignment with NYSDEC and NYSDOH.

6.0 REFERENCES

1) KAPL. 2021. Emerging Contaminants Sampling Scope of Work for the Knolls Laboratory, April 2021

2) NYSDEC. 2021. Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, January 2021

3) NYSDEC (Winterberger) letter to NRLFO (Delwiche) dated September 2, 2021; Re: Knolls Atomic Power Laboratory (KAPL) – Knolls Laboratory, Emerging Contaminants (EC) Scope of Work (SOW)

4) NYSDEC. 2021. Division of Materials Management. New York State Inactive Landfill Initiative, Comprehensive Plan to Address Priority Solid Waste Sites for Potential Impacts on Drinking Water Quality, May 2021

5) Dunn Geoscience Corporation, 1984. Hydrogeologic Evaluation of the Niskayuna Well Field, Town of Niskayuna, New York, October 1984

6) NYS Drinking Water Quality Council (DWQC). 2022. *Emerging PFAS – Health based Drinking Water Values and Maximum Contaminant Levels* [PowerPoint Slides], Sadie Wheeler, Ph.D., March 10, 2022, Minute 35 https://totalwebcasting.com/view/?func=VOFF&id=nysdoh&date=2022-05-02&seq=1

7) ITRC. 2020. History and Use of Per-and Polyfluoroalkyl Substances (PFAS), April 2020

Tables

Table 1
Implementation Summary

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory – Knolls Laboratory
Niskayuna, New York

Initial Sampling Phase	
September 27, 2021 - October 1, 2021	Groundwater Sampling • Four Hillside Area Wells Sampled o D3D6-B16, D3D6-MW40, D3D6-MW45, D3D6-MW51, o One Field Reagent Blank • One High Yard Area Well Sampled o HYA-MW6R o One Field Reagent Blank • Five Q3 Yard Wells Sampled o Q3-MW03, Q3-MW19, Q3-MW23, Q3-MW34, Q3-MW103 o One Field Reagent Blank • Two Land Disposal Area Wells Sampled o LDA-LMW103, LDA-LMW142 o One Field Reagent Blank • Three Closed Landfill Wells Sampled o NTH-1A, NTH-2A, NTH-5A o One Field Reagent Blank
Supplemental Sampling Phase	
December 7, 2021 - December 8, 2021	Groundwater Sampling • Six Q3 Yard Wells Sampled o Q3-MW26, Q3-MW99, Q3-MW104 Q3-MW121, Q3-MW122, Q3-MW187 o Two Field Reagent Blanks

Notes:

PFAS = Per- and polyfluoroalkyl substances; USEPA = United States Environmental Protection Agency

1. Emerging Contaminants groundwater samples analyzed for 21 PFAS by modified USEPA Method 537 and 1,4-dioxane by USEPA Method 8270 Selected Ion Monitoring (SIM).
2. Supplemental groundwater samples analyzed for PFAS only by modified USEPA Method 537.
3. PFAS analysis performed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California. 1,4-dioxane analysis performed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey.
4. All necessary Quality Assurance / Quality Control samples collected in accordance with the Scope of Work.

Table 2
Developed Area
Sample Results

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

			Area	Hillside Area				
			Location ID	D3D6-B16	D3D6-MW40	D3D6-MW45	D3D6-MW45	D3D6-MW51
			Sample ID	KL-EC-B-16-093021	KL-EC-MW-40-100121	KL-EC-MW-45-100121	KL-EC-X01-100121	KL-EC-MW-51-100121
			Sample Date	9/30/2021	10/1/2021	10/1/2021	10/1/2021	10/1/2021
Chemical Name	**Proposed Guidance Values**	**Drinking Water MCL**						
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV		4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV		1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV		4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV		4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV		1.88 U	**0.34 J**	**1.12 J**	**1.07 J**	**0.70 J**
Perfluorobutanoic acid (PFBA)	NV	NV		4.71 U	**4.69 J**	**6.01**	**6.04**	**4.92**
Perfluorodecanesulfonic acid (PFDS)	NV	NV		1.88 U	**6.12**	1.96 U	1.89 U	1.96 U
Perfluorodecanoic acid (PFDA)	NV	NV		1.88 U	**10.5**	**0.33 J**	1.89 U	**0.74 J**
Perfluorododecanoic acid (PFDoA)	NV	NV		1.88 U	**5.84**	1.96 U	1.89 U	1.96 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV		1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluoroheptanoic acid (PFHpA)	NV	NV		1.88 U	**3.83**	**1.89 J**	**1.64 J**	**1.32 J**
Perfluorohexanesulfonic acid (PFHxS)	NV	NV		1.88 U	**0.65 J**	1.96 U	1.89 U	1.96 U
Perfluorohexanoic acid (PFHxA)	NV	NV		1.88 U	**3.98**	**3.00**	**2.56**	**2.06**
Perfluorononanoic acid (PFNA)	NV	NV		1.88 U	**5.92**	**0.80 J**	**0.84 J**	**2.11**
Perfluorooctanesulfonic acid (PFOS)	2.7	10		1.88 U	**13.9 ***	**1.94 J**	1.89 U	**6.52 ***
Perfluorooctanoic acid (PFOA)	6.7	10		1.88 U	**12.2 ***	**2.13**	**2.01**	**2.89**
Perfluoropentanoic acid (PFPeA)	NV	NV		1.88 U	**5.72**	**5.58**	**4.70**	**2.82**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV		1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV		1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV		1.88 U	**6.32**	1.96 U	1.89 U	1.96 U
Perflurooctanesulfonamide (FOSA)	NV	NV		1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
1,4-Dioxane	0.35	1.0		0.20 U	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates the analyte was analyzed for, but not detected, and the associated reported quantitation limit is approximate. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

4. MCL values are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies. Exceedances are underlined.

Table 2
Developed Area
Sample Results

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

			Area	High Yard Area	Q3 Yard Area			
			Location ID	HYA-MW6R	Q3-MW03	Q3-MW19	Q3-MW23	Q3-MW34
			Sample ID	KL-EC-MW-6R-093021	KL-EC-Q3-MW03-093021	KL-EC-Q3-MW19-092821	KL-EC-Q3-MW23-092821	KL-EC-Q3-MW34-093021
			Sample Date	9/30/2021	9/30/2021	9/28/2021	9/28/2021	9/30/2021
Chemical Name	Proposed Guidance Values	Drinking Water MCL						
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV		4.76 U	4.68 U	4.55 U	4.69 U	4.74 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV		1.90 U	1.87 U	1.82 U	1.88 U	1.89 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV		4.76 U	4.68 U	4.55 U	4.69 U	4.74 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV		4.76 U	4.68 U	4.55 U	4.69 U	4.74 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV		**1.38 EMPC**	**3.77**	**4.18**	**0.75 J**	**0.96 J**
Perfluorobutanoic acid (PFBA)	NV	NV		**3.80 J**	**15.9**	**7.80**	**9.08**	**8.41**
Perfluorodecanesulfonic acid (PFDS)	NV	NV		1.90 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluorodecanoic acid (PFDA)	NV	NV		1.90 U	**0.75 J**	**1.22 J**	1.88 U	1.89 U
Perfluorododecanoic acid (PFDoA)	NV	NV		1.90 U	1.87 U	**0.85 J**	1.88 U	1.89 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV		1.90 U	**1.98**	1.82 U	1.88 U	1.89 U
Perfluoroheptanoic acid (PFHpA)	NV	NV		**1.54 J**	**11.0**	**3.28**	**4.01**	**4.47**
Perfluorohexanesulfonic acid (PFHxS)	NV	NV		**5.65**	**6.98**	**3.34**	**0.87 J**	**2.74**
Perfluorohexanoic acid (PFHxA)	NV	NV		**2.22**	**13.7**	**6.21**	**7.58**	**8.72**
Perfluorononanoic acid (PFNA)	NV	NV		**0.34 J**	**2.55**	**1.77 J**	**1.94**	**1.98**
Perfluorooctanesulfonic acid (PFOS)	2.7	10		**9.46 ***	**71.7 ***	**6.70 ***	**6.77 ***	**24.0 ***
Perfluorooctanoic acid (PFOA)	6.7	10		**8.88 ***	**34.6 ***	**10.2 ***	**7.33 ***	**12.8 ***
Perfluoropentanoic acid (PFPeA)	NV	NV		**2.72**	**9.01**	**4.95**	**9.12**	**13.2**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV		1.90 U	1.87 U	**0.66 J**	1.88 U	1.89 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV		1.90 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV		1.90 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluroroctanesulfonamide (FOSA)	NV	NV		**1.39 J**	1.87 U	1.82 U	1.88 U	1.89 U
1,4-Dioxane	0.35	1.0		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates the analyte was analyzed for, but not detected, and the associated reported quantitation limit is approximate. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

4. MCL values are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies. Exceedances are underlined.

Table 2
Developed Area
Sample Results

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

			Area	Q3 Yard Area				
			Location ID	Q3-MW103	Q3-MW26	Q3-MW99	Q3-MW104	Q3-MW121
			Sample ID	KL-EC-Q3-MW103-100121	KL-EC-Q3-MW26-120721	KL-EC-Q3-MW99-120821	KL-EC-Q3-MW104-120721	KL-EC-Q3-MW121-120721
			Sample Date	10/1/2021	12/7/2021	12/8/2021	12/7/2021	12/7/2021
Chemical Name	**Proposed Guidance Values**	**Drinking Water MCL**						
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV		4.74 U	4.59 U	**2.58 J**	4.64 U	4.65 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV		1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV		4.74 U	4.59 U	5.11 U	4.64 U	4.65 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV		4.74 U	4.59 U	5.11 U	4.64 U	4.65 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV		1.90 U	**0.34 J**	**0.79 J**	1.86 U	1.86 U
Perfluorobutanoic acid (PFBA)	NV	NV		**7.62**	**6.94**	**4.27 J**	**3.58 J**	4.65 U
Perfluorodecanesulfonic acid (PFDS)	NV	NV		1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorodecanoic acid (PFDA)	NV	NV		1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorododecanoic acid (PFDoA)	NV	NV		1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV		**0.22 J**	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroheptanoic acid (PFHpA)	NV	NV		**2.12**	**0.50 J**	**1.66 J**	**0.54 J**	**0.34 J**
Perfluorohexanesulfonic acid (PFHxS)	NV	NV		1.90 U	**1.31 J**	**0.92 J**	1.86 U	1.86 U
Perfluorohexanoic acid (PFHxA)	NV	NV		**3.14**	**1.04 J**	**3.25 EMPC**	**1.13 J**	**0.78 J**
Perfluorononanoic acid (PFNA)	NV	NV		**1.35 EMPC**	**0.27 J**	**1.08 J**	**0.25 J**	1.86 U
Perfluorooctanesulfonic acid (PFOS)	2.7	10		**3.64 ***	**1.75 J**	**1.97 J**	**0.99 J**	**1.97**
Perfluorooctanoic acid (PFOA)	6.7	10		**5.78**	**2.00**	**2.02 J**	**1.38 J**	**1.23 J**
Perfluoropentanoic acid (PFPeA)	NV	NV		**6.49**	**1.87**	**3.72**	**1.39 J**	**0.81 J**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV		1.90 UJ	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV		1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV		1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perflurooctanesulfonamide (FOSA)	NV	NV		1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
1,4-Dioxane	0.35	1.0		0.20 UJ	---	---	---	---

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates the analyte was analyzed for, but not detected, and the associated reported quantitation limit is approximate. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

4. MCL values are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies. Exceedances are underlined.

Table 2
Developed Area
Sample Results

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

			Area	Q3 Yard Area		
			Location ID	Q3-MW121	Q3-MW122	Q3-MW187
			Sample ID	KL-EC-X02-120721	KL-EC-Q3-MW122-120721	KL-EC-Q3-MW187-120821
			Sample Date	12/7/2021	12/7/2021	12/8/2021
Chemical Name	Proposed Guidance Values	Drinking Water MCL				
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV		4.67 U	4.65 U	4.49 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV		1.87 U	1.86 U	1.79 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV		4.67 U	4.65 U	4.49 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV		4.67 U	4.65 U	4.49 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV		1.87 U	1.86 U	1.79 U
Perfluorobutanoic acid (PFBA)	NV	NV		4.67 U	**2.27 J**	**10.1**
Perfluorodecanesulfonic acid (PFDS)	NV	NV		1.87 U	1.86 U	1.79 U
Perfluorodecanoic acid (PFDA)	NV	NV		1.87 U	1.86 U	1.79 U
Perfluorododecanoic acid (PFDoA)	NV	NV		1.87 U	1.86 U	1.79 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV		1.87 U	1.86 U	1.79 U
Perfluoroheptanoic acid (PFHpA)	NV	NV		**0.27 J**	1.86 U	**1.10 J**
Perfluorohexanesulfonic acid (PFHxS)	NV	NV		1.87 U	1.86 U	1.79 U
Perfluorohexanoic acid (PFHxA)	NV	NV		**0.65 J**	1.86 U	**3.35**
Perfluorononanoic acid (PFNA)	NV	NV		1.87 U	1.86 U	1.79 U
Perfluorooctanesulfonic acid (PFOS)	2.7	10		**1.71 J**	1.86 U	1.79 U
Perfluorooctanoic acid (PFOA)	6.7	10		**1.01 J**	1.86 U	**15.7 ***
Perfluoropentanoic acid (PFPeA)	NV	NV		**0.82 J**	1.86 U	**4.56**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV		1.87 U	1.86 U	1.79 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV		1.87 U	1.86 U	1.79 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV		1.87 U	1.86 U	1.79 U
Perfluroroctanesulfonamide (FOSA)	NV	NV		1.87 U	1.86 U	1.79 U
1,4-Dioxane	0.35	1.0		---	---	---

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L).
"MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates the analyte was analyzed for, but not detected, and the associated reported quantitation limit is approximate.
"---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537.
1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM).
Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. "NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with "*".

4. MCL values are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.
Exceedances are underlined.

Table 3
Undeveloped Area
Sample Results

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

			Area	Land Disposal Area		Closed Landfill		
			Location ID	LDA-LMW103	LDA-LMW142	NTH-1A	NTH-2A	NTH-5A
			Sample ID	KL-EC-LMW-103-092821	KL-EC-LMW-142-092821	KL-EC-NTH-1A-092721	KL-EC-NTH-2A-092721	KL-EC-NTH-5A-092721
			Sample Date	9/28/2021	9/28/2021	9/27/2021	9/27/2021	9/27/2021
Chemical Name	**Proposed Guidance Values**	**Drinking Water MCL**						
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV		5.10 U	4.78 U	4.98 U	5.23 U	5.24 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV		2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV		5.10 U	4.78 U	4.98 U	5.23 U	5.24 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV		5.10 U	4.78 U	4.98 U	5.23 U	5.24 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV		**0.72 J**	**0.57 J**	1.99 U	**0.87 J**	**0.45 J**
Perfluorobutanoic acid (PFBA)	NV	NV		**52.3**	**16.2**	4.98 U	**4.88 J**	5.24 U
Perfluorodecanesulfonic acid (PFDS)	NV	NV		2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluorodecanoic acid (PFDA)	NV	NV		2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluorododecanoic acid (PFDoA)	NV	NV		2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV		2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluoroheptanoic acid (PFHpA)	NV	NV		**1.46 J**	**0.80 EMPC**	1.99 U	**1.06 J**	2.10 U
Perfluorohexanesulfonic acid (PFHxS)	NV	NV		**0.65 J**	1.91 U	1.99 U	2.09 U	2.10 U
Perfluorohexanoic acid (PFHxA)	NV	NV		**2.62**	**1.25 J**	1.99 U	**1.62 J**	2.10 U
Perfluorononanoic acid (PFNA)	NV	NV		**0.88 J**	1.91 U	1.99 U	2.09 U	2.10 U
Perfluorooctanesulfonic acid (PFOS)	2.7	10		**2.28**	1.91 U	1.99 U	**5.35 ***	2.10 U
Perfluorooctanoic acid (PFOA)	6.7	10		**4.80**	**2.19**	1.99 U	**4.16**	**0.92 J**
Perfluoropentanoic acid (PFPeA)	NV	NV		**3.29**	**4.14**	1.99 U	**1.96 J**	2.10 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV		2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV		2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV		2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
Perfluroroctanesulfonamide (FOSA)	NV	NV		2.04 U	1.91 U	1.99 U	2.09 U	2.10 U
1,4-Dioxane	0.35	1.0		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates the analyte was analyzed for, but not detected, and the associated reported quantitation limit is approximate. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

4. MCL values are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies. Exceedances are underlined.

Table 4
PFHpA, PFNA, PFDA, PFHxS Detection Summary
Developed Area and Undeveloped Area

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory – Knolls Laboratory
Niskayuna, New York

Analyte	Area	Number of Detections per Number of Samples Analyzed	Range of Detections (ng/L)	Number of Samples > Recommended NYS DW MCL (10 ng/L)
PFHpA	Developed Area	16/18	0.27 J to 11.0	1/18
	Undeveloped Area	3/5	0.80 EMPC to 1.46 J	0/5
PFNA	Developed Area	14/18	0.25 J to 5.92	0/18
	Undeveloped Area	1/5	0.88 J	0/5
PFDA	Developed Area	5/18	0.33 J to 10.5	1/18
	Undeveloped Area	0/5	Not Detected	0/5
PFHxS	Developed Area	8/18	0.65 J to 6.98	0/18
	Undeveloped Area	1/5	0.65 J	0/5

Notes: 1. ng/L= nanograms per liter; NYS = New York State; DW = Drinking Water;
MCL = Maximum Contaminant Level; PFHpA = Perfluoroheptanoic acid;
PFNA = Perfluorononanoic acid; PFDA = Perfluorodecanoic acid;
PFHxS = Perfluorohexanesulfonic acid; J = analyte detected at an estimated concentration;
EMPC = indicates the result is estimated maximum possible concentration

2. Proposed NYS DW MCL values are from the NYS Drinking Water Quality Council March 10, 2022 meeting.

Table 5
PFOS and PFOA Detection Summary
Developed Area

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory – Knolls Laboratory
Niskayuna, New York

Analyte / Criteria	Area	Range of Detections (ng/L)	Number of Samples > NYS GW GV	Number of Samples > NYS DW MCL
PFOA	Site Area	1.01 J to 34.6	7/18	5/18
NYS GW GV: 6.7 ng/L NYS DW MCL: 10 ng/L	Hillside Area	2.01 to 12.2	1/5	1/5
	High Yard Area	8.88	1/1	0/1
	Q3 Yard	1.01 J to 34.6	5/12	4/12
PFOS	Site Area	0.99 J to 71.7	8/18	3/18
NYS GW GV: 2.7 ng/L NYS DW MCL: 10 ng/L	Hillside Area	1.94 J to 13.9	2/5	1/5
	High Yard Area	9.46	1/1	0/1
	Q3 Yard	0.99 J to 71.7	5/12	2/12

Notes: 1. ng/L= nanograms per liter; NYS = New York State; GW = Groundwater; GV = Guidance Value; DW = Drinking Water MCL = Maximum Contaminant Level; PFOA = Perfluorooctanoic acid; PFOS = Perfluorooctanesulfonic acid; J = analyte detected at an estimated concentration

2. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

3. MCL value are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

Table 6
PFOS and PFOA Detection Summary
Undeveloped Area

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory – Knolls Laboratory
Niskayuna, New York

Analyte / Criteria	Area	Range of Detections (ng/L)	Number of Samples > NYS GW GV	Number of Samples > NYS DW MCL
PFOA NYS GW GV: 6.7 ng/L NYS DW MCL: 10 ng/L	Closed Landfill	0.92 J to 4.16	0/3	0/3
	Land Disposal Area	2.19 to 4.80	0/2	0/2
PFOS NYS GW GV: 2.7 ng/L NYS DW MCL: 10 ng/L	Closed Landfill	5.35	1/3	0/3
	Land Disposal Area	2.28	0/2	0/2

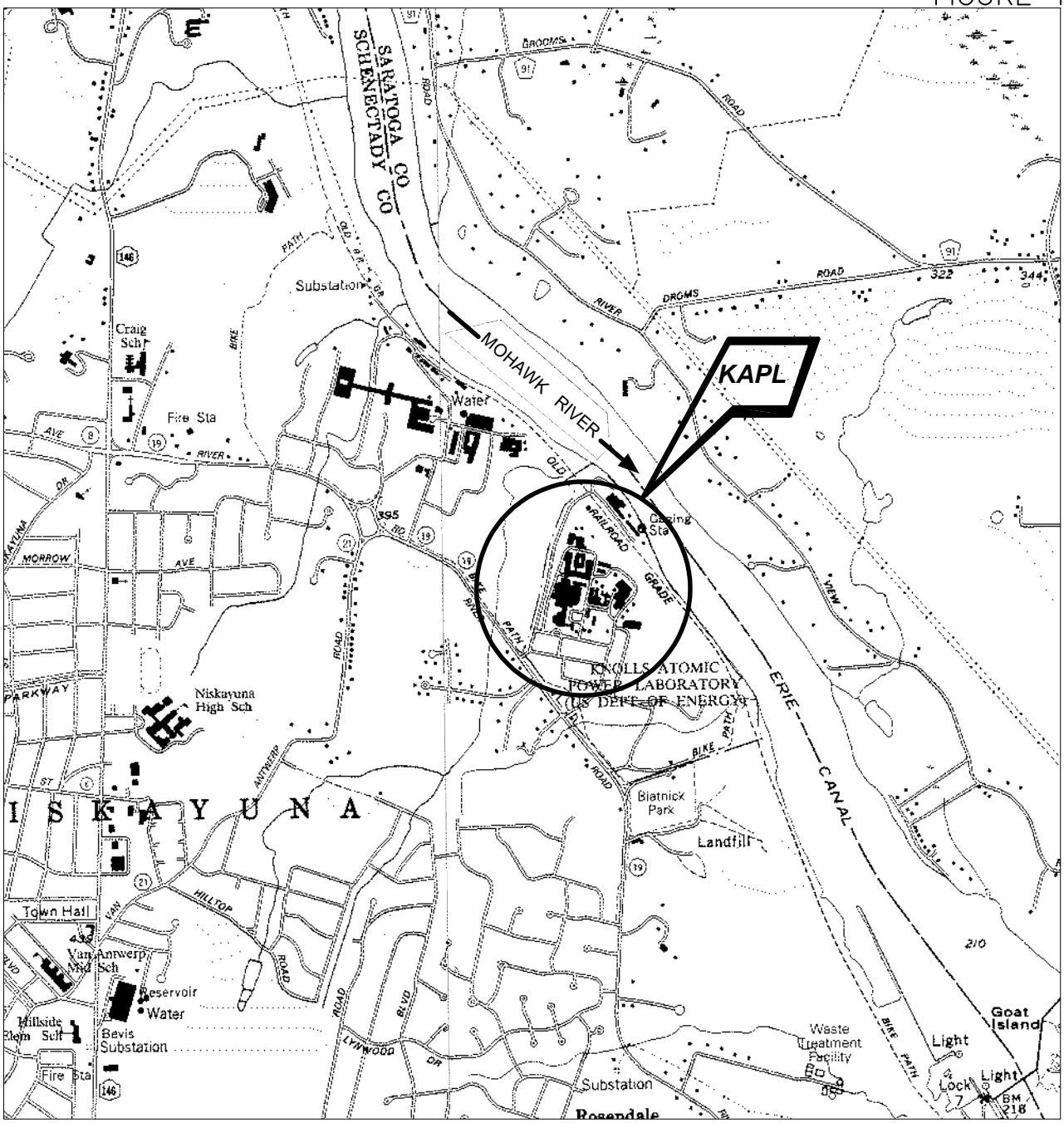
Notes: 1. ng/L= nanograms per liter; NYS = New York State; GW = Groundwater; GV = Guidance Value; DW = Drinking Water MCL = Maximum Contaminant Level; PFOA = Perfluorooctanoic acid; PFOS = Perfluorooctanesulfonic acid; J = analyte detected at an estimated concentration

2. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

3. MCL value are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

Figures

FIGURE 1



ADAPTED FROM: NISKAYUNA & SCHENECTADY QUAD., N.Y. STATE U.S.G.S. 7.5 MIN. QUAD

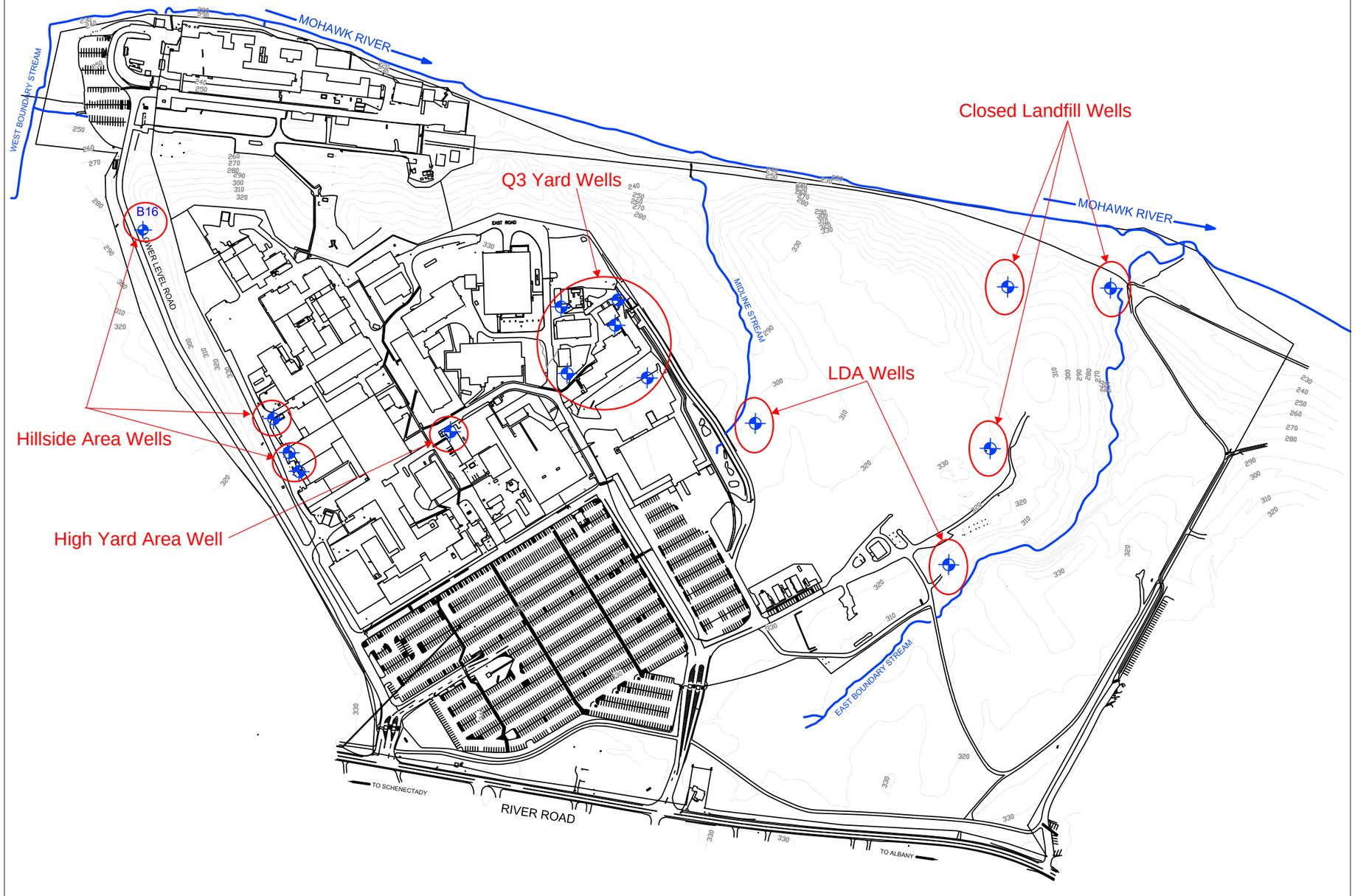
KNOLLS ATOMIC POWER LABORATORY – KNOLLS LABORATORY
NISKAYUNA, NEW YORK
EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT
FIGURE 1
SITE LOCATION MAP

QUADRANGLE LOCATION

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 5 0 1 KILOMETER

N

SCALE: 1:24000



N

LEGEND

MONITORING WELL

Note:

1. Vertical datum of topographic contours is National Geodetic Vertical Datum of 1929 (NGVD 29).

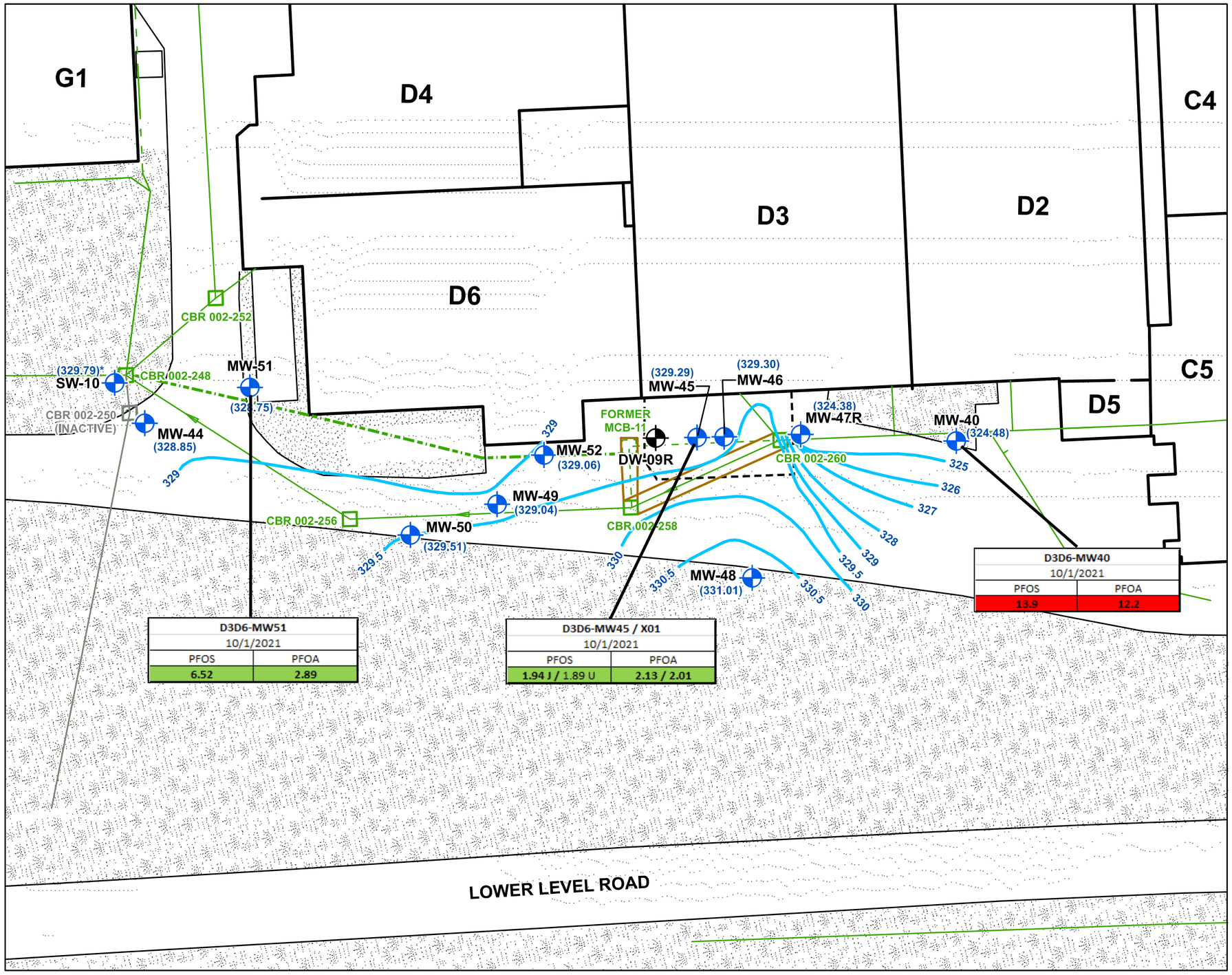
KNOLLS ATOMIC POWER LABORATORY - KNOLLS LABORATORY
NISKAYUNA, NEW YORK

EMERGING CONTAMINANTS
GROUNDWATER MONITORING REPORT

FIGURE 2
SAMPLE LOCATION MAP

0 375 750

SCALE IN FEET



Source: Figure adapted from the Interim Corrective Measure Report for the Hillside Area (AOC-001) G1-D4 Alleyway, Attachment 1, D3D6 Area Groundwater Flow Assessment, Figure 10, December 2019

Legend

N

- Monitoring Well Location
- Monitoring Well Location - Damaged
- (331.01) Water Elevation Measured on September 18, 2019
- Groundwater Elevation Contour with 0.5-Foot Interval
- Storm Sewer Line
- Catch Basin
- Flowable Fill Boundary
- Abandoned Storm Sewer Line or Catch Basin
- 24-inch Bell and Spigot Concrete Storm Sewer Pipe Segment Removed in 1996
- Foundation Drain
- ICM Excavation Area Limit
- Grass Cover
- Gravel Cover

Notes:

1. Results are in nanograms per liter (ng/L)."U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration.
2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.
3. Promulgated Maximum Contaminant Levels (MCLs) are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

- Red box = PFAS above criteria
- Green box = PFAS below criteria

KNOLLS ATOMIC POWER LABORATORY - KNOLLS LABORATORY NISKAYUNA, NEW YORK

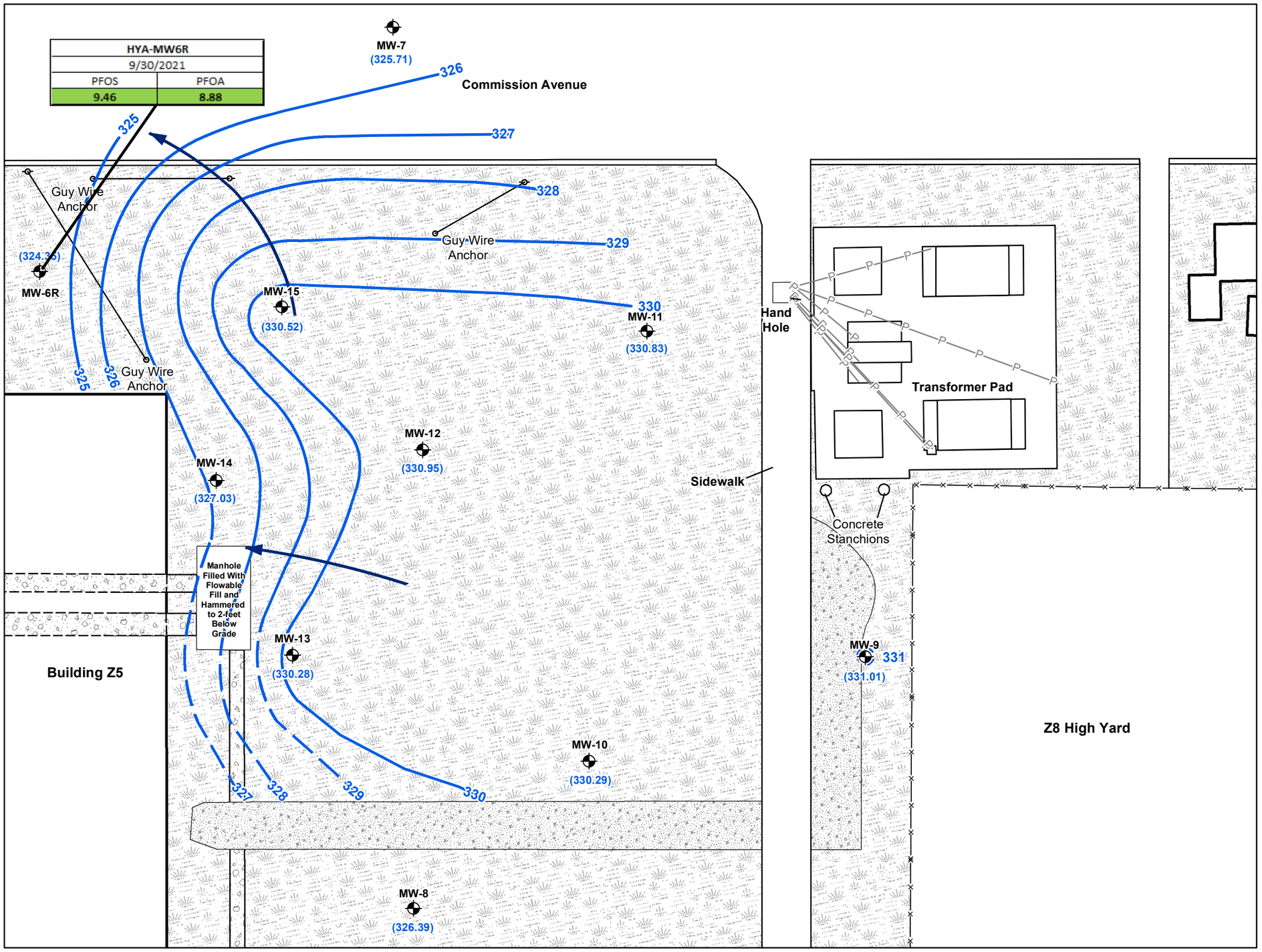
EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 3

HILLSIDE AREA PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER

0 15 30 60

Feet



Source: Figure adapted from Figure 8 from the Annual Groundwater Monitoring Report for the High Yard Area (SWMU-023), March 2020

N

Legend

- Monitoring Well Location
- (324.35) Groundwater Elevation Measured on December 10, 2019 (Feet Above Mean Sea Level)
- Groundwater Elevation Contour with 1-Foot Interval (Dashed where Inferred)
- Groundwater Flow Direction
- Underground Power Line
- Groundwater Cut-Off Wall
- Conduit Duct Bank Encased in Concrete - Under Building
- Conduit Duct Bank Encased in Concrete
- Grass
- Security Fence
- Utility Pole

Notes:

1. Results are in nanograms per liter (ng/L).
2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.
3. Promulgated Maximum Contaminant Levels (MCLs) are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

- Green box = PFAS below criteria

KNOLLS ATOMIC POWER LABORATORY - KNOLLS LABORATORY
NISKAYUNA, NEW YORK

EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 4

HIGH YARD AREA PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER

0 6 12 24

Feet

N

Legend

- Soil Boring/Monitoring Well Location
- Seep Location
- (309.28) Groundwater Elevation Measured November 2019 (Feet Above Mean Sea Level)
- Groundwater Flow Direction
- Groundwater Elevation Contour with 2-Foot Interval (Dashed Where Inferred)
- Chain Link Fence
- Proposed Utility Footprint

Notes:

1. Monitoring wells and seeps surveyed in 2019 and 2020 by CT Male Associates, with the exception of SB/MW21 and SEEP-3R. SB/MW21 surveyed in 2010 by Richard Rybinski Land Surveying, and SEEP-13R surveyed in 2020 by KAPL contractor.
2. Ground elevation contour is 2 feet.
3. Seep groundwater elevations shown represent the surveyed ground surface elevations provided by CT Male Associates or KAPL contractor.
4. Results are in nanograms per liter (ng/L)."U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration.
5. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.
6. Promulgated Maximum Contaminant Levels (MCLs) are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

- Red box = PFAS above criteria
- Green box = PFAS below criteria

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NISKAYUNA, NEW YORK

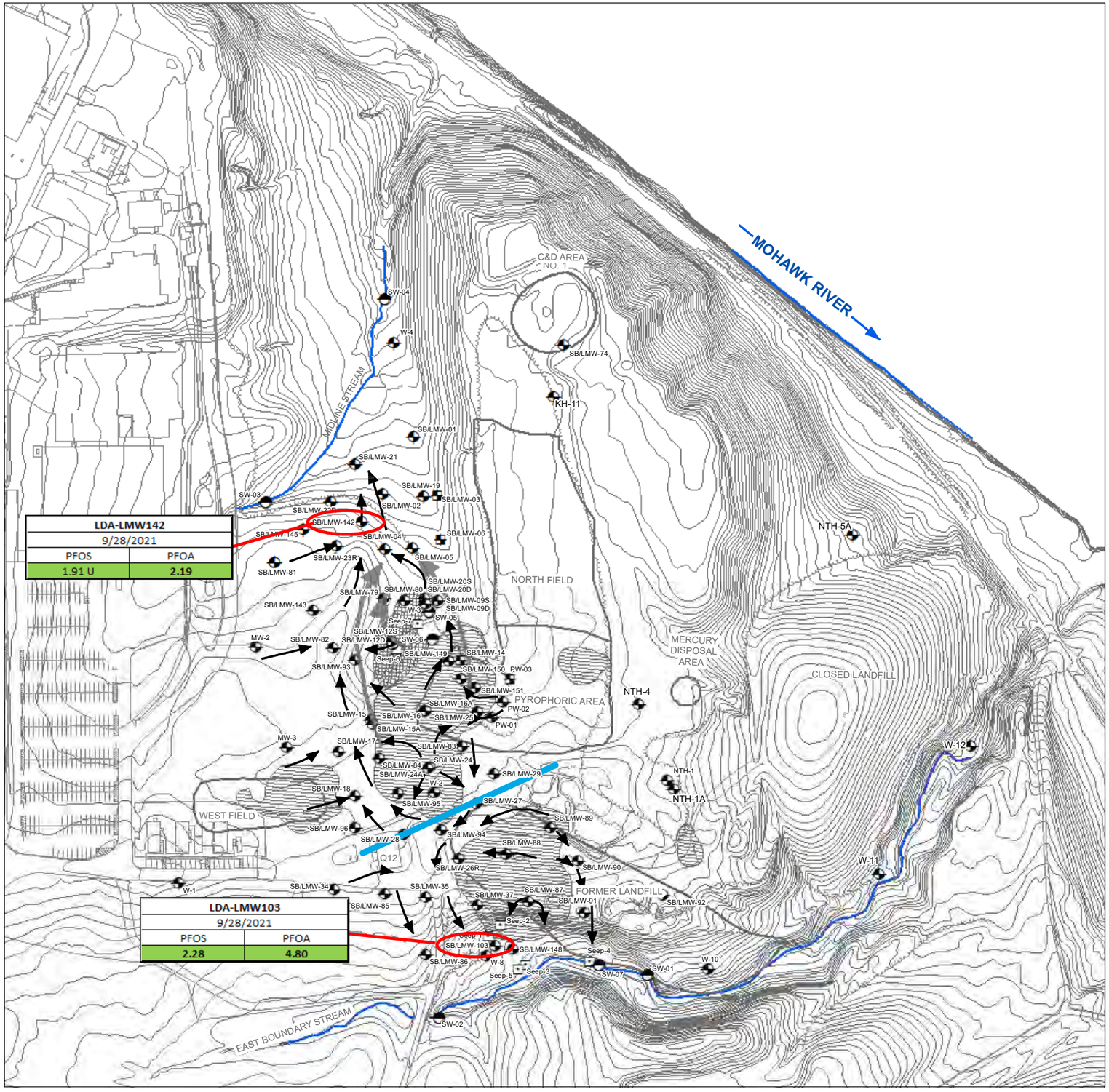
EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 5

Q3 YARD PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER

0 32.5 65 130

Feet



Source: This figure is adapted from KAPL Land Disposal Area Focused Corrective Measures Study Report, May 2018, Figure 6

N

Legend

- Groundwater Monitoring Well and Identification Number selected for EC Sampling
- SB/LMW-12S — Monitoring Well Location Used for Contouring
  - Well ID Prefix Designator
  - W, MW, KH, NTH - Pre-LDA RCRA Corrective Action Site Wells
  - PW - SPRU Well
  - SB/LMW - LDA Sampling Visit and RFI Boring/Well
- SB/LMW-06 — Former Well Location
- SW-03 — Surface Water Sampling Location
- Seep-1 — Seep Sampling Location
- Groundwater Flow Direction
- Northern Sub-Plume
- Groundwater Divide
- Topographic Contour (2-Foot Interval)
- Area Containing Possible Buried Metal Objects
- Area Containing Possible Conductive Soil or Groundwater

Notes:

1. Results are in nanograms per liter (ng/L)."U" indicates analyte not detected.
2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.
3. Promulgated Maximum Contaminant Levels (MCLs) are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

- Green box = PFAS below criteria

KNOLLS ATOMIC POWER LABORATORY - KNOLLS LABORATORY
NISKAYUNA, NEW YORK

EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

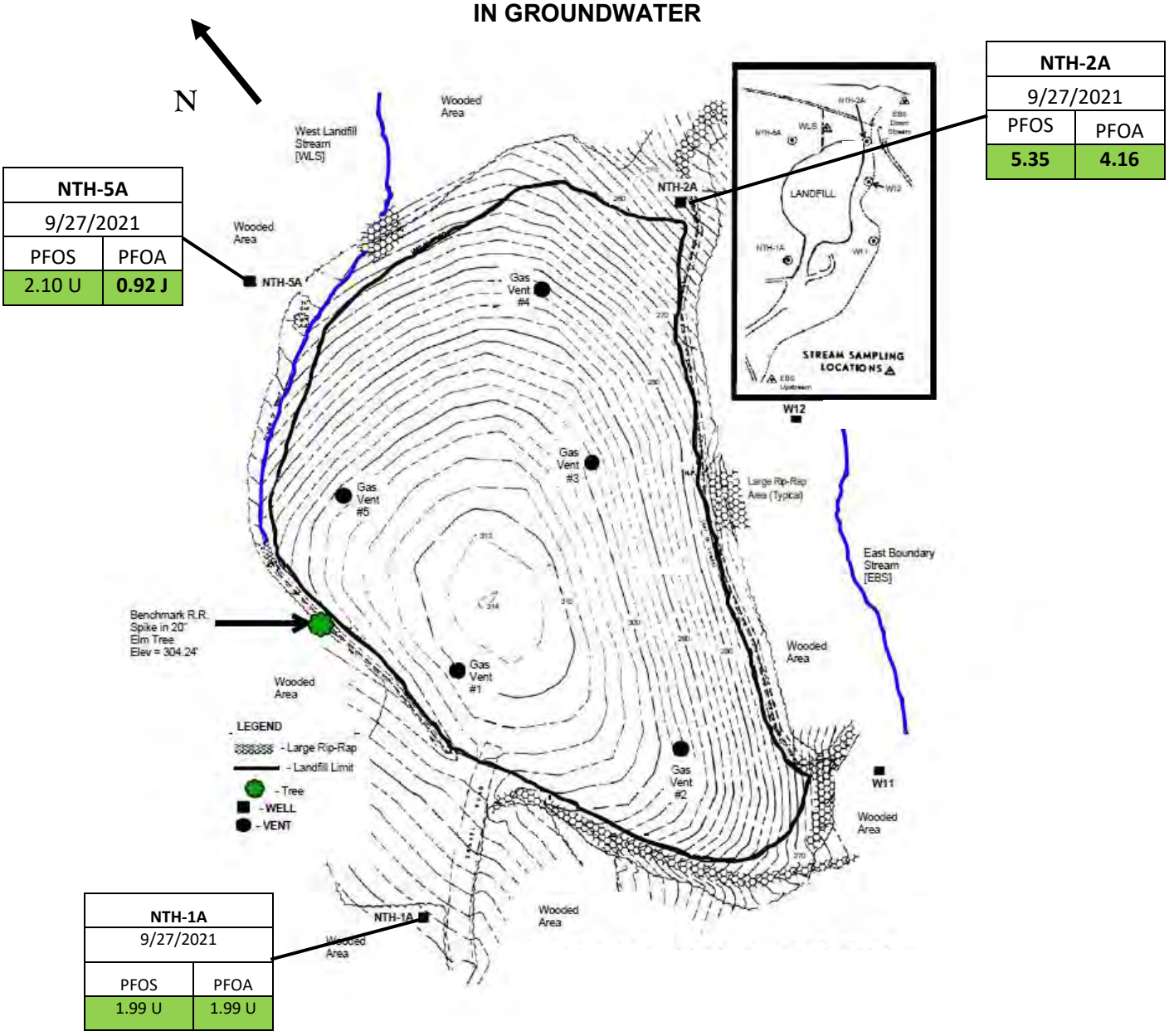
FIGURE 6

LAND DISPOSAL AREA PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER

0 200 400

Feet

FIGURE 7
CLOSED LANDFILL
PFOS AND PFOA CONCENTRATIONS
IN GROUNDWATER



NTH-5A	
9/27/2021	
PFOS	PFOA
2.10 U	**0.92 J**

NTH-2A	
9/27/2021	
PFOS	PFOA
5.35	**4.16**

NTH-1A	
9/27/2021	
PFOS	PFOA
1.99 U	1.99 U

Source: Figure adapted from Figure 1 of the Annual 2020 Post-Closure Landfill Monitoring Report for KAPL – Knolls Laboratory, August 2020

Notes:

1. Results are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected an estimated concentration.
2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.
3. Promulgated Maximum Contaminant Levels (MCLs) are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.
- Green box = PFAS below criteria

Appendix A

Data Validation Report

Data Validation Services

120 Cobble Creek Road P.O. Box 208
North Creek, NY 12853

Phone 518-251-4429
harry@frontiernet.net

April 26, 2022

Marc Flanagan
FMP-KAPL
P. O. Box 1072
Schenectady, NY 12301

RE: Knolls Atomic Power Laboratory (KAPL), Knolls Laboratory (KL) Site Emerging Contaminants (EC) Sampling Scope of Work Implementation Analytical Data Packages
Eurofins TestAmerica Laboratories Report Nos. 200-60278-1 and 200-61275-1

Dear Mr. Flanagan:

Review has been completed for the data packages generated by Eurofins TestAmerica Laboratories that pertain to aqueous samples collected between 09/27/21 and 12/08/21 as part of the KAPL KL EC Sampling Scope of Work Implementation. In September/October 2021, fifteen samples, one field duplicate, and one equipment blank were analyzed for 1,4-dioxane and twenty-one per- and polyfluoroalkyl substances (PFAS). In December 2021, six samples, one field duplicate, and one equipment blank were analyzed for PFAS. Five rinse blanks collected in September/October 2021 and two rinse blanks collected in December 2021 were analyzed for PFAS. The samples were processed and analyzed by the United States Environmental Protection Agency (USEPA) SW846 method 8270E Selected Ion Monitoring (SIM) and a modified USEPA Method 537.

Data validation was performed with guidance from the following documents, with consideration of the specific project method requirements.

- Emerging Contaminants Scope of Work for the Knolls Laboratory, April 2021
- NYSDEC. 2021. Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, January 2021
- USEPA. 2018. USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537, EPA 910-R-18-001, November 2018
- USEPA. 2017. USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, January 2017

The following items were reviewed:

- Data Completeness
- Custody Documentation/Sample Condition
- Holding Times
- Surrogate, Isotopic Dilution, and Internal Standard Recoveries
- Matrix Spike Recoveries/Duplicate Correlations
- Field Duplicate Correlations
- Method/Equipment/Rinse Blanks
- Laboratory Control Samples (LCSs)

- Instrument Tunes
- Calibration Standard Responses
- Method Compliance
- Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was conducted in compliance with project requirements and with adherence to quality criteria. Sample results are usable as reported or with minor qualification.

Validation data qualifier definitions, sample summaries, laboratory qualifier definitions/ glossaries, laboratory case narratives, and chains-of-custody are included in this report, and should be reviewed in conjunction with this text. Also attached is a data summary table displaying the sample results and the qualifications noted in this report.

PFAS compounds are identified by their common acronyms in this report. The data packages and data table reference both the technical names and the acronyms.

Field Duplicate Correlations

The blind field duplicate evaluations were performed for 1,4-dioxane and PFAS on KL-EC-MW-45-100121 and for PFAS on KL-EC-Q3-MW121-120721. The correlations meet validation guidelines.

1,4-Dioxane Analyses by USEPA Method 8270E SIM

The following samples were extracted beyond the allowable holding time due to laboratory oversight: KL-EC-MW-40-100121, KL-EC-MW-45-100121, KL-EC-MW-51-100121, KL-EC-Q3-MW103-100121, and KL-EC-X01-100121. The results 1,4-diooxane for those samples have been qualified as estimated in value, with a low bias.

The matrix spike accuracy and precision evaluation was performed on KL-EC-Q3-MW34-093021. Recoveries and correlations fall within validation guidelines.

Instrument tune compounds meet fragmentation requirements. Surrogate standard recoveries are within validation guidelines. LCS recoveries are within the required range. Internal standard recoveries are within required ranges. Blanks show no contamination.

Calibration standards show acceptable correlations.

PFAS Analyses by Modified USEPA Method 537

The results for the following analytes have been qualified as being Estimated Maximum Possible Concentrations (EMPCs) due to outlying ion ratios:

- PFHpA in KL-EC-LMW-142-092821
- PFBS in KL-EC-MW-6R-093021

- PFNA in KL-EC-Q3-MW103-100121
- PFHxA in KL-EC-Q3-MW99-120821

The matrix spike accuracy and precision evaluations were performed on KL-EC-Q3-MW34-093021 and KL-EC-Q3-MW26-120721. Recoveries and correlations fall within validation guidelines.

The result for PFTeA is qualified as estimated in KL-EC-Q3-MW103-100121 due to low recovery of the associated isotopic dilution standard. The bias is expected to be minimal.

Holding time requirements were met. LCS recoveries are within required ranges. Internal standard recoveries are within required ranges. Blanks show no contamination affecting sample reported results.

Calibration standards show responses within validation guidelines.

Please do not hesitate to contact me if questions or comments arise during your review of this report.

Very truly yours,

Judy Harry

Attachments:
Validation Data Qualifier Definitions
Sample Summaries
Laboratory Definitions/Glossaries
Laboratory Case Narratives
Chains-of-Custody
Data Summary Table

VALIDATION DATA QUALIFIER DEFINITIONS

U	The analyte was analyzed for, but was not detected above the level of the associated reported quantitation limit.
J	The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
J-	The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased low.
J+	The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased high.
UJ	The analyte was analyzed for, but was not detected. The associated reported quantitation limit is approximate and may be inaccurate or imprecise.
NJ	The detection is tentative in identification and estimated in value. Although there is presumptive evidence of the analyte, the result should be used with caution as a potential false positive and/or elevated quantitative value.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control limits. The analyte may or may not be present.
EMPC	The results do not meet all criteria for a confirmed identification. The quantitative value represents the Estimated Maximum Possible Concentration of the analyte in the sample.

Sample Summaries

Sample Summary

Client: Ramboll US Corporation
Project/Site: KAPL KL Emerging Contaminant Testing

Job ID: 200-60278-1
SDG: 200-60278

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
200-60278-1	KL-EC-NTH-1A-092721	Water	09/27/21 11:25	09/28/21 11:13
200-60278-2	KL-EC-NTH-5A-092721	Water	09/27/21 14:25	09/28/21 11:13
200-60278-3	KL-EC-NTH-2A-092721	Water	09/27/21 15:45	09/28/21 11:13
200-60278-4	KL-EC-FRB01-092721	Water	09/27/21 15:30	09/28/21 11:13
200-60294-1	KL-EC-LMW-103-092821	Water	09/28/21 09:45	09/29/21 10:41
200-60294-2	KL-EC-LMW-142-092821	Water	09/28/21 11:10	09/29/21 10:41
200-60294-3	KL-EC-FRB02-092821	Water	09/28/21 11:20	09/29/21 10:41
200-60294-4	KL-EC-Q3-MW23-092821	Water	09/28/21 14:35	09/29/21 10:41
200-60294-5	KL-EC-Q3-MW19-092821	Water	09/28/21 15:50	09/29/21 10:41
200-60348-1	KL-EC-B-16-093021	Water	09/30/21 09:55	10/01/21 13:31
200-60348-2	KL-EC-Q3-MW03-093021	Water	09/30/21 11:50	10/01/21 13:31
200-60348-3	KL-EC-Q3-MW34-093021	Water	09/30/21 13:30	10/01/21 13:31
200-60348-4	KL-EC-MW-6R-093021	Water	09/30/21 14:30	10/01/21 13:31
200-60348-5	KL-EC-EBW01-093021	Water	09/30/21 15:20	10/01/21 13:31
200-60348-6	KL-EC-FRB03-093021	Water	09/30/21 11:55	10/01/21 13:31
200-60348-7	KL-EC-FRB04-093021	Water	09/30/21 14:40	10/01/21 13:31
200-60389-1	KL-EC-MW-45-100121	Water	10/01/21 10:35	10/04/21 08:25
200-60389-2	KL-EC-MW-51-100121	Water	10/01/21 11:40	10/04/21 08:25
200-60389-3	KL-EC-FRB05-100121	Water	10/01/21 11:45	10/04/21 08:25
200-60389-4	KL-EC-MW-40-100121	Water	10/01/21 12:35	10/04/21 08:25
200-60389-5	KL-EC-Q3-MW103-100121	Water	10/01/21 13:25	10/04/21 08:25
200-60389-6	KL-EC-X01-100121	Water	10/01/21 00:00	10/04/21 08:25

Sample Summary

Client: Ramboll US Corporation
Job ID: 200-61275-1
Project/Site: KAPL KL Emerging Contaminant Testing

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
200-61275-1	KL-EC-Q3-MW26-120721	Water	12/07/21 10:40	12/07/21 16:58
200-61275-2	KL-EC-Q3-MW122-120721	Water	12/07/21 12:05	12/07/21 16:58
200-61275-3	KL-EC-Q3-MW121-120721	Water	12/07/21 13:30	12/07/21 16:58
200-61275-4	KL-EC-Q3-MW104-120721	Water	12/07/21 14:20	12/07/21 16:58
200-61275-5	KL-EC-EBW02-120721	Water	12/07/21 12:45	12/07/21 16:58
200-61275-6	KL-EC-FRB06-120721	Water	12/07/21 12:50	12/07/21 16:58
200-61275-7	KL-EC-X02-120721	Water	12/07/21 00:00	12/07/21 16:58
200-61295-1	KL-EC-Q3-MW99-120821	Water	12/08/21 10:30	12/08/21 16:26
200-61295-2	KL-EC-FRB07-120821	Water	12/08/21 10:40	12/08/21 16:26
200-61295-3	KL-EC-Q3-MW187-120821	Water	12/08/21 12:10	12/08/21 16:26

Laboratory Definitions/Glossaries

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
F1	MS and/or MSD recovery exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Definitions/Glossary

Client: Ramboll US Corporation
Job ID: 200-61275-1
Project/Site: KAPL KL Emerging Contaminant Testing

Qualifiers

LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Laboratory Case Narratives

CASE NARRATIVE

Client: Ramboll US Corporation

Project: KAPL KL Emerging Contaminant Testing

Report Number: 200-60278-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISION SUMMARY
The report being provided is a revision of the original report sent on 11/1/2021. The report (revision 1) is being revised due to: Revision to correct method reference in the narrative from 8270D SIM to 8270E SIM.

RECEIPT
The samples were received on 09/28/2021, 09/29/2021, 10/01/2021 and 10/04/2021; the samples arrived in good condition.

1,4-DIOXANE
Samples KL-EC-NTH-1A-092721, KL-EC-LMW-103-092821, KL-EC-B-16-093021, KL-EC-MW-45-100121, KL-EC-NTH-5A-092721, KL-EC-LMW-142-092821, KL-EC-Q3-MW03-093021, KL-EC-MW-51-100121, KL-EC-NTH-2A-092721, KL-EC-Q3-MW34-093021, KL-EC-Q3-MW23-092821, KL-EC-MW-6R-093021, KL-EC-MW-40-100121, KL-EC-Q3-MW19-092821, KL-EC-EBW01-093021, KL-EC-Q3-MW103-100121 and KL-EC-X01-100121 were analyzed for 1,4-Dioxane in accordance with 8270E SIM. The samples were prepared on 09/30/2021, 10/03/2021, 10/06/2021 and 10/11/2021 and analyzed on 10/01/2021, 10/03/2021, 10/06/2021, 10/07/2021 and 10/13/2021.

1,4-Dioxane exceeded the RPD limit for LCSD 460-804807/5-A. Refer to the QC report for details.

1,4-Dioxane failed the recovery criteria low for the MS of sample KL-EC-Q3-MW34-093021MS in batch 460-805421.

Samples KL-EC-MW-45-100121 (200-60389-1), KL-EC-MW-51-100121 (200-60389-2), KL-EC-MW-40-100121 (200-60389-4), KL-EC-Q3-MW103-100121 (200-60389-5) and KL-EC-X01-100121 (200-60389-6) were extracted out of holding time due to an internal tracking error .

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERFLUORINATED HYDROCARBONS
Samples KL-EC-NTH-1A-092721, KL-EC-LMW-103-092821, KL-EC-B-16-093021, KL-EC-MW-45-100121, KL-EC-NTH-5A-092721, KL-EC-LMW-142-092821, KL-EC-Q3-MW03-093021, KL-EC-MW-51-100121, KL-EC-NTH-2A-092721, KL-EC-FRB02-092821, KL-EC-Q3-MW34-093021, KL-EC-FRB05-100121, KL-EC-FRB01-092721, KL-EC-Q3-MW23-092821, KL-EC-MW-6R-093021, KL-EC-MW-40-100121, KL-EC-Q3-MW19-092821, KL-EC-EBW01-093021, KL-EC-Q3-MW103-100121, KL-EC-FRB03-093021, KL-EC-X01-100121 and KL-EC-FRB04-093021 were analyzed for Perfluorinated Hydrocarbons in accordance with TAL SOP BR-LC-009. The samples were prepared on 10/01/2021, 10/04/2021, 10/05/2021 and 10/12/2021 and analyzed on 10/02/2021, 10/07/2021, 10/08/2021 and 10/13/2021.

The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limit. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte: KL-EC-MW-6R-093021 (200-60348-4).

The “I” qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the results may have a high bias. However, analyst judgment was used to positively identify the analyte.
KL-EC-LMW-142-092821 (200-60294-2)

The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: KL-EC-Q3-MW103-100121 (200-60389-5). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater

than 10:1, which is achieved for all IDA in the sample.

The “I” qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limit. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgement was used to positively identify the analyte.
KL-EC-Q3-MW103-100121 (200-60389-5)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CASE NARRATIVE

Client: Ramboll US Corporation

Project: KAPL KL Emerging Contaminant Testing

Report Number: 200-61275-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 12/07/2021; the samples arrived in good condition, properly preserved and on ice.

PERFLUORINATED HYDROCARBONS

Samples KL-EC-Q3-MW26-120721, KL-EC-Q3-MW122-120721, KL-EC-Q3-MW121-120721, KL-EC-Q3-MW104-120721, KL-EC-EBW02-120721, KL-EC-FRB06-120721 and KL-EC-X02-120721 were analyzed for Perfluorinated Hydrocarbons in accordance with TAL SOP BR-LC-009. The samples were prepared on 12/10/2021 and analyzed on 12/12/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Chains-of-Custody

RAMBOLL Albany #224

Chain of Custody/Analysis Report

Page 1 of 1

Sampler(s): (Signature) Robert Hornung, Sarah Travaly

Lab Use Only

Project Number:

Job Number:

Lab ID:

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Project: KAPL - KL Emerging Contaminants Sampling
Location: Knolls Site, Niskayuna, N.Y.
Project #: 1940101245

Laboratory:
TestAmerica Laboratory
880 Riverside Pkwy
West Sacramento, CA, 95605

Attn: Kathryn Kelly
Phone:
802-923-1021

Holding Time:
14 days from sample collection to analysis (PFAS)

Package Requirement:
NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Analysis Required

Preservatives (see key at bottom): 0

Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab (G) or Composite (C)	Field Filtered (Y / N)	PFAS (21 Compounds) by USEPA Modified Method 537	Lab Sample ID
1 KL-EC-NTH-1A-092721	09/27/21	11:25	N	WG	2	G	N	X	
2 KL-EC-NTH-5A-092721	09/27/21	14:25	N	WG	2	G	N	X	
3 KL-EC-NTH-2A-092721	09/27/21	15:45	N	WG	2	G	N	X	
4 KL-EC-FRB01-092721	09/27/21	15:30	FB	WQ	2	G	N	X	
5									
6									
7									
8									
9									
10									
11									
12									

TAT

9-27-2021

200-60278 Chain of Custody

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Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:	Date: Time:	Courier Name: Tracking Number:	Date: Time:	Condition:	Other Comments or Notes regarding condition of samples as received:
Relinquished by: Sarah Travaly of: Ramboll	Date: 9-27-21 Time: ~~1515~~ 1715	Received by: of: TestAmerica	Date: 9/27/21 Time: 1715	Custody Seals intact? on ICR	
Relinquished by: of:	Date: 9-28-21 Time: 1700	Received by: of: Fedex	Date: 9/29/21 Time: 1010	Cooler Temperature: 1.8°C	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify):
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

Chain of Custody/Analysis Report

RAMBOLL Albany #224

Page 1 of 1

Sampler(s): (Signature) Robert Hornung, Sarah Travaly

Lab Use Only

Project Number:

Lab Number: 200-60278

Lab ID:

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com

Project: KAPL - KL Emerging Contaminants Sampling
Location: Knolls Site, Niskayuna, N.Y.
Project #: 1940101245

Laboratory: Test America Laboratory, 777 New Durham Rd, Edison, NJ 08817
Attn: Kathryn Kelly
Phone: 802-923-1021

Holding Time: 7 days from sample collection to analysis (1,4-dioxane)

Package Requirement: NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab G, or Composite C	Field Filtered? Y / N	Analysis Required: Preservatives (see key at bottom): 0 — 1,4-Dioxane by USEPA Method 8270 SIM	Lab Sample ID
1	KL-EC-NTH-1A-092721	09/27/21	11:25	N	WG	2	G	N	X	1
2	KL-EC-NTH-5A-092721	09/27/21	14:25	N	WG	2	G	N	X	2
3	KL-EC-NTH-2A-092721	09/27/21	15:45	N	WG	2	G	N	X	3
4										
5										
6										
7										
8										
9										
10										
11										
12										

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Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:	Date: Time:	Courier Name: Tracking Number:	Date: Time:	Condition:	Other Comments or Notes regarding condition of samples as received
Relinquished by: Sarah Travaly of Ramboll	Date 9-27-21 Time ~~1515~~ 1715	Received by: of:	Date 9-27-21 Time ~~1515~~ 1715	Custody Seals intact? ON ICE	
Relinquished by: of:	Date 9-28-~~21~~ 9/27/21 Time 1700	Received by: of: FedEx / Via FedEx	Date 9/29/21 Time 9:45	Cooler Temperature: ID#9 – 1.8 = 1.3	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify)
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

CS#1700021

Chain of Custody/Analysis Report

RAMBOLL Albany #224

Page 1 of 1

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Project: KAPL - KL Emerging Contaminants Sampling
Location: Knolls Site, Niskayuna, N.Y.
Project #: 1940101245

Sampler(s): (Signature) Robert Hornung, Sarah Travaly

Laboratory:
Test America Laboratory
880 Riverside Pkwy
West Sacramento, CA, 95605

Attn: Kathryn Kelly
Phone:
802-923-4021

Holding Time:
14 days from sample collection to analysis (PFAS)

Package Requirement:
NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Lab Use Only
Project Number:
Job Number:
Lab ID:

Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab (G) or Composite (C)	Field Filtered? (Y / N)	Analysis Required: Preservatives (see key at bottom): 0	PFAS (21 Compounds) by USEPA Modified Method 537	Lab Sample ID
1 KL-EC-LMW-103-092821	09/28/21	09:45	N	WG	2	G	N		X	
2 KL-EC-LMW-142-092821	09/28/21	11:10	N	WG	2	G	N		X	
KL-EC-FRB02-092821	09/28/21	11:20	FB	WQ	2	G	N		X	
KL-EC-Q3-MW23-092821	09/28/21	14:35	N	WG	2	G	N		X	
* KL-EC-Q3-MW19-092821	09/28/21	15:50	N	WG	2	G	N		X	
8				WG						
9										
10										
11										
12										

9-28-21

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200-60294 Chain of Custody

Special Instructions: * Please analyze less turbid bottle from KL-EC-Q3-MW19-092821 first.

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: / of:	Date / Time	Courier Name: / Tracking Number:	Date / Time	Condition:	Other Comments or Notes regarding condition of samples as received:
Relinquished by: Sarah Travaly / of: Ramboll	Date 9-28-21 / Time 1645	Received by: / of: FEDEX	Date 9-28-21 / Time 1645	Custody Seals intact? Yes	
Relinquished by: / of: FEDEX	Date 9/29/21 / Time 1700	Received by: / of: ETOSac	Date 9/30/21 / Time 0810	Cooler Temperature:	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify):
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

1.7

RAMBOLL Albany #224

Chain of Custody/Analysis Report

Page 1 of 1

Sampler(s): (Signature) Robert Hornung MAH — Sarah Travaly Sarah Travaly

Lab Use Only: 200-60294

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Project: KAPL – KL Emerging Contaminants Sampling
Location: Knolls Site, Niskayuna, N.Y.
Project #: 1940101245

Laboratory: Test America Laboratory
777 New Durham Rd
Edison, NJ 08817
Attn: Kathryn Kelly
Phone: 802-923-1021

Holding Time: 7 days from sample collection to analysis (1,4-dioxane)

Package Requirement: NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Project Number:

Job Number:

Lab ID:

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab (G) or Composite (C)	Field Filtered (Y / N)	Analysis Required: Preservatives (see key at bottom): 0 — 1,4 Dioxane by USEPA Method 8270 SIM	Lab Sample ID
1	KL-EC-LMW-103-092821	09/28/21	09:45	N	WG	2	G	N	X	
2	KL-EC-LMW-142-092821	09/28/21	11:10	N	WG	2	G	N	X	
3	KL-EC-Q3-MW23-092821	09/28/21	14:35	N	WG	2	G	N	X	
4	KL-EC-Q3-MW19-092821	09/28/21	15:50	N	WG	2	G	N	X	
5										
6										
7										
8										
9										
10										
11										
12										

5-Day RUSH

MC 9-28-21

200-60294 Chain of Custody

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:	Date: Time:	Courier Name: Tracking Number:	Date: Time:	Condition:	Other Comments or Notes regarding condition of samples as received:
Relinquished by: Sarah Travaly of: Ramboll	Date: 9-28-21 Time: 1645	Received by: [illegible] Keller of: EFTA	Date: 9-28-21 Time: 1645	Custody Seals intact?	
Relinquished by: [illegible] Keller of:	Date: 9/29/21 Time: 1700	Received by: [illegible] / ViaFedEx of:	Date: 9/30/21 Time: 10:00	Cooler Temperature: ID#9 0.8=0.3	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify):
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

CS#1700043

Chain of Custody/Analysis Report

RAMBOLL

Sampler(s): (Signature) Robert Hornung, Sarah Travaly

Lab Use Only

Project Number:

Job Number:

Lab ID:

Contact: Paul D'Annibale, Amy Spooner-Stevens

Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203

Phone: (518) 724-7272

Email: Paul.D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Project: KAPL - KL Emerging Contaminants Sampling

Location: Knolls Site, Niskayuna, N.Y.

Project #: 1940101245

Laboratory:
Test America Laboratory
880 Riverside Pkwy
West Sacramento, CA, 95605

Attn: Kathryn Kelly

Phone:
802-923-1021

Holding Time:
14 days from sample collection to analysis (PFAS)

Package Requirement:
NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Analysis Required

Preservatives: (see key at bottom)

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab (G) or Composite (C)	Field Filtered (Y / N)	PFAS (21 Compounds) by USEPA Modified Method 537 (0)	Lab Sample ID
1	KL-EC-B-16-093021	09/30/21	0955	N	WG	2	G	N	X	
2	KL-EC-Q3-MW03-093021	09/30/21	1150	N	WG	2	G	N	X	
3	KL-EC-FRB03-093021	09/30/21	1155	FB	WQ	2	G	N	X	
4	KL-EC-Q3-MW34-093021	09/30/21	1330	N	WG	2	G	N	X	
5	KL-EC-Q3-MW34-093021-MS	09/30/21	1330	MS	WQ	2	G	N	X	
6	KL-EC-Q3-MW34-093021-MSD	09/30/21	1330	MS	WQ	2	G	N	X	
7	KL-EC-MW-6R-093021	09/30/21	1430	N	WG	2	G	N	X	
8	KL-EC-FRB04-093021	09/30/21	1440	FB	WQ	2	G	N	X	
9	KL-EC-EBW01-093021	09/30/21	1520	EB	WQ	2	G	N	X	
10										
11										
12										

TAL 9-30-2021

200-60348 Chain of Custody

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by:	Date	Courier Name:	Date	Condition:	Other Comments or Notes regarding condition of samples as received:
of:	Time	Tracking Number:	Time		
Relinquished by: Sarah Travaly	Date 9-30-21	Received by: TC Keller	Date 9-30-21	Custody Seals intact?	
of: Ramboll	Time 1620	of: EE+A	Time 1620	✓	
Relinquished by: TC Keller	Date 10-1-21	Received by:	Date 10-2-21	Cooler Temperature:	
of:	Time 1700	of: ETASAC	Time 09:10	5.9 °C	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify)

Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control

Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

Albany #224

RAMBOLL

Chain of Custody/Analysis Report

Sampler(s): Robert Hornung, Sarah Travaly
(Signature)

Lab Use Only

Project Number:

Job Number: 244252

Lab ID:

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com

Project: KAPL - KL Emerging Contaminants Sampling
Location: Knolls Site, Niskayuna, N.Y.
Project #: 1940101245

Laboratory: TestAmerica Laboratory
777 New Durham Rd
Edison, NJ 08817
Attn: Kathryn Kelly
Phone: 802-923-1021

Holding Time: 7 days from sample collection to analysis (1,4-dioxane)

Package Requirement: NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Analysis Required
Preservatives: (see key at bottom): 0

	Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab (G) or Composite (C)	Field Filtered? Y/N	1,4-Dioxane by USEPA Method 8270 SIM	Lab Sample ID
1	KL-EC-B-16-093021	09/30/21	0955	N	WG	2	G	N	X	1
2	KL-EC-Q3-MW03-093021	09/30/21	1150	N	WG	2	G	N	X	2
3	KL-EC-Q3-MW34-093021	09/30/21	1330	N	WG	2	G	N	X	3
4	KL-EC-Q3-MW34-093021-MS	09/30/21	1330	MS	WQ	2	G	N	X	3
5	KL-EC-Q3-MW34-093021-MSD	09/30/21	1330	MS	WQ	2	G	N	X	3
6	KL-EC-MW-6R-093021	09/30/21	1430	N	WG	2	G	N	X	4
7	KL-EC-EBW01-093021	09/30/21	1520	EB	WQ	2	G	N	X	5
8										
9										
10										
11										
12										

TMC 9-30-2021

200-60348 Chain of Custody

Page 3323 of 3339

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:	Date / Time	Courier Name: Tracking Number:	Date / Time	Condition:	Other Comments or Notes regarding condition of samples as received:
Relinquished by: Sarah Travaly of: Ramboll	Date 9-30-21 Time 1620	Received by: [signature] of: EETA	Date 9-30-21 Time 1620	Custody Seals intact? Y	
Relinquished by: [signature] of:	Date 10-1-21 Time 1700	Received by: [signature] of:	Date 10/1/21 Time 1000	Cooler Temperature: FedEx	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify):
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

CSH 17 00081

1.1 [illegible]

10/1/21

Chain of Custody/Analysis Report

Page 1 of 1

RAMBOLL

Sampler(s): (Signature) Robert Hornung, Sarah Travaly

Lab Use Only

Project Number:

Job Number:

Lab ID: Albany #224

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, NY. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Project: KAPL - KL Emerging Contaminants Sampling
Location: Knolls Site, Niskayuna, NY
Project #: 1940101245

Laboratory:
Test America Laboratory
880 Riverside Pkwy
West Sacramento, CA, 95605
Attn: Kathryn Kelly
Phone:
802 923-1021

Holding Time:
14 days from sample collection to analysis (PFAS)

Package Requirement:
NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Analysis Required

Preservatives (see key at bottom):

Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab or Composite?	Field Filtered? Y/N	0	PFAS (24 Compounds) by USEPA Modified Method 537	Lab Sample ID
1 KL-EC-MW-45-100121	10/01/21	1035	N	WG	2	G	N		X	
2 KL-EC-MW-51-100121	10/01/21	1140	N	WG	2	G	N		X	
3 KL-EC-FRB05-100121	10/01/21	1145	FB	WQ	2	G	N		X	
4 KL-EC-MW-40-100121	10/01/21	1235	N	WG	2	G	N		X	
5 KL-EC-Q3-MW103-100121	10/01/21	1325	N	WG	1	G	N		X	
6 KL-EC-X01-100121	10/01/21	—	FD	WG	2	G	N		X	
7										
8										
9										
10										
11										
12										

200-60389 Chain of Custody

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex): Relinquished by:	Date:	Courier Name:	Date:	Condition:	Other Comments or Notes regarding condition of samples as received:	
of:	Time:	Tracking Number:	Time:			
Relinquished by: Sarah Travaly	Date: 10-1-21	Received by:	Date: 10-1-21	Custody Seals intact:		
of: Ramboll	Time: 1650	of: EETA	Time: 1650			
Relinquished by:	Date: 10-1-2021	Received by:	Date: 10-2-21	Cooler Temperature:		
of: EETA	Time: 1700	of: ETASAC	Time: 09:10	0.1°C		

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify)
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

Chain of Custody/Analysis Report

RAMBOLL

Page 1 of 1

Sampler(s): (Signature) Robert Hornung, Sarah Travaly

Lab Use Only

Project Number:

Job Number:

Lab ID: Albany #224

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com

Project: KAPL - KL Emerging Contaminants Sampling
Location: Knolls Site, Niskayuna, N.Y.
Project #: 1940101245

Laboratory:
TestAmerica Laboratory
777 New Durham Rd
Edison, NJ 08817

Attn: Kathryn Kelly
Phone:
802-923-1021

Holding Time:
7 days from sample collection to analysis (1,4-dioxane)

Package Requirement:
NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab G or Composite C	Field Filtered? Y / N	Analysis Required: Preservatives: (see key at bottom) 0: 1,4-Dioxane by USEPA Method 8270 SIM	Lab Sample ID
1	KL-EC-MW-45-100121	10/01/21	1035	N	WG	2	G	N	X	
2	KL-EC-MW-51-100121	10/01/21	1140	N	WG	2	G	N	X	
3	KL-EC-MW-40-100121	10/01/21	1235	N	WG	2	G	N	X	
4	KL-EC-Q3-MW103-100121	10/01/21	1325	N	WG	1	G	N	X	
5	KL-EC-X01-100121	10/01/21	—	FD	WG	2	G	N	X	
6										
7										
8										
9										
10										
11										
12										

10-1-2021

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by:	Date	Courier Name:	Date	Condition	Other Comments or Notes regarding condition of samples as received:
of:	Time	Tracking Number:	Time		
Relinquished by: Sarah Travaly	Date 10-1-21	Received by:	Date 10/1/21	Custody Seals intact?	
of: Ramboll	Time 1650	of: EETA	Time 1650		
Relinquished by: Tim Knuble	Date 10-1-2021	Received by:	Date 10/2/21	Cooler Temperature:	
of: EETA	Time 1700	of:	Time 1060	5.2/4.7	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify):
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

NaCS fep

RAMBOLL

Chain of Custody/Analysis Report

Sampler(s): William Pierce ~~Robert Hornung~~ ~~Sarah Travaly~~ Alexandra Golden
(Signature)

Lab Use Only

Project Number:

Job Number:

Lab ID:

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Project: KAPL - KL Emerging Contaminants Sampling
Location: Knolls Site, Niskayuna, N.Y.
Project #: 1940101245

Laboratory:
Test America Laboratory
880 Riverside Pkwy
West Sacramento, CA, 95605
Attn: Kathryn Kelly
Phone:
802-923-1021

Holding Time:
14 days from sample collection to analysis (PFAS) (AG)

Package Requirement: 5 day TAT
NYSDEC Full ASP Cat B Data Package with a std ~~10 business~~ day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Analysis Required — Preservatives: (see key at bottom): 0

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab (G) or Composite (C)	Field Filtered? Y/N	PFAS (21 Compounds) by USEPA Modified Method 537								Lab Sample ID
1	KL-EC-Q3-MW99-120821	12/8/21	1030	N	WG	2	G	N	X								
2	KL-EC-FRB07-120821	↓	1040	FB	WQ	↓	↓	↓	X								
3	KL-EC-Q3-MW187-120821	↓	1210	N	WG	↓	↓	↓	X								
4																	
5																	
6																	
7																	
8			WEP														
9																	
10	200-61295 Chain of Custody																
11																	
12																	

Albany #224

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex)		Courier Name:		Condition:	Other Comments or Notes regarding condition of samples as received:
Relinquished by: WEP of:	Date: Time:	Tracking Number: WEP	Date: Time:		
Relinquished by: [signature] of: Ramboll	Date: 12-8-21 Time: 1400	Received by: Tim Kndler of: EETA	Date: 12-8-21 Time: 1400	Custody Seals intact?	
Relinquished by: Tim Kndler of: EETA	Date: 12-8-2021 Time: 1700	Received by: [signature] of: [illegible]	Date: 12/9/21 Time: ~~1105~~ 1125	Cooler Temperature: BAL 0.8C	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify):
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

Chain of Custody/Analysis Report

RAMBOLL

Page 1 of 1

Lab Use Only

Project Number:

Job Number:

200-61275 Chain of Custody

Sampler(s): William Reese Robert Hornung (Signature) Sarah Travaly Alexandra Holden

Contact: Paul D'Annibale, Amy Spooner-Stevens

Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203

Phone: (518) 724-7272

Email: Paul.D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Project: KAPL - ~~Site~~ Emerging Contaminants Sampling (AG)

Location: ~~Knolls Site, West Milton~~ KL Knolls Site, N.Schuylna N.Y.

Project #: 1940101245

Laboratory:
TestAmerica Laboratory
880 Riverside Pkwy
West Sacramento, CA, 95605

Attn: Kathryn Kelly

Phone:
802-923-1021

Holding Time:
14 days from sample collection to analysis (PFAS)

Package Requirement: 5 day
NYSDEC Full ASP Cat B Data Package with a std ~~10 business~~ day TAT, prelim analytical results provided in pivot tables (MS)

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Analysis Required

Preservatives: (see key at bottom)

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab (G) or Composite (C)	Field Filtered (Y/N)	PFAS (21 Compounds) by USEPA Modified Method 537								Lab Sample ID
									0								
1	KL-EC-Q3-MW20-120721	12/07/21	1040	N	WG	2	G	N	X								
2	KL-EC-Q3-MW26-120721-MS		1040	MS	WQ				X								
3	KL-EC-Q3-MW26-120721-MSD		1040	MS	WQ				X								
4	KL-EC-Q3-MW122-120721		1205	N	WG				X								
5	KL-EC-Q3-MW121-120721		1330	N	WG				X								
6	KL-EC-Q3-MW104-120721		1420	N	WG				X								
7	KL-EC-EBW02-120721		1245	EB	WQ				X								
8	KL-EC-FRB06-120721		1250	FB	WQ				X								
9	KL-EC-X02-120721		—	FD	WG				X								
10																	
11	(HG)																
12																	

Albany #224

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: Duncan Holden of: Ramboll	Date 12/07/21 Time 1945	Courier Name: — Tracking Number:	Date Time	Condition	Other Comments or Notes regarding condition of samples as received:
Relinquished by: of:	Date Time	Received by: Tim Knollinger of: EETA	Date 12-7-21 Time 1545	Custody Seals intact?	
Relinquished by: Tim Knollinger of: EETA	Date 12-7-2021 Time 1700	Received by: of: EETA	Date 12-8-21 Time 1030	Cooler Temperature:	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify):

Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control

Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

Data Summary Table

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

	Area	Hillside Area				
	Location ID	D3D6-B16	D3D6-MW40	D3D6-MW45	D3D6-MW45	D3D6-MW51
	Sample ID	KL-EC-B-16-093021	KL-EC-MW-40-100121	KL-EC-MW-45-100121	KL-EC-X01-100121	KL-EC-MW-51-100121
	Sample Date	9/30/2021	10/1/2021	10/1/2021	10/1/2021	10/1/2021
Chemical Name	**Proposed Guidance Values**					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.71 U	4.76 U	4.91 U	4.74 U	4.89 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.88 U	**0.34 J**	**1.12 J**	**1.07 J**	**0.70 J**
Perfluorobutanoic acid (PFBA)	NV	4.71 U	**4.69 J**	**6.01**	**6.04**	**4.92**
Perfluorodecanesulfonic acid (PFDS)	NV	1.88 U	**6.12**	1.96 U	1.89 U	1.96 U
Perfluorodecanoic acid (PFDA)	NV	1.88 U	**10.5**	**0.33 J**	1.89 U	**0.74 J**
Perfluorododecanoic acid (PFDoA)	NV	1.88 U	**5.84**	1.96 U	1.89 U	1.96 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluoroheptanoic acid (PFHpA)	NV	1.88 U	**3.83**	**1.89 J**	**1.64 J**	**1.32 J**
Perfluorohexanesulfonic acid (PFHxS)	NV	1.88 U	**0.65 J**	1.96 U	1.89 U	1.96 U
Perfluorohexanoic acid (PFHxA)	NV	1.88 U	**3.98**	**3.00**	**2.56**	**2.06**
Perfluorononanoic acid (PFNA)	NV	1.88 U	**5.92**	**0.80 J**	**0.84 J**	**2.11**
Perfluorooctanesulfonic acid (PFOS)	2.7	1.88 U	**13.9 ***	**1.94 J**	1.89 U	**6.52 ***
Perfluorooctanoic acid (PFOA)	6.7	1.88 U	**12.2 ***	**2.13**	**2.01**	**2.89**
Perfluoropentanoic acid (PFPeA)	NV	1.88 U	**5.72**	**5.58**	**4.70**	**2.82**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.88 U	**6.32**	1.96 U	1.89 U	1.96 U
Perfluroroctanesulfonamide (FOSA)	NV	1.88 U	1.90 U	1.96 U	1.89 U	1.96 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Guidance Water Quality Standards and Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

	Area	Hillside Area		High Yard Area		Landfill Disposal Area
	Location ID	Field Reagent Blank	Field Reagent Blank	HYA-MW6R	Field Reagent Blank	LDA-LMW103
	Sample ID	KL-EC-FRB03-093021	KL-EC-FRB05-100121	KL-EC-MW-6R-093021	KL-EC-FRB04-093021	KL-EC-LMW-103-092821
	Sample Date	9/30/2021	10/1/2021	9/30/2021	9/30/2021	9/28/2021
Chemical Name	**Proposed Guidance Values**					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	5.20 U	4.81 U	4.76 U	4.93 U	5.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	5.20 U	4.81 U	4.76 U	4.93 U	5.10 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	5.20 U	4.81 U	4.76 U	4.93 U	5.10 U
Perfluorobutanesulfonic acid (PFBS)	NV	2.08 U	1.93 U	**1.38 EMPC**	1.97 U	**0.72 J**
Perfluorobutanoic acid (PFBA)	NV	5.20 U	4.81 U	**3.80 J**	4.93 U	**52.3**
Perfluorodecanesulfonic acid (PFDS)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluorodecanoic acid (PFDA)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluorododecanoic acid (PFDoA)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluoroheptanoic acid (PFHpA)	NV	2.08 U	1.93 U	**1.54 J**	1.97 U	**1.46 J**
Perfluorohexanesulfonic acid (PFHxS)	NV	2.08 U	1.93 U	**5.65**	1.97 U	**0.65 J**
Perfluorohexanoic acid (PFHxA)	NV	2.08 U	1.93 U	**2.22**	1.97 U	**2.62**
Perfluorononanoic acid (PFNA)	NV	2.08 U	1.93 U	**0.34 J**	1.97 U	**0.88 J**
Perfluorooctanesulfonic acid (PFOS)	2.7	2.08 U	1.93 U	**9.46 ***	1.97 U	**2.28**
Perfluorooctanoic acid (PFOA)	6.7	2.08 U	1.93 U	**8.88 ***	1.97 U	**4.80**
Perfluoropentanoic acid (PFPeA)	NV	2.08 U	1.93 U	**2.72**	1.97 U	**3.29**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	2.08 U	1.93 U	1.90 U	1.97 U	2.04 U
Perfluroroctanesulfonamide (FOSA)	NV	2.08 U	1.93 U	**1.39 J**	1.97 U	2.04 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Guidance Water Quality Standards and Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

	Area	Landfill Disposal Area		Closed Landfill Area		
	Location ID	LDA-LMW142	Field Reagent Blank	NTH-1A	NTH-2A	NTH-5A
	Sample ID	KL-EC-LMW-142-092821	KL-EC-FRB02-092821	KL-EC-NTH-1A-092721	KL-EC-NTH-2A-092721	KL-EC-NTH-5A-092721
	Sample Date	9/28/2021	9/28/2021	9/27/2021	9/27/2021	9/27/2021
Chemical Name	**Proposed Guidance Values**					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.78 U	4.85 U	4.98 U	5.23 U	5.24 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.78 U	4.85 U	4.98 U	5.23 U	5.24 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.78 U	4.85 U	4.98 U	5.23 U	5.24 U
Perfluorobutanesulfonic acid (PFBS)	NV	**0.57 J**	1.94 U	1.99 U	**0.87 J**	**0.45 J**
Perfluorobutanoic acid (PFBA)	NV	**16.2**	4.85 U	4.98 U	**4.88 J**	5.24 U
Perfluorodecanesulfonic acid (PFDS)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U
Perfluorodecanoic acid (PFDA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U
Perfluorododecanoic acid (PFDoA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U
Perfluoroheptanoic acid (PFHpA)	NV	**0.80 EMPC**	1.94 U	1.99 U	**1.06 J**	2.10 U
Perfluorohexanesulfonic acid (PFHxS)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U
Perfluorohexanoic acid (PFHxA)	NV	**1.25 J**	1.94 U	1.99 U	**1.62 J**	2.10 U
Perfluorononanoic acid (PFNA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U
Perfluorooctanesulfonic acid (PFOS)	2.7	1.91 U	1.94 U	1.99 U	**5.35 ***	2.10 U
Perfluorooctanoic acid (PFOA)	6.7	**2.19**	1.94 U	1.99 U	**4.16**	**0.92 J**
Perfluoropentanoic acid (PFPeA)	NV	**4.14**	1.94 U	1.99 U	**1.96 J**	2.10 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U
Perfluroroctanesulfonamide (FOSA)	NV	1.91 U	1.94 U	1.99 U	2.09 U	2.10 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Guidance Water Quality Standards and Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

	Area	Closed Landfill Area	Q3 Yard Area			
	Location ID	Field Reagent Blank	Q3-MW03	Q3-MW19	Q3-MW23	Q3-MW34
	Sample ID	KL-EC-FRB01-092721	KL-EC-Q3-MW03-093021	KL-EC-Q3-MW19-092821	KL-EC-Q3-MW23-092821	KL-EC-Q3-MW34-093021
	Sample Date	9/27/2021	9/30/2021	9/28/2021	9/28/2021	9/30/2021
Chemical Name	**Proposed Guidance Values**					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	3.98 U	4.68 U	4.55 U	4.69 U	4.74 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.59 U	1.87 U	1.82 U	1.88 U	1.89 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	3.98 U	4.68 U	4.55 U	4.69 U	4.74 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	3.98 U	4.68 U	4.55 U	4.69 U	4.74 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.59 U	**3.77**	**4.18**	**0.75 J**	**0.96 J**
Perfluorobutanoic acid (PFBA)	NV	3.98 U	**15.9**	**7.80**	**9.08**	**8.41**
Perfluorodecanesulfonic acid (PFDS)	NV	1.59 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluorodecanoic acid (PFDA)	NV	1.59 U	**0.75 J**	**1.22 J**	1.88 U	1.89 U
Perfluorododecanoic acid (PFDoA)	NV	1.59 U	1.87 U	**0.85 J**	1.88 U	1.89 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.59 U	**1.98**	1.82 U	1.88 U	1.89 U
Perfluoroheptanoic acid (PFHpA)	NV	1.59 U	**11.0**	**3.28**	**4.01**	**4.47**
Perfluorohexanesulfonic acid (PFHxS)	NV	1.59 U	**6.98**	**3.34**	**0.87 J**	**2.74**
Perfluorohexanoic acid (PFHxA)	NV	1.59 U	**13.7**	**6.21**	**7.58**	**8.72**
Perfluorononanoic acid (PFNA)	NV	1.59 U	**2.55**	**1.77 J**	**1.94**	**1.98**
Perfluorooctanesulfonic acid (PFOS)	2.7	1.59 U	**71.7 ***	**6.70 ***	**6.77 ***	**24.0 ***
Perfluorooctanoic acid (PFOA)	6.7	1.59 U	**34.6 ***	**10.2 ***	**7.33 ***	**12.8 ***
Perfluoropentanoic acid (PFPeA)	NV	1.59 U	**9.01**	**4.95**	**9.12**	**13.2**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.59 U	1.87 U	**0.66 J**	1.88 U	1.89 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.59 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.59 U	1.87 U	1.82 U	1.88 U	1.89 U
Perfluroroctanesulfonamide (FOSA)	NV	**1.20 J**	1.87 U	1.82 U	1.88 U	1.89 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Guidance Water Quality Standards and Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

	Area	Q3 Yard Area				
	Location ID	Q3-MW103	Q3-MW26	Q3-MW99	Q3-MW104	Q3-MW121
	Sample ID	KL-EC-Q3-MW103-100121	KL-EC-Q3-MW26-120721	KL-EC-Q3-MW99-120821	KL-EC-Q3-MW104-120721	KL-EC-Q3-MW121-120721
	Sample Date	10/1/2021	12/7/2021	12/8/2021	12/7/2021	12/7/2021
Chemical Name	**Proposed Guidance Values**					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.74 U	4.59 U	**2.58 J**	4.64 U	4.65 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.74 U	4.59 U	5.11 U	4.64 U	4.65 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.74 U	4.59 U	5.11 U	4.64 U	4.65 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.90 U	**0.34 J**	**0.79 J**	1.86 U	1.86 U
Perfluorobutanoic acid (PFBA)	NV	**7.62**	**6.94**	**4.27 J**	**3.58 J**	4.65 U
Perfluorodecanesulfonic acid (PFDS)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorodecanoic acid (PFDA)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorododecanoic acid (PFDoA)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	**0.22 J**	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroheptanoic acid (PFHpA)	NV	**2.12**	**0.50 J**	**1.66 J**	**0.54 J**	**0.34 J**
Perfluorohexanesulfonic acid (PFHxS)	NV	1.90 U	**1.31 J**	**0.92 J**	1.86 U	1.86 U
Perfluorohexanoic acid (PFHxA)	NV	**3.14**	**1.04 J**	**3.25 EMPC**	**1.13 J**	**0.78 J**
Perfluorononanoic acid (PFNA)	NV	**1.35 EMPC**	**0.27 J**	**1.08 J**	**0.25 J**	1.86 U
Perfluorooctanesulfonic acid (PFOS)	2.7	**3.64 ***	**1.75 J**	**1.97 J**	**0.99 J**	**1.97**
Perfluorooctanoic acid (PFOA)	6.7	**5.78**	**2.00**	**2.02 J**	**1.38 J**	**1.23 J**
Perfluoropentanoic acid (PFPeA)	NV	**6.49**	**1.87**	**3.72**	**1.39 J**	**0.81 J**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.90 UJ	1.83 U	2.04 U	1.86 U	1.86 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U
Perfluroroctanesulfonamide (FOSA)	NV	1.90 U	1.83 U	2.04 U	1.86 U	1.86 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

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3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Guidance Water Quality Standards and Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

Chemical Name	Proposed Guidance Values	Area	Q3 Yard Area				
		Location ID	Q3-MW121	Q3-MW122	Q3-MW187	Field Reagent Blank	Field Reagent Blank
		Sample ID	KL-EC-X02-120721	KL-EC-Q3-MW122-120721	KL-EC-Q3-MW187-120821	KL-EC-FRB06-120721	KL-EC-FRB07-120821
		Sample Date	12/7/2021	12/7/2021	12/8/2021	12/7/2021	12/8/2021
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV		4.67 U	4.65 U	4.49 U	4.83 U	4.56 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV		4.67 U	4.65 U	4.49 U	4.83 U	4.56 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV		4.67 U	4.65 U	4.49 U	4.83 U	4.56 U
Perfluorobutanesulfonic acid (PFBS)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorobutanoic acid (PFBA)	NV		4.67 U	**2.27 J**	**10.1**	4.83 U	4.56 U
Perfluorodecanesulfonic acid (PFDS)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorodecanoic acid (PFDA)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorododecanoic acid (PFDoA)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluoroheptanesulfonic acid (PFHpS)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluoroheptanoic acid (PFHpA)	NV		**0.27 J**	1.86 U	**1.10 J**	1.93 U	1.82 U
Perfluorohexanesulfonic acid (PFHxS)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorohexanoic acid (PFHxA)	NV		**0.65 J**	1.86 U	**3.35**	1.93 U	1.82 U
Perfluorononanoic acid (PFNA)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorooctanesulfonic acid (PFOS)	2.7		**1.71 J**	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorooctanoic acid (PFOA)	6.7		**1.01 J**	1.86 U	**15.7 ***	1.93 U	1.82 U
Perfluoropentanoic acid (PFPeA)	NV		**0.82 J**	1.86 U	**4.56**	1.93 U	1.82 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U
Perfluroroctanesulfonamide (FOSA)	NV		1.87 U	1.86 U	1.79 U	1.93 U	1.82 U

Notes: 1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Guidance Water Quality Standards and Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

		Area	Equipment Blank	
		Location ID	Equipment Blank	Equipment Blank
		Sample ID	KL-EC-EBW01-093021	KL-EC-EBW02-120721
		Sample Date	9/30/2021	12/7/2021
Chemical Name	Proposed Guidance Values			
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV		4.73 U	4.82 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV		1.89 U	1.93 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV		4.73 U	4.82 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV		4.73 U	4.82 U
Perfluorobutanesulfonic acid (PFBS)	NV		1.89 U	1.93 U
Perfluorobutanoic acid (PFBA)	NV		4.73 U	4.82 U
Perfluorodecanesulfonic acid (PFDS)	NV		1.89 U	1.93 U
Perfluorodecanoic acid (PFDA)	NV		1.89 U	1.93 U
Perfluorododecanoic acid (PFDoA)	NV		1.89 U	1.93 U
Perfluoroheptanesulfonic acid (PFHpS)	NV		1.89 U	1.93 U
Perfluoroheptanoic acid (PFHpA)	NV		1.89 U	1.93 U
Perfluorohexanesulfonic acid (PFHxS)	NV		1.89 U	1.93 U
Perfluorohexanoic acid (PFHxA)	NV		1.89 U	1.93 U
Perfluorononanoic acid (PFNA)	NV		1.89 U	1.93 U
Perfluorooctanesulfonic acid (PFOS)	2.7		1.89 U	1.93 U
Perfluorooctanoic acid (PFOA)	6.7		1.89 U	1.93 U
Perfluoropentanoic acid (PFPeA)	NV		1.89 U	1.93 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV		1.89 U	1.93 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV		1.89 U	1.93 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV		1.89 U	1.93 U
Perfluroroctanesulfonamide (FOSA)	NV		1.89 U	1.93 U

Notes:
1. Results in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.
2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.
3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Guidance Water Quality Standards and Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1b
Groundwater Sampling Results - 1,4-Dioxane

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Knolls Laboratory
Niskayuna, New York

	Area	Hillside Area					High Yard Area
	Location ID	D3D6-B16	D3D6-MW40	D3D6-MW45	D3D6-MW45	D3D6-MW51	HYA-MW6R
	Sample ID	KL-EC-B-16-093021	KL-EC-MW-40-100121	KL-EC-MW-45-100121	KL-EC-X01-100121	KL-EC-MW-51-100121	KL-EC-MW-6R-093021
	Sample Date	9/30/2021	10/1/2021	10/1/2021	10/1/2021	10/1/2021	9/30/2021
Chemical Name	Proposed Guidance Values						
1,4-Dioxane	0.35	0.20 U	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ	0.20 U

	Area	Landfill Disposal Area		Closed Landfill Area		
	Location ID	LDA-LMW103	LDA-LMW142	NTH-1A	NTH-2A	NTH-5A
	Sample ID	KL-EC-LMW-103-092821	KL-EC-LMW-142-092821	KL-EC-NTH-1A-092721	KL-EC-NTH-2A-092721	KL-EC-NTH-5A-092721
	Sample Date	9/28/2021	9/28/2021	9/27/2021	9/27/2021	9/27/2021
Chemical Name	Proposed Guidance Values					
1,4-Dioxane	0.35	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

	Area	Q3 Yard Area					Equipment Blank
	Location ID	Q3-MW03	Q3-MW19	Q3-MW23	Q3-MW34	Q3-MW103	Equipment Blank
	Sample ID	KL-EC-Q3-MW03-093021	KL-EC-Q3-MW19-092821	KL-EC-Q3-MW23-092821	KL-EC-Q3-MW34-093021	KL-EC-Q3-MW103-100121	KL-EC-EBW01-093021
	Sample Date	9/30/2021	9/28/2021	9/28/2021	9/30/2021	10/1/2021	9/30/2021
Chemical Name	Proposed Guidance Values						
1,4-Dioxane	0.35	0.20 U	0.20 U	0.20 U	0.20 U	0.20 UJ	0.20 U

Notes:
1. Results in micrograms per liter (µg/L). "U" indicates analyte not detected. "UJ" indicates analyte not detected at an estimated reporting limit. Internal laboratory qualifiers are not reported. Detections are bolded.
2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.
3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. Exceedances of proposed guidance values are marked with "*".

Appendix B

Field Data Forms

GROUNDWATER SAMPLING FIELD LOG

Date	9-27-21	Personnel	RDH/SET	Weather	±60, rain
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	NTH-1A
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	26.74	ft.
Depth to Water *	7.82	ft.
Length of Water Column	18.92	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	–	gallons
2" diameter wells = 0.163 x (LWC) =	3.08	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1035	1048	1103				
End Time	1047	1101	1114				
Gallons Purged	3.08	3.08	3.08				
Temp (C)	14.5	13.6	13.4				
pH	6.83	7.02	7.11				
Spec. Conduc. (mS/cm)	1.27	1.30	1.28				
ORP (mV)	2.04	89.7	47.0				
DO (mg/L)	83.7	1.25	3.88				
Turbidity (NTU)	4.07	2.08	2.52				

Probe type: YSI Quatro and Lamotte Turbidity meter

Appearance at start: Clear - light gray, no odor

Appearance at end: clear, no odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 9.24 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1125

NOTES: Purge water into YSI cup instead of flow through cell because tubing was too large diameter to fit into flow through cell. Approved by M. Flanagan.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	9-27-21	Personnel	RDH/SET	Weather	~75°F, Sunny
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	NTH-2A
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	22.50	ft.
Depth to Water *	9.18	ft.
Length of Water Column	13.32	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	- gallons
2" diameter wells = 0.163 x (LWC) =	2.17 gallons
4" diameter wells = 0.653 x (LWC) =	-- gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1507	1521					
End Time	1517	1529					
Gallons Purged	2.17						
Temp (C)	14.5						
pH	6.90	9-27-21					
Spec. Conduc. (mS/cm)	0.84	SI	SI				
ORP (mV)	59.0						
DO (mg/L)	1.06						
Turbidity (NTU)	31.5						

Probe type: YSI Quatro and Lamotte Turbidity meter

Appearance at start: clear, organic odor

Appearance at end: clear, no odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 3.26 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1545

NOTES: Too much pressure on in-line bypass valve to use it. Will disconnect flow-thru cell to take turbidity reading prior to water flowing through flow-thru cell. Well purged dry at 1.5 well volumes.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	9-27-21	Personnel	RDH/SET	Weather	±75°F, sunny
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	NTH-5A
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	16.87	ft.
Depth to Water *	5.09	ft.
Length of Water Column	11.78	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	-	gallons
2" diameter wells = 0.163 x (LWC) =	1.92	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1350	1359	1408				
End Time	1357	1406	1416				
Gallons Purged	1.92	1.92	1.92				
Temp (C)	15.5	15.5	15.4				
pH	6.72	6.59	6.54				
Spec. Conduc. (mS/cm)	0.76	0.69	0.68				
ORP (mV)	72.1	71.7	73.5				
DO (mg/L)	0.93	1.95	2.51				
Turbidity (NTU)	4.01	1.80	2.97				

Probe type: YSI Quatro and Lamotte Turbidity Meter

Appearance at start: Clear, no odor

Appearance at end: clear, no odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 5.76 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1425

NOTES: Too much pressure on in-line bypass valve to use it. Will disconnect flow-thru cell to take turbidity reading prior to water flowing through flow-thru cell

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	9-28-21	Personnel	RDH/SET	Weather	±60°F, cloudy
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	LMW-103
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	~~8.00~~ 7.63 (ST)	ft.	* Measurements taken from
Depth to Water *	0.54	ft.	x Top of Well Casing
Length of Water Column	7.09	ft.	Top of Protective Casing
			(Other, Specify)

1.5" diameter = 0.092 x (LWC) = → 0.65 gallons
1" diameter wells = 0.041 x (LWC) = -- gallons
2" diameter wells = 0.163 x (LWC) = -- gallons
4" diameter wells = 0.653 x (LWC) = -- gallons

Well evacuation data:

	Well Volumes 1	2	3				
Start Time	0934						
End Time	0936						
Gallons Purged	0.65						
Temp (C)	16.7	9-28-21					
pH	7.21	(ST)	(ST)				
Spec. Conduc. (mS/cm)	4.12						
ORP (mV)	-63.4						
DO (mg/L)	6.48						
Turbidity (NTU)	79						

Probe type: YSI Quatro + lamotte Turbidity meter
Appearance at start: light gray/clear, organic odor
Appearance at end: light gray, organic odor
Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 0.65 gallons
Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 0945

NOTES: Purged dry at 1 well volume. Allow to recharge

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	9-28-21	Personnel	RDH/SET	Weather	±60°F, cloudy
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	LMW-142
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	21.78	ft.
Depth to Water *	9.57	ft.
Length of Water Column	12.21	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1.25" diameter = 0.063 x (LWC) = 0.78 gallons

1" diameter wells = 0.041 x (LWC) = — gallons

2" diameter wells = 0.163 x (LWC) = -- gallons

4" diameter wells = 0.653 x (LWC) = -- gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1045	1050	1055				
End Time	1047	1053	1059				
Gallons Purged	0.78	0.78	0.78				
Temp (C)	10.9	10.9	10.9				
pH	7.09	7.07	7.06				
Spec. Conduc. (mS/cm)	1.95	1.95	1.95				
ORP (mV)	46.1	54.0	58.5				
DO (mg/L)	6.37	6.06	6.07				
Turbidity (NTU)	7.77	3.33	3.23				

Probe type: YSI Quatro + Lamotte Turbidity meter

Appearance at start: clear, no odor - slight sulfur

Appearance at end: clear, no odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 2.34 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1110

NOTES:

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	9-28-21	Personnel	RDH/SET	Weather	±65°F, cloudy
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	Q3-MW23
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	22.22	ft.	* Measurements taken from
Depth to Water *	15.45	ft.	x Top of Well Casing
Length of Water Column	6.77	ft.	Top of Protective Casing
			(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	0.28	gallons
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1409	1418	14.24				
End Time	1416	1421	1427				
Gallons Purged	0.28	0.28	0.28				
Temp (C)	15.8	15.1	15.2				
pH	6.59	6.58	6.59				
Spec. Conduc. (mS/cm)	3.09	3.32	3.53				
ORP (mV)	67.3	61.5	58.1				
DO (mg/L)	0.79	0.31	0.38				
Turbidity (NTU)	1148	36.4	26.8				

Probe type: YSI Quatro + Turbidity meter

Appearance at start: Brown, no odor

Appearance at end: clear, no odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 0.84 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1435

NOTES:

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	9-28-21	Personnel	RDH/SET	Weather	± 60°F, cloudy
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	Q3-MW19
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	20.40	ft.
Depth to Water *	11.38	ft.
Length of Water Column	9.02	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	0.37	gallons
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1306	1310	1314				
End Time	1308	1312	1316				
Gallons Purged	0.37	0.37	0.37				
Temp (C)	15.3	14.6	13.7				
pH	7.12	7.11	7.11				
Spec. Conduc. (mS/cm)	0.84	0.91	0.83				
ORP (mV)	32.9	45.0	53.7				
DO (mg/L)	3.28	0.82	1.86				
Turbidity (NTU)	55.3	94.5	17.6				

Probe type: YSI Quatro + Lamotte Turbidity Meter

Appearance at start: clear, no odor

Appearance at end: clear, no odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 1.11 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1550

NOTES: well purged dry after 3rd well volume. Allow well to recover before sampling. Able to collect full bottle set. One of the PFAS bottles is very turbid; will ask lab to analyse the less turbid one first.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	9-30-21	Personnel	RDH/SET	Weather	±60°F overcast
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	B-16
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	17.80	ft.
Depth to Water *	9.10	ft.
Length of Water Column	8.70	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	-	gallons
2" diameter wells = 0.163 x (LWC) =	1.42	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	0926	0932	0938				
End Time	0930	0936	0943				
Gallons Purged	1.42	1.42	1.42				
Temp (C)	14.9	15.0	15.0				
pH	7.21	7.14	7.14				
Spec. Conduc. (mS/cm)	2.35	2.78	2.81				
ORP (mV)	-1.0	2.9	-3.4				
DO (mg/L)	0.37	0.22	0.16				
Turbidity (NTU)	10.95	2.77	1.69				

Probe type: YSI Quatro + Lamotte Turbidity meter

Appearance at start: clear no odors

Appearance at end: clear, no odors

Other Observations: Headspace PID reading: 0.0ppm

Amount of water removed: 4.26 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 0955

NOTES: One bottle for PFAS is more turbid than the other. Will ask the lab to analyze the less turbid bottle first.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	9-30-21	Personnel	RDH/SET	Weather	±65°F, overcast
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	Q3-MW03
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	14.39	ft.	* Measurements taken from
Depth to Water *	6.12	ft.	x Top of Well Casing
Length of Water Column	8.27	ft.	Top of Protective Casing
			(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	0.34	gallons
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1132	1136	1139				
End Time	1133	1137	1141				
Gallons Purged	0.34	0.34	0.34				
Temp (C)	18.6	18.6	18.7				
pH	7.05	7.12	7.19				
Spec. Conduc. (mS/cm)	7.30	4.09	1.95				
ORP (mV)	66.2	65.6	63.8				
DO (mg/L)	1.94	3.07	1.93				
Turbidity (NTU)	99.0	60.6	35.4				

Probe type: YSI Quatro + Lamotte Turbidity meter

Appearance at start: light brown-clear, no odor

Appearance at end: clear, no odor

Other Observations: Headspace PID reading: 0.0ppm

Amount of water removed: 1.02 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1150

NOTES:

GROUNDWATER SAMPLING FIELD LOG

Date	9-30-21	Personnel	RDH/SET	Weather	165°F, overcast
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	Q3-MW34
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	16.82	ft.	* Measurements taken from
Depth to Water *	5.01	ft.	x Top of Well Casing
Length of Water Column	11.81	ft.	Top of Protective Casing
			(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	0.48	gallons
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1311	1314	1317				
End Time	1312	1315	1318				
Gallons Purged	0.48	0.48	0.48				
Temp (C)	16.8	16.7	16.7				
pH	7.23	7.26	7.23				
Spec. Conduc. (mS/cm)	3.03	3.56	3.88				
ORP (mV)	82.4	82.2	81.9				
DO (mg/L)	0.32	0.25	0.18				
Turbidity (NTU)	52.9	36.4	36.1				

Probe type: YSI Quatro + Lamotte Turbidity Meter

Appearance at start: Light gray, no odor

Appearance at end: Light gray, no odor RDH 11/2/21

Other Observations: Headspace PID reading: 0.0ppm

Amount of water removed: 1.44 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1330

NOTES: Collect MS/MSD for PFAS and 1,4-Dioxane

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	9-30-21	Personnel	RDH/SET	Weather	±65°F, overcast
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-6R
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	17.00	ft.
Depth to Water *	6.91	ft.
Length of Water Column	10.09	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	0.41	gallons
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1414						
End Time	1416						
Gallons Purged	0.41						
Temp (C)	16.6						
pH	7.25	ST	ST				
Spec. Conduc. (mS/cm)	1.40						
ORP (mV)	-91.2						
DO (mg/L)	0.87						
Turbidity (NTU)	77.0						

Probe type: YSI Quatro + Lamotte Turbidity Meter

Appearance at start: Light gray, no odor

Appearance at end: Light gray, no odor RDH 11/2/21

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 0.41 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1430

NOTES: Well purged dry after removing one well volume. Allow well to recharge prior to sampling.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	9-30-21	Personnel	RDH/SET	Weather	160°F, overcast
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	Q3-MW103
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	10.39	ft.
Depth to Water *	7.50	ft.
Length of Water Column	2.89	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	0.12	gallons
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1055	1058	1100				
End Time	1056	1059	1101				
Gallons Purged	0.12	0.12					
Temp (C)	20.8	20.6					
pH	7.57	7.64	9/30/21 ST				
Spec. Conduc. (mS/cm)	9.10	11.07					
ORP (mV)	55.1	54.8					
DO (mg/L)	0.49	0.26					
Turbidity (NTU)	1070	643					

Probe type: YSI Quatro ~~1,4-Dioxane~~ (ST) 9/30/21 LaMotte Turbidy Meter

Appearance at start: Light brown-gray, no odor

Appearance at end: Light brown, no odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 0.30 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

10-1-21

Sample Time: 1325

NOTES: Well purged dry after removing 2.5 well volumes. Allow well to recharge prior to sampling.

Sampled the following day. Slow to recharge so limited volume for sample collection

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-1-21	Personnel	RDH/SET	Weather	±55°F, Sunny
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-45
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	16.00	ft.
Depth to Water *	5.39	ft.
Length of Water Column	10.61	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	--	gallons
2" diameter wells = 0.163 x (LWC) =	1.73	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	0954	1004	193				
End Time	1002	1100	1020				
Gallons Purged	1.73	1.73	1.73				
Temp (C)	19.0	19.0	19.0				
pH	7.83	7.85	7.81				
Spec. Conduc. (mS/cm)	3.01	3.02	3.02				
ORP (mV)	98.0	90.2	76.3				
DO (mg/L)	0.16	0.08	0.08				
Turbidity (NTU)	3.71	1.86	1.71				

Probe type: YSI Quatro + Lamotte Turbidity meter

Appearance at start: clear, no odors

Appearance at end: clear, no odors

Other Observations: Headspace PID reading: 0.2 ppm

Amount of water removed: 5.19 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1035

NOTES: Collect blind duplicate XO1 here for PFAS and 1,4-Dioxane

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-1-21	Personnel	RDH/SET	Weather	±55°F, Sunny
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-51
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	15.12	ft.
Depth to Water *	2.90	ft.
Length of Water Column	12.22	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	0.50	gallons
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes (10-1-21)						
	1 1117	2	3				
Start Time	1119	1121	1125				
End Time		1123	1127				
Gallons Purged	0.50	0.50	0.50				
Temp (C)	18.2	18.3	18.4				
pH	7.63	7.61	7.62				
Spec. Conduc. (mS/cm)	2.69	2.71	2.74				
ORP (mV)	100.6	100.8	100.8				
DO (mg/L)	0.31	0.17	0.15				
Turbidity (NTU)	105.8	48.5	17.6				

Probe type: YSI Quatro

Appearance at start: Brown, no odor

Appearance at end: Light brown, no odor

Other Observations: Headspace PID reading: 0.1 ppm

Amount of water removed: 1.50 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1140

NOTES:

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-1-21	Personnel	RDH/SET	Weather	±55°F, Sunny
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-40
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	15.93	ft.
Depth to Water *	10.47	ft.
Length of Water Column	5.46	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	0.22	gallons
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	0926						
End Time	0927						
Gallons Purged	0.22						
Temp (C)	18.3						
pH	8.21	SI	SI				
Spec. Conduc. (mS/cm)	1.06						
ORP (mV)	100.1						
DO (mg/L)	1.35						
Turbidity (NTU)	3251						

Probe type: YSI Quatro + Lamotte Turbidity meter

Appearance at start: Light brown, no odor

Appearance at end: Light brown, no odor RDH 11/2/21

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 0.22 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1235

NOTES: Well purged dry after removing one well volume. Allow well to recharge prior to sampling

RAMBOLL

ENVIRONMENT & HEALTH

PFAS Pre-Sampling Checklist

Site Name: Knolls Laboratory EC Sampling

Task: 1940101245

Weather (temp/precip): ±60°F, Rain in PM

Date: 9-27-21

Pre-Mobilization:

- [x] The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

- [x] Using white Tyvek®; not using yellow Tyvek®
- [x] Clothing has not been most recently washed with fabric softeners or other treatments
- [x] Clothing has not been permanently chemically treated for insect resistance or UV protection
- [x] Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist
- [x] Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used
- [x] Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

- [x] Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)
- [x] Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist
- [x] Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon
- [x] Waterproof field books, waterproof paper, and Post-It Notes® are not used
- [x] Markers (e.g., Sharpies®) are used only in the staging area or are not used

Sample Containers:

- [x] Water ice is in use only, not chemical (blue) ice packs
- [x] Sample containers have been received and are made of HDPE or polypropylene
- [x] Bottleware for non-drinking water samples do not contain preservative
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering

Equipment Decontamination (as applicable):

- [x] On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
- [x] Alconox®, Liquinox®, Seventh Generation™, and Citranox® are being used as decontamination cleaning agents; Decon 90® is not being used.

Food Considerations:

- [x] Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
- [x] Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used

Work Area and Vehicle Considerations:

- [x] Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS-containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Sarah Yaeger

Field Team Leader Name and Signature

0919

Time

RAMBOLL

ENVIRONMENT & HEALTH

PFAS Pre-Sampling Checklist

Site Name: Knolls Laboratory EC Sampling

Task: 1940101245

Weather (temp/precip): ±60°F, Sunny

Date: 9-28-21

Pre-Mobilization:

- [x] The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

- [x] Using white Tyvek®; not using yellow Tyvek®
- [x] Clothing has not been most recently washed with fabric softeners or other treatments
- [x] Clothing has not been permanently chemically treated for insect resistance or UV protection
- [x] Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist
- [x] Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used
- [x] Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

- [x] Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)
- [x] Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist
- [x] Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon
- [x] Waterproof field books, waterproof paper, and Post-It Notes® are not used
- [x] Markers (e.g., Sharpies®) are used only in the staging area or are not used

Sample Containers:

- [x] Water ice is in use only, not chemical (blue) ice packs
- [x] Sample containers have been received and are made of HDPE or polypropylene
- [x] Bottleware for non-drinking water samples do not contain preservative
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering

Equipment Decontamination (as applicable):

- [x] On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
- [x] Alconox®, Liquinox®, Seventh Generation™, and Citranox® are being used as decontamination cleaning agents; Decon 90® is not being used.

Food Considerations:

- [x] Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
- [x] Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used

Work Area and Vehicle Considerations:

- [x] Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS-containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Frank Yally

Field Team Leader Name and Signature

0840

Time

RAMBØLL

ENVIRONMENT
& HEALTH

PFAS Pre-Sampling Checklist

Site Name: Knolls Laboratory EC Sampling Task: 1940101245

Weather (temp/precip): ±60°F, overcast Date: 9-30-21

Pre-Mobilization:

- [x] The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

- [x] Using white Tyvek®; not using yellow Tyvek®
- [x] Clothing has not been most recently washed with fabric softeners or other treatments
- [x] Clothing has not been permanently chemically treated for insect resistance or UV protection
- [x] Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist
- [x] Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used
- [x] Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

- [x] Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)
- [x] Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist
- [x] Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon
- [x] Waterproof field books, waterproof paper, and Post-It Notes® are not used
- [x] Markers (e.g., Sharpies®) are used only in the staging area or are not used

Sample Containers:

- [x] Water ice is in use only, not chemical (blue) ice packs
- [x] Sample containers have been received and are made of HDPE or polypropylene
- [x] Bottleware for non-drinking water samples do not contain preservative
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering

Equipment Decontamination (as applicable):

- [x] On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
- [x] Alconox®, Liquinox®, Seventh Generation™, and Citranox® are being used as decontamination cleaning agents; Decon 90® is not being used.

Food Considerations:

- [x] Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
- [x] Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used

Work Area and Vehicle Considerations:

- [x] Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS-containing materials and surfaces

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[signature]

Field Team Leader Name and Signature

0851

Time

RAMBOLL

ENVIRONMENT & HEALTH

PFAS Pre-Sampling Checklist

Site Name: Knolls Laboratory EC Sampling

Task: 1940101245

Weather (temp/precip): ± 55°F, overcast

Date: 10-1-21

Pre-Mobilization:

- [x] The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

- [x] Using white Tyvek®; not using yellow Tyvek®
- [x] Clothing has not been most recently washed with fabric softeners or other treatments
- [x] Clothing has not been permanently chemically treated for insect resistance or UV protection
- [x] Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist
- [x] Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used
- [x] Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

- [x] Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)
- [x] Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist
- [x] Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon
- [x] Waterproof field books, waterproof paper, and Post-It Notes® are not used
- [x] Markers (e.g., Sharpies®) are used only in the staging area or are not used

Sample Containers:

- [x] Water ice is in use only, not chemical (blue) ice packs
- [x] Sample containers have been received and are made of HDPE or polypropylene
- [x] Bottleware for non-drinking water samples do not contain preservative
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering

Equipment Decontamination (as applicable):

- [x] On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
- [x] Alconox®, Liquinox®, Seventh Generation™, and Citranox® are being used as decontamination cleaning agents; Decon 90® is not being used.

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- [x] Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
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If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Sarah Yeardley

Field Team Leader Name and Signature

0858

Time

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	12/07/21	Personnel	AJG, WGP	Weather	±30, Light Rain
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	Q3-MW104
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	26.65	ft.
Depth to Water *	17.81	ft.
Length of Water Column	8.84	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	0.36	gallons
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1354	1403	1408				
End Time	1403	1408	1413				
Gallons Purged	0.36	0.36	0.36				
Temp (C)	12.8	13.9	14.0				
pH	6.93	6.80	6.77				
Spec. Conduc. (mS/cm)	3629	3695	3787				
ORP (mV)	274.7	284.3	282.5				
DO (mg/L)	2.71	1.67	2.16				
Turbidity (NTU)	81.1	21.0	12.5				

Probe type: YSI Quatro + Lamotte Turbidimeter

Appearance at start: Brown

Appearance at end: Clear

Other Observations: Headspace PID reading: 0.0

Amount of water removed: 1.10 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537

Sample Time: 1420

NOTES:

17.81
5.84
26.65

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	12/7/21	Personnel	AJH / WDP	Weather	~30 light snow
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	GS-MW12
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	21.37	ft.
Depth to Water *	12.01	ft.
Length of Water Column	9.36	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	0.38	gallons
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1303	1308	1314				
End Time	1308	1314	1320				
Gallons Purged	.38	.38	.38				
Temp (C)	11.7	12.0	12.2				
pH	7.07	7.02	6.99				
Spec. Conduc. (mS/cm)	2607	2673	2593				
ORP (mV)	171.6	159.1	164.5				
DO (mg/L)	2.105	2.92	2.64				
Turbidity (NTU)	110	79.5	41.2				

Probe type: YSI Quatro + Lamotte Turbidimeter

Appearance at start: Brown, no odor

Appearance at end: Murky, no odor

Other Observations: Headspace PID reading: 0.0

Amount of water removed: 1.14 gallons

Depth to water before sampling: N M ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537

Sample Time: 1330

NOTES: * DUP here

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	12/7/21	Personnel	AJG / WGP	Weather	±30, light snow
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW122
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	17.61	ft.	
Depth to Water *	10.00	ft.	
Length of Water Column	7.61	ft.	

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) = 0.31 gallons
2" diameter wells = 0.163 x (LWC) = -- gallons
4" diameter wells = 0.653 x (LWC) = -- gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	~~1140~~ 1150	1155	1159				
End Time	1155	1159	1204				
Gallons Purged	0.31	0.31	0.31				
Temp (C)	11.2	12.4	12.9				
pH	7.42	7.05	7.05				
Spec. Conduc. (mS/cm)	3202	3886	3903				
ORP (mV)	167.6	163.9	164.3				
DO (mg/L)	9.20	2.84	2.28				
Turbidity (NTU)	96	79.6	57.1				

Probe type: YSI Quatro + Lamotte Turbidimeter
Appearance at start: Brown, no odor
Appearance at end: murky, cleared up, no odor
Other Observations: Headspace PID reading: 0.0

Amount of water removed: 1.00 gallons
Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537

Sample Time: 1205

NOTES: * had to put in longer tubing @ 1040
restart @ 1050

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	12-7-21	Personnel	AJG, WBP	Weather	30° sunny
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	Q3-MW-26
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	13.21	ft.
Depth to Water *	4.97	ft.
Length of Water Column	8.24	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	0.33	gallons
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

3 wv = 1.01 gal

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1014	1021	1027				
End Time	1021	1027	1033				
Gallons Purged	0.33	0.33	0.33				
Temp (C)	11.0	12.0	12.1				
pH	7.18	6.71	6.87				
Spec. Conduc. (mS/cm)	0.109	7797	8.23				
ORP (mV)	192.7	174.6	190.9				
DO (mg/L)	12.54	2.59	2.23				
Turbidity (NTU)	52.7	73.1	68.2				

Probe type: YSI Quatro + Lamotte Turbidimeter

Appearance at start: Brown + turbid, sand in bucket

Appearance at end: murky, no odor

Other Observations: Headspace PID reading: 0.0

Amount of water removed: 1.01 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537

Sample Time: 1040

NOTES: *MS/MSD here

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	12-8-21	Personnel		Weather	29°F. Snow
Site Name	KL EC Sampling	Evacuation Method	Peristaltic Pump	Well #	23-MW94
Site Location	Niskayuna, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	14.89	ft.
Depth to Water *	12.36	ft.
Length of Water Column	2.53	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	.10	gallons x 3 = 30 3WVs
2" diameter wells = 0.163 x (LWC) =	--	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	10:00	1014	1022				
End Time	1013	1016	1023				
Gallons Purged	0.10	0.10	0.10				
Temp (C)	10.5	11.2	11.9				
pH	6.94	6.86	6.82				
Spec. Conduc. (mS/cm)	1.908	1.879	1.879				
ORP (mV)	167.1	160.1	163.9				
DO (mg/L)	3.45	2.52	2.39				
Turbidity (NTU)	1223	56.5	24.4				

Probe type: YSI Quatro + Lamotte Turbidimeter

Appearance at start: Brown, very turbid, no odor

Appearance at end: Clear, no odor

Other Observations: Headspace PID reading: 0.0

Amount of water removed: 0.30 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537

Sample Time: 1030

NOTES:

RAMBOLL

GROUNDWATER DEVELOPMENT FIELD LOG

Date	12-8-21	Personnel	AJH, WOP	Weather	25°, Snow
Site Name	Q3 Yard (AOC-005) RFI Fieldwork Groundwater Investigation	Evacuation Method	Peristaltic Pump	Well #	03-MW187
Site Location	Niskayuna, NY	Sampling Method	Bailer/Peristaltic Pump	Project #	1940101245

Well information:

Initial Depth of Well *	22.96	ft.	* Measurements taken from
Final Depth of Well *	NO ~~15.82~~	ft.	x Top of Well Casing
Depth to Water *	15.82	ft.	Top of Protective Casing
Length of Water Column	7.14	ft.	(Other, Specify)

1" diameter wells = 0.041 x (LWC) = 0.29 gallons
2" diameter wells = 0.163 x (LWC) = --- gallons
4" diameter wells = 0.653 x (LWC) = --- gallons

Well evacuation data:

	Well Volumes 1)						
		DRY					
Start Time	1125	1133	1200				
End Time	1133	1139	1205				
Gallons Purged	0.29	0.29	0.29				
Temperature (C)	13.7	13.3	13.5				
pH	7.08	6.79	6.74				
Spec. Conduc. (mS/cm)	5.84	7.70	8.37				
Turbidity (NTU)	2811 *	NM 2)	1287				

Probe type: YSI Quatro
Appearance at start: Brown
Appearance at end: Brown
Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 0.87 gallons
Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537
Sample Time: 1210

NOTES: * Changed back flow preventer after 1st reading; readings may not be accurate. Sampled after 3 vols purged

1) Dry after 2nd reading
2) Not enough volume for NTU reading

Note: Samples were turbid

RAMBOLL

ENVIRONMENT
& HEALTH

PFAS Pre-Sampling Checklist

Site Name: Knolls Laboratory EC Sampling Task: 1940101245

Weather (temp/precip): ±32, snowing Date: 12-7-21

Pre-Mobilization:

- [x] The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

- [x] Using white Tyvek®; not using yellow Tyvek®
- [x] Clothing has not been most recently washed with fabric softeners or other treatments
- [x] Clothing has not been permanently chemically treated for insect resistance or UV protection
- [x] Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist
- [x] Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used
- [x] Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

- [x] Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)
- [x] Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist
- [x] Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon
- [x] Waterproof field books, waterproof paper, and Post-It Notes® are not used
- [x] Markers (e.g., Sharpies®) are used only in the staging area or are not used

Sample Containers:

- [x] Water ice is in use only, not chemical (blue) ice packs
- [x] Sample containers have been received and are made of HDPE or polypropylene
- [x] Bottleware for non-drinking water samples do not contain preservative
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering

Equipment Decontamination (as applicable):

- [x] On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
- [x] Alconox®, Liquinox®, Seventh Generation™, and Citranox® are being used as decontamination cleaning agents; Decon 90® is not being used.

Food Considerations:

- [x] Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
- [x] Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used

Work Area and Vehicle Considerations:

- [ ] Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS-containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Field Team Leader Name and Signature Time

RAMBOLL

ENVIRONMENT & HEALTH

PFAS Pre-Sampling Checklist

Site Name: ~~Kesselring Site~~ Knolls Laboratory EC Sampling

Task: 1940101245

Weather (temp/precip): ~25°, Sunny

Date: 12/8/21

Pre-Mobilization:

- [x] The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

- [x] Using white Tyvek®; not using yellow Tyvek®
- [x] Clothing has not been most recently washed with fabric softeners or other treatments
- [x] Clothing has not been permanently chemically treated for insect resistance or UV protection
- [x] Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist
- [x] Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used
- [x] Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

- [x] Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)
- [x] Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist
- [x] Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon
- [x] Waterproof field books, waterproof paper, and Post-It Notes® are not used
- [x] Markers (e.g., Sharpies®) are used only in the staging area or are not used

Sample Containers:

- [x] Water ice is in use only, not chemical (blue) ice packs
- [x] Sample containers have been received and are made of HDPE or polypropylene
- [x] Bottleware for non-drinking water samples do not contain preservative
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [ ] Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering

Equipment Decontamination (as applicable):

- [x] On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
- [x] Alconox®, Liquinox®, Seventh Generation™, and Citranox® are being used as decontamination cleaning agents; Decon 90® is not being used.

Food Considerations:

- [x] Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
- [x] Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used

Work Area and Vehicle Considerations:

- [ ] Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS-containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Field Team Leader Name and Signature

0935

Time

Enclosure (2)

Emerging Contaminants Groundwater Monitoring Report for the Kesselring Site

Emerging Contaminants Groundwater Monitoring Report for the Kesselring Site

Knolls Atomic Power Laboratory
Kesselring Site
West Milton, New York

June 2022

Prepared by

Fluor Marine Propulsion, LLC
Knolls Atomic Power Laboratory
Niskayuna, New York
Operated for the United States Department of Energy

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List of Acronyms and Abbreviations

amsl	Above Mean Sea Level
AFFF	Aqueous Film-Forming Foam
CVOC	Chlorinated Volatile Organic Compound
FTS	Fluorotelomer Sulfonate
HDPE	High Density Polyethylene
KAPL	Knolls Atomic Power Laboratory
MCL	Maximum Contaminant Level
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PFAS	Per- and Polyfluoroalkyl Substances
PFDA	Perfluorodecanoic Acid
PFHpA	Perfluoroheptanoic Acid
PFHxS	Perfluorohexanesulfonic Acid
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PPE	Personal Protective Equipment
ppt	Parts Per Trillion
QA	Quality Assurance
QC	Quality Control
SOW	Scope of Work
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

A Scope of Work (SOW), reference (1), was implemented to evaluate groundwater at the Knolls Atomic Power Laboratory (KAPL) – Kesselring Site (Site) for the presence of the emerging contaminants, per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane, as identified by the United States Environmental Protection Agency (USEPA) and the New York State Department of Environmental Conservation (NYSDEC). The SOW was prepared in accordance with the reference (2) NYSDEC Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs. The SOW was provided to NYSDEC via email on April 6, 2021. Following resolution of NYSDEC and New York State Department of Health (NYSDOH) comments, NYSDEC approved the SOW by reference (3) on September 2, 2021. The SOW fieldwork was implemented in the fall of 2021.

The SOW specified that a monitoring report would be prepared to document the findings of the fieldwork. This Monitoring Report includes a site description, emerging contaminants groundwater analytical data summary and assessment, and conclusions.

1.1 Emerging Contaminants Groundwater Sampling Implementation Summary

The SOW was implemented in two phases – the Initial Phase that implemented the SOW and a Supplemental Phase that was performed based on the results of the Initial Phase and discussions with NYSDEC and NYSDOH. The objectives of the SOW were to evaluate for the presence of Emerging Contaminants in groundwater.

The Initial Phase consisted of groundwater sample collection from four wells at the Hogback Road Landfill and nine wells in the Site's developed area. The Supplemental Phase consisted of groundwater sample collection from two wells at the Hogback Road Landfill and the Site's developed area East Ditch. An implementation summary is provided on Table 1.

2.0 SITE DESCRIPTION

As shown on Figure 1, the Site is approximately 3,900 acres of mostly undeveloped land with a centrally located developed area of approximately 65 acres. The Site is located near West Milton, New York, approximately 17 miles north of the city of Schenectady and 9 miles southwest of Saratoga Springs. The Site is an industrial setting that is predominantly paved with one pressurized-water naval nuclear propulsion plant (i.e., prototype) and support facilities that include administrative offices, machine shops, waste storage facilities, oil storage facilities, training facilities, equipment service buildings, chemistry laboratories, a boiler house, a cooling tower, and wastewater treatment facilities. Additionally, there have been three other prototypes that are permanently shutdown; one has been dismantled and the other two will be dismantled. The Site is dedicated primarily to the training of personnel in the operation of naval nuclear propulsion plants. The Site is owned by the United States Department of Energy and is currently operated by Fluor Marine Propulsion, LLC.

The Hogback Road Landfill (landfill), Solid Waste Management Unit #35, is located approximately 7/8-mile south-southeast of the developed area as shown on Figure 1. The landfill is approximately 14 acres and was operated from 1951 until October 1993. Toward the end of operation, the landfill was used exclusively for the disposal of cafeteria waste, office waste, and construction and demolition debris. Prior to the enactment of the Resource Conservation and Recovery Act, certain wastes such as asbestos scraps, scrap metal, lead bricks, oil and oily water, paint; and chemicals were disposed of in the landfill. The landfill was closed in 1994 in accordance with 6 New York Codes, Rules and Regulations Part 360 Solid Waste Management regulations, and groundwater is monitored annually per the requirements of the reference (4) Hogback Road Landfill Post Closure Monitoring and Maintenance Operations Manual.

In May 2021, NYSDEC Division of Materials Management, issued their reference (5) Comprehensive Plan to Address Priority Solid Waste Sites for Potential Impacts on Drinking Water Quality, with emphasis on emerging contaminants. The Comprehensive Plan included the Inactive Landfill Initiative Program to assess potential impacts that inactive landfills may have on public drinking water supplies. The Hogback Road Landfill was identified in this program as a “Potential Future Investigation List Site”.

2.1 Environmental Setting

The Site is located within the undulating transition zone between the Adirondack Mountains and the Hudson-Mohawk Valley lowlands. Ground elevations in the vicinity of the Site generally range from 400 to 900 feet above mean sea level (amsl) as shown on Figure 1. The ground surface elevations range from approximately 480 to 490 feet amsl within the developed area of the Site and from approximately 456 to 497 feet amsl at the landfill.

2.2 Geology

2.2.1 Developed Area

Overburden deposits consist of lake-bottom deposits (lacustrine silts) and glacial till. Fluvial deposits have been observed in some isolated areas of the Site. Coarse backfill materials consisting of sand, gravel, and crushed stone have also been added during construction activities.

2.2.2 Hogback Road Landfill

Overburden deposits at the landfill consist of glacial till and kamic sands and gravel of varying extent and thicknesses. Two types of glacial till exist at the landfill. The Mohawk till is clay rich and is the lower till deposit and, where present, overlies bedrock. The Adirondack till is clay poor and typically overlies the Mohawk till. The sand and gravel deposits typically overlie the till deposits.

2.3 Groundwater

2.3.1 Developed Area

Groundwater at the developed area is not used for drinking water. There are no groundwater aquifers in the vicinity of the Site that are designated as a sole source aquifer by the USEPA or as a primary or principal aquifer by NYSDEC. Primarily, the glacial till and lacustrine silt deposits yield very low volumes of groundwater. However, localized areas of saturated coarse-grained deposits that can transmit groundwater have been observed at the Site.

Groundwater elevations within the Site's developed area range from approximately 495 feet amsl in the western portion to approximately 465 feet amsl on the downgradient, eastern portion of the developed area as shown on Figure 2. Groundwater flow is generally to the east and conforms to the ground surface topography and converges to the East Ditch and ultimately the Glowegee Creek.

2.3.2 Hogback Road Landfill

Groundwater elevations at the landfill generally range from 485 feet amsl on the west side to 450 feet amsl to 460 feet amsl on the east. During closure activities in the early 1990s, an apparent east to west groundwater divide existed through the approximate center of the landfill. North of the divide, groundwater flow is to the northeast and south of the divide groundwater flow is to the southeast. Along the divide, groundwater flow is west to east. A more recent groundwater elevation contour map was developed using the groundwater elevations from the routine Site landfill monitoring conducted in September 2021. As shown on Figure 3, groundwater flow is consistent with that reported during landfill closure. Overall, groundwater flows toward and discharges to the Glowegee Creek, with some groundwater first entering the unnamed tributary to the north of the landfill and the Hogback Brook to the south of the landfill before entering the Glowegee Creek.

2.3.3 Drinking Water Supply

Drinking water for the Kesselring Site is provided by on-site production wells located approximately one mile east of the developed portion of the Site. The well field is hydrogeologically separate from current and historical operational areas. The production wells were sampled twice in 2021 for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and 1,4-dioxane in accordance with NYSDOH sampling requirements for public water supplies. The laboratory analytical results, transmitted to NYSDOH by references (6) and (7), show that these three compounds were not detected during each sampling event. Groundwater at the landfill is not used for drinking water.

The closest downstream private drinking water supply well from the developed area is associated with a private residence approximately one mile east / southeast and hydraulically separated from the Site by the Glowegee Creek (Figure 4). The closest downgradient private drinking water supply well from the landfill is approximately 0.3 miles southeast of the landfill (Figure 4).

3.0 SCOPE OF WORK IMPLEMENTATION

As shown on Table 1, groundwater samples were collected from nine developed area wells (MW-1, MW-4, MW-6, MW-10, MW-12, MW-15, MW-16, MW-17, and MW-18), the East Ditch, and six Hogback Road Landfill wells (HB-1A, LMW-4, HB-5A2, HB-8A, HB-9A, and HB-11A). Attempts were made to collect a sample from Hogback Road Landfill well HB-10A; however, the well was dry. Developed area and Hogback Road Landfill sampling locations are shown on Figures 2 and 3, respectively.

For the Initial Phase of sampling, groundwater samples were submitted to the Eurofins TestAmerica Laboratory in Sacramento, California for the analysis of PFAS in accordance with modified USEPA Method 537 and to the Eurofins TestAmerica Laboratory in Edison, New Jersey for analysis of 1,4-dioxane by USEPA Method 8270 selected ion monitoring. Both analytical laboratories are NYSDOH Environmental Laboratory Approval Program certified for the methods. For the Supplemental Phase of sampling, groundwater samples were analyzed only for PFAS, as 1,4-Dioxane was not detected in the Initial Phase of sampling and determined not to be a constituent of concern. NYSDEC Analytical Service Protocol Category B data packages were generated by TestAmerica and validated by an independent data validator. The data validation report is provided in Appendix A.

3.1 Groundwater Sampling Locations

Developed area groundwater sampling locations were determined based on an evaluation of past uses of potential Emerging Contaminant containing items, available groundwater chlorinated volatile organic compound (CVOC) analytical results for potential 1,4-dioxane indicator CVOCs, and local groundwater flow patterns. Hogback Road Landfill sample locations were determined based on available CVOC analytical results and local groundwater flow patterns. This detailed evaluation and sampling location rationale is described in the approved reference (1) SOW. Supplemental sampling locations were determined based on the initial sampling results and discussions with NYSDEC and NYSDOH.

3.2 Sample Collection and Handling

Prior to conducting groundwater sampling activities, monitoring well headspace was screened for organic vapors with a photoionization detector immediately upon opening the well. Any existing dedicated groundwater sampling equipment within the selected wells was removed prior to the start of the sampling to minimize the potential for anomalies in the Emerging Contaminants analytical data. The depth to groundwater was then measured in the monitoring

well and compared to a previously determined total well depth to calculate the volume of water to be purged during sampling activities. The water levels were obtained by using an electronic water level indicator probe graduated in 0.01-foot increments.

Groundwater monitoring wells were purged by removing three well volumes of water. In slowly recharging monitoring wells, the well was purged to dryness for a minimum of one well volume. Monitoring well purging and sampling was conducted using a peristaltic pump with dedicated high density polyethylene (HDPE) tubing for each well. Due to the depth of HB-5A2, which is at the limits of the peristaltic pump, the aid of a stainless steel in-line check valve was used to purge and sample the well.

Groundwater purging and sampling was conducted while appropriate personal protective equipment (PPE) was donned by sampling personnel as described in the SOW.

Water quality parameters including: temperature, conductivity, pH, oxidation-reduction potential, turbidity and dissolved oxygen were measured after each well volume was purged. Visual observations were also noted at the start and end of purging; however, no odors or sheens were observed. Well purging information is provided in the field data forms in Appendix B.

Following purging activities, groundwater samples were collected for laboratory analysis. All sampling was performed in accordance with the SOW. Prior to each sample collection, a new pair of nitrile gloves were donned by sampling personnel. The groundwater sample for PFAS analysis was collected first by direct filling the HDPE laboratory-provided containers. The sample for 1,4-dioxane analysis was collected after the PFAS sample collection (including collection of any Quality Assurance/Quality Control (QA/QC) samples for PFAS analysis). The 1,4-dioxane samples were direct-filled into laboratory-provided containers. QA/QC samples including duplicates, matrix spikes/matrix spike duplicates, field reagent blanks, and equipment blanks were collected at the frequency and following the procedures as specified in the SOW. After collecting the sample, the sample identification, project name, date and time of sample collection, and sample analysis were placed on the sample container labels. The sample information was also recorded on a laboratory provided chain of custody and placed with the sample containers in a cooler containing regular ice for transportation to the laboratory.

The East Ditch groundwater sample and field duplicate were collected following three days of no precipitation to ensure a representative sample of groundwater. The sample was collected by direct-filling the laboratory provided container by dipping the container into the ditch water until full. Samples were then labeled, handled, and shipped as described above.

3.3 Equipment Decontamination

All non-dedicated sampling equipment (i.e., the water level indicator and the in-line check valve used for HB-5A2) was cleaned between each use. Equipment was cleaned by rinsing the equipment with laboratory provided water, followed by a solution containing 1,4-dioxane free soap (i.e., Seventh Generation™) and laboratory provided water. Equipment was rinsed a second time with laboratory provided water and the equipment was wiped with paper towels. Cleaning fluids were applied with spray bottles and the minimal volume was absorbed with paper towels.

Investigation-derived waste including PPE, primarily nitrile gloves, and disposable sampling materials (e.g., tubing, paper towels) were managed as non-hazardous in accordance with Site waste management procedures.

4.0 EMERGING CONTAMINANTS RESULTS AND ASSESSMENT

Analytical results are provided on Tables 2 and 3. The data validation report is provided in Appendix A.

Analytical results are compared to the NYSDOH drinking water maximum contaminant level (MCL) of 10 part per trillion (ppt) or nanogram per liter for PFOS and PFOA and 1 part per billion or microgram per liter for 1,4-dioxane; there are no established NYS regulatory criteria for the other PFAS. For perspective, the PFOS and PFOA results are also compared to the NYSDEC proposed ambient water guidance values of 2.7 ppt and 6.7 ppt, respectively. For information the data are additionally compared to criteria in the SOWs that are now outdated. This includes the May 2016 USEPA lifetime health advisory of 70 ppt for PFOA and PFOS, individually and combined; and the former NYSDEC screening levels of no individual PFAS detected greater than 100 ppt (excluding PFOS and PFOA), and no individual monitoring well with a sum of PFAS detections (including PFOA and PFOS) greater than 500 ppt.

While there are currently no established regulatory criteria for the other PFAS, the NYS Drinking Water Quality Council has recommended a 10 ppt MCL for perfluoroheptanoic acid (PFHpA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), and perfluorohexanesulfonic acid (PFHxS). This recommendation is based on the overall persistence in the environment and toxicity of these PFAS, which is similar to PFOS and PFOA as, indicated in reference (8). These additional four PFAS were proactively evaluated relative to the recommended 10 ppt MCL, as it is anticipated that NYSDOH will adopt the recommendation as a drinking water MCL. The frequency of these four PFAS detected in the developed area and Hogback Road Landfill and a comparison to the recommended 10 ppt MCL is provided in Table 4 and described herein.

4.1 Data Summary

4.1.1 1,4-Dioxane

1,4-Dioxane was not detected in any of the groundwater samples. As a result, 1,4-dioxane was not analyzed for in the supplemental samples. The analytical results are presented on Table 2 and Table 3.

4.1.2 PFAS – Developed Area

Various combinations of individual PFAS, including PFOS and PFOA, were detected in 12 groundwater samples (10 samples and 2 duplicate samples) collected from the developed area wells and the East Ditch. The groundwater analytical results are presented in Table 2.

PFOS and PFOA concentrations in samples collected from developed area wells are shown on Figure 2.

PFOA concentrations range in the developed area from 0.96 ppt in MW-12 to 14 ppt in MW-18. The highest concentration of PFOS was noted in the sample collected from MW-6 at 327 ppt with the next highest concentration in MW-10 at 67.2 ppt. With the exception of these two monitoring wells, PFOS range in concentration from 2.18 ppt in MW-1 to 21.9 ppt in MW-18. The frequency of PFOS and PFOA results compared to the NYSDOH drinking water MCL and the NYSDEC proposed guidance values is provided in Table 5.

The detection of PFOS in monitoring well MW-6 represents the only detection of PFAS greater than the USEPA health advisory of 70 ppt. The total concentration of PFAS in MW-6 is below the former NYSDEC screening level for total PFAS of 500 ppt.

The sample collected from the East Ditch is representative of the furthest downgradient sample location in the developed area. PFOS was detected in the sample and duplicate at concentrations of 7.01 ppt and 6.55 ppt, respectively; which exceed the NYSDEC proposed guidance value for groundwater of 2.7 ppt, but is below the NYSDOH drinking water MCL of 10 ppt. PFOA was detected in the sample and duplicate at concentrations of 2.82 ppt and 2.74 ppt, respectively, which are below all applicable criteria. In consideration of the adjacent Glowegee Creek, and for perspective, the East Ditch results are well below the NYSDEC draft surface water criteria of 160,000 ppt for PFOS; there is no current surface water standard for PFOA.

PFHpA was detected in all developed area samples including the East Ditch samples, with the exception of MW-12, at concentrations up to 10 ppt. With the exception of MW-12, PFNA was detected in all developed area samples including the East Ditch at concentrations up to 5.68 ppt. PFDA was detected in samples collected from MW-4, MW-6, MW-10, MW-15 (duplicate), and MW-18 at concentrations up to 1.95 ppt. PFHxS was detected in all developed area samples including the East Ditch sample, with the exception of MW-12, at concentrations up to 8.95 ppt. There are no exceedances of the recommended MCL of 10 ppt for these four PFAS. The frequency of these four PFAS detected in the developed area and a comparison to the recommended 10 ppt MCL is provided in Table 4.

4.1.3 Developed Area Assessment

Overall, developed area results generally correlate with the assessment provided in the SOW which concluded that the use of PFAS containing aqueous film-forming foam (AFFF) was limited

to isolated areas of the developed area. Specifically, the PFAS composition in most of the site groundwater suggests electrochemical fluorination, similar to that used in the early production of legacy AFFF. This process was predominantly phased out in industry circa 2000 and the dominant process for production of PFAS changed to fluorotelomerization which yields different PFAS. For example, the presence of 6:2 fluorotelomer sulfonate (FTS) and 8:2 FTS in MW-6 and 8:2 FTS in MW-15 may suggest the use of newer AFFF formulations in addition to the legacy AFFF. The four PFAS that are recommended for addition to the NYSDOH list of drinking water MCLs did not exceed the proposed standard of 10 ppt. Furthermore, the East Ditch results, which represents an area of convergence of downgradient developed area groundwater, are below MCLs.

4.1.4 PFAS: Hogback Road Landfill

Various combinations of individual PFAS, including PFOS and PFOA, were detected in five of the six groundwater samples collected from the landfill. The groundwater analytical results are presented in Table 3. PFOS and PFOA concentrations in samples collected from Hogback Road Landfill wells are shown on Figure 3.

PFAS were not detected in upgradient well HB-1A. PFOA concentrations range in the landfill groundwater samples from non-detect in HB-1A to 6.31 ppt in HB-5A2. PFOS range in concentration in groundwater from non-detect in HB-1A to 13.6 ppt in HB-11A. The frequency of PFOS and PFOA detections and a comparison to the NYSDOH drinking water standards and NYSDEC proposed guidance values is provided in Table 6.

Fluorotelomer compounds were not detected in the landfill groundwater samples.

PFHpA was detected in all landfill samples, with the exception of HB-1A, at concentrations up to 7.67 ppt. PFNA was detected in HB-5A2 at a concentration of 0.46 J ppt. PFDA was not detected in landfill samples. PFHxS was detected in all landfill samples, with the exception of HB-1A, at concentrations up to 5.90 ppt. There are no exceedances of the recommended MCL of 10 ppt for these four PFAS. The frequency of these four PFAS detected in the Hogback Road Landfill and a comparison to the recommended 10 ppt MCL is provided in Table 4.

None of the PFAS concentrations exceeds the USEPA health advisory of 70 ppt or the former NYSDEC screening levels of 100 ppt individually or total PFAS of 500 ppt.

4.1.5 Hogback Road Landfill Assessment

Overall, the Hogback Road Landfill results are unremarkable. Only one sample result is greater than the MCL, and PFAS concentrations decrease in further downgradient wells to levels below the MCL. Additionally, the four PFAS that are recommended for addition to the NYSDOH list of drinking water standards do not exceed the recommended MCL of 10 ppt. The lack of fluorotelomer compounds, as a result of fluorotelomerization manufacturing processes, in the landfill samples correlates with the early 1990s landfill closure as those compounds were limited in production prior to the early 2000s (reference (9)).

4.2 AFFF Inventory

The principal potential PFAS containing item evaluated for usage at the Site is AFFF. A review of historical operations and early interviews with Site personnel indicate that fire-fighting training with AFFF was conducted onsite, proximal to former Building 31 (i.e., Farmhouse) and Building 3 (i.e., Site Firehouse) as shown on Figure 2. These two structures were located near one another; however, the Farmhouse was demolished in 2014 and office trailers currently exist at this location. Subsequent to the issuance of the SOW, additional discussions with on-site personnel indicated that fire extinguisher training was also historically performed at the prototypes in the developed area. The dates of training and usage are not certain. Fire-fighting training with AFFF, containing PFAS, is no longer conducted on-site. The Site began transitioning in 2007, and continues to use an alternative, PFAS-free, training foam product in training exercises conducted at the Site.

In June 2022, an update of the on-site AFFF inventory was performed. Currently, there is approximately (some volume in the extinguishers is estimated) 411 gallons of PFAS-containing AFFF (non-legacy) on-site for emergency response action. In addition, there is currently approximately 147 gallons of legacy AFFF that has been removed from active inventory and is awaiting off-site disposal.

5.0 CONCLUSION

1,4-Dioxane was not detected in any of the groundwater samples and is not considered a constituent of concern. PFAS are present in the developed area and Hogback Road Landfill groundwater. The PFAS present in groundwater at the Site's developed area are likely attributed to historical fire-fighting training operations using legacy AFFF and potential newer formulations of AFFF. The PFAS present in the Hogback Road Landfill are consistent with legacy PFAS formulations and correlates with the closure of the landfill in the early 1990s. The concentrations of PFAS observed in downgradient sample locations are below drinking water standards. Furthermore, groundwater discharges to the Glowegee Creek, which acts as a hydrogeologic barrier to off-site migration of PFAS from the developed area of the Site. At the Hogback Road Landfill, groundwater also flows into the Glowegee Creek and the nearest private downgradient well is approximately 0.3 miles from the property boundary.

Due to the evolving nature of regulatory requirements associated with PFAS, any future additional characterization will be performed based on discussions and alignment with NYSDEC and NYSDOH.

6.0 REFERENCES

1) KAPL. 2021. Emerging Contaminants Sampling Scope of Work for the Kesselring Site, April 2021

2) NYSDEC. 2021. Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, January 2021

3) NYSDEC (Winterberger) letter to NRLFO (Delwiche) dated September 2, 2021; Re: Knolls Atomic Power Laboratory (KAPL) – Kesselring Site, Emerging Contaminants Scope of Work (SOW)

4) KAPL. 1998. Hogback Road Landfill Post-Closure Monitoring and Maintenance Operations Manual, Knolls Atomic Power Laboratory, Kesselring Site, September 1998, Revised March 2014

5) NYSDEC. 2021. Division of Materials Management. New York State Inactive Landfill Initiative, Comprehensive Plan to Address Priority Solid Waste Sites for Potential Impacts on Drinking Water Quality, May 2021

6) NRLFO letter. NRLFO: AMO-S:ESH:21-008, dated February 2, 2021; Subject: First Quarter 2021 PFOA, PFOS, and 1,4-Dioxane Monitoring Results; Kenneth A. Kesselring Site (PWS ID: NY4520559).

7) NRLFO letter. NRLFO: AMO-S:ESH:21-038, dated May 7, 2021; Subject: Second Quarter 2021 PFOA, PFOS, and 1,4-Dioxane Monitoring Results; Kenneth A. Kesselring Site (PWS ID: NY4520559).

8) NYS Drinking Water Quality Council (DWQC). 2022. *Emerging PFAS – Health based Drinking Water Values and Maximum Contaminant Levels* [PowerPoint Slides], Sadie Wheeler, Ph.D., March 10, 2022, Minute 35 https://totalwebcasting.com/view/?func=VOFF&id=nysdoh&date=2022-05-02&seq=1

9) ITRC. 2020. History and Use of Per-and Polyfluoroalkyl Substances (PFAS), April 2020

Tables

Table 1
Implementation Summary

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

Initial Sampling Phase	
October 4, 2021 - October 8, 2021	Groundwater Sampling • Four Hogback Road Landfill Wells Sampled o HB-1A, LMW-4, HB-5A2, HB-11A o One Field Reagent Blank • Nine Developed Area Wells Sampled o MW-1, MW-4, MW-6, MW-10, MW-12, MW-15, MW-16, MW-17, MW-18 o Three Field Reagent Blanks
Supplemental Sampling Phase	
December 6, 2021	Groundwater Sampling • Two Hogback Road Landfill Wells Sampled o HB-8A, HB-9A o HB-10A (not sampled – dry) o One Field Reagent Blank • One Developed Area Groundwater Sample o East Ditch o One Field Reagent Blank

Notes:

PFAS = per- and polyfluoroalkyl substances; USEPA = United States Environmental Protection Agency

1. Emerging Contaminants groundwater samples analyzed for 21 PFAS by modified USEPA Method 537 and 1,4-dioxane by USEPA Method 8270 Selected Ion Monitoring (SIM).
2. Supplemental groundwater samples analyzed for PFAS only by modified USEPA Method 537.
3. PFAS analysis performed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California. 1,4-dioxane analysis performed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey.
4. All necessary Quality Assurance / Quality Control samples collected in accordance with the Scope of Work.

Table 2
Developed Area
Sample Results

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

			Area	Kesselring Facility Area				
			Location ID	MW-1	MW-4	MW-6	MW-10	MW-12
			Sample ID	KS-EC-MW-1-100721	KS-EC-MW-4-100821	KS-EC-MW-6-100521	KS-EC-MW-10-100521	KS-EC-MW-12-100721
			Sample Date	10/7/2021	10/8/2021	10/5/2021	10/5/2021	10/7/2021
Chemical Name	Proposed Guidance Values	Drinking Water MCL						
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV		4.78 U	4.59 U	**5.98**	4.56 U	4.75 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV		1.91 U	1.84 U	**20.4**	1.82 U	1.90 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV		4.78 U	4.59 U	4.66 U	4.56 U	4.75 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV		4.78 U	4.59 U	4.66 U	4.56 U	4.75 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV		**0.52 J**	**2.77**	**1.80 J**	**1.16 J**	**0.73 J**
Perfluorobutanoic acid (PFBA)	NV	NV		**5.05**	**10.4**	**8.07**	4.56 U	4.75 U
Perfluorodecanesulfonic acid (PFDS)	NV	NV		1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
Perfluorodecanoic acid (PFDA)	NV	NV		1.91 U	**1.05 J**	**0.89 J**	**1.95**	1.90 U
Perfluorododecanoic acid (PFDoA)	NV	NV		1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV		1.91 U	1.84 U	**1.39 J**	1.82 U	1.90 U
Perfluoroheptanoic acid (PFHpA)	NV	NV		**3.28**	**8.77**	**10.0**	**2.38**	1.90 U
Perfluorohexanesulfonic acid (PFHxS)	NV	NV		**1.14 J**	**1.51 J**	**8.95**	**0.92 J**	1.90 U
Perfluorohexanoic acid (PFHxA)	NV	NV		**4.30**	**14.3**	**11.5**	**1.56 J**	1.90 U
Perfluorononanoic acid (PFNA)	NV	NV		**0.80 J**	**3.27**	**5.17**	**1.70 J**	1.90 U
Perfluorooctanesulfonic acid (PFOS)	2.7	10		**2.18**	**6.44 ***	**<u>327 *</u>**	**<u>67.2 *</u>**	**2.49**
Perfluorooctanoic acid (PFOA)	6.7	10		**4.46**	**<u>12.1 *</u>**	**<u>11.3 *</u>**	**1.96**	**0.96 J**
Perfluoropentanoic acid (PFPeA)	NV	NV		**11.9**	**17.5**	**20.0**	**1.06 J**	1.90 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV		1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV		1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV		1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
Perfluroroctanesulfonamide (FOSA)	NV	NV		1.91 U	1.84 U	1.87 U	1.82 U	1.90 U
1,4-Dioxane	0.35	1.0		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

4. MCL values are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies. Exceedances are underlined.

Table 2
Developed Area
Sample Results

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

			Area	Kesselring Facility Area				
			Location ID	MW-15	MW-15	MW-16	MW-17	MW-18
			Sample ID	KS-EC-MW-15-100521	KS-EC-X01-100521	KS-EC-MW-16-100721	KS-EC-MW-17-100721	KS-EC-MW-18-100521
			Sample Date	10/5/2021	10/5/2021	10/7/2021	10/7/2021	10/5/2021
Chemical Name	**Proposed Guidance Values**	**Drinking Water MCL**						
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV		4.77 U	4.63 U	4.72 U	4.84 U	4.81 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV		**34.9**	**34.3**	1.89 U	1.94 U	**1.33 J**
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV		4.77 U	4.63 U	4.72 U	4.84 U	4.81 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV		4.77 U	4.63 U	4.72 U	4.84 U	4.81 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV		**3.17**	**3.23**	**3.52**	1.94 U	**3.04**
Perfluorobutanoic acid (PFBA)	NV	NV		**9.01**	**8.86**	**6.81**	4.84 U	**5.48**
Perfluorodecanesulfonic acid (PFDS)	NV	NV		1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perfluorodecanoic acid (PFDA)	NV	NV		**0.85 J**	**0.88 J**	1.89 U	1.94 U	**1.22 J**
Perfluorododecanoic acid (PFDoA)	NV	NV		1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV		1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perfluoroheptanoic acid (PFHpA)	NV	NV		**5.26**	**5.22**	**2.98**	**0.53 J**	**9.54**
Perfluorohexanesulfonic acid (PFHxS)	NV	NV		**2.39**	**2.25**	**0.83 J**	**1.32 J**	**2.18**
Perfluorohexanoic acid (PFHxA)	NV	NV		**10.9**	**10.6**	**6.92**	**0.82 J**	**7.29**
Perfluorononanoic acid (PFNA)	NV	NV		**5.68**	**5.52**	**0.71 J**	**0.41 J**	**4.61**
Perfluorooctanesulfonic acid (PFOS)	2.7	10		**16.4 ***	**15.4 ***	**2.63 EMPC**	**3.24 ***	**21.9 ***
Perfluorooctanoic acid (PFOA)	6.7	10		**9.58 ***	**9.44 ***	**6.61**	**2.24**	**14.0 ***
Perfluoropentanoic acid (PFPeA)	NV	NV		**16.1**	**15.4**	**8.22**	**0.94 J**	**9.12**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV		1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV		1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV		1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
Perflurooctanesulfonamide (FOSA)	NV	NV		1.91 U	1.85 U	1.89 U	1.94 U	1.92 U
1,4-Dioxane	0.35	1.0		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

4. MCL values are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies. Exceedances are underlined.

Table 2
Developed Area
Sample Results

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

			Area	East Ditch Area	
			Location ID	EASTDITCH-01	EASTDITCH-01
			Sample ID	KS-EC-EASTDITCH-01-120621	KS-EC-X02-120621
			Sample Date	12/6/2021	12/6/2021
Chemical Name	Proposed Guidance Values	Drinking Water MCL			
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV		4.40 U	4.47 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV		1.76 U	1.79 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV		4.40 U	4.47 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV		4.40 U	4.47 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV		**0.81 J**	**0.90 J**
Perfluorobutanoic acid (PFBA)	NV	NV		**3.22 J**	**3.89 J**
Perfluorodecanesulfonic acid (PFDS)	NV	NV		1.76 U	1.79 U
Perfluorodecanoic acid (PFDA)	NV	NV		1.76 U	1.79 U
Perfluorododecanoic acid (PFDoA)	NV	NV		1.76 U	1.79 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV		1.76 U	1.79 U
Perfluoroheptanoic acid (PFHpA)	NV	NV		**1.93**	**2.57**
Perfluorohexanesulfonic acid (PFHxS)	NV	NV		**3.07**	**2.99**
Perfluorohexanoic acid (PFHxA)	NV	NV		**3.32**	**3.05**
Perfluorononanoic acid (PFNA)	NV	NV		**0.47 J**	**0.50 J**
Perfluorooctanesulfonic acid (PFOS)	2.7	10		**7.01 ***	**6.55 ***
Perfluorooctanoic acid (PFOA)	6.7	10		**2.82**	**2.74**
Perfluoropentanoic acid (PFPeA)	NV	NV		**5.00**	**5.32**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV		1.76 U	1.79 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV		1.76 U	1.79 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV		1.76 U	1.79 U
Perfluoroctanesulfonamide (FOSA)	NV	NV		1.76 U	1.79 U
1,4-Dioxane	0.35	1.0		---	---

Notes: 1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

4. MCL values are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies. Exceedances are underlined.

Table 3
Hogback Road Landfill
Sample Results

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

Chemical Name	Proposed Guidance Values	Drinking Water MCL	Area	Hogback Road Landfill Area					
			Location ID	HB-1A	HB-5A2	HB-11A	LMW-4	HB-8A	HB-9A
			Sample ID	KS-EC-HB-1A-100421	KS-EC-HB-5A2-100421	KS-EC-HB-11A-100421	KS-EC-LMW-4-100421	KS-EC-HB-8A-120621	KS-EC-HB-9A-120621
			Sample Date	10/4/2021	10/4/2021	10/4/2021	10/4/2021	12/6/2021	12/6/2021
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	NV		4.74 U	4.82 U	4.71 U	4.75 U	4.47 U	4.98 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	NV		1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	NV		4.74 U	4.82 U	4.71 U	4.75 U	4.47 U	4.98 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	NV		4.74 U	4.82 U	4.71 U	4.75 U	4.47 U	4.98 U
Perfluorobutanesulfonic acid (PFBS)	NV	NV		1.90 U	**1.22 J**	**0.61 J**	**1.22 J**	1.79 U	**0.26 J**
Perfluorobutanoic acid (PFBA)	NV	NV		4.74 U	**10.7**	4.71 U	**10.1**	4.47 U	4.98 U
Perfluorodecanesulfonic acid (PFDS)	NV	NV		1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluorodecanoic acid (PFDA)	NV	NV		1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluorododecanoic acid (PFDoA)	NV	NV		1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	NV		1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluoroheptanoic acid (PFHpA)	NV	NV		1.90 U	**7.67**	**0.88 J**	**3.35**	**0.55 J**	**0.97 J**
Perfluorohexanesulfonic acid (PFHxS)	NV	NV		1.90 U	**3.11**	**5.90**	**1.54 J**	**1.10 J**	**1.06 J**
Perfluorohexanoic acid (PFHxA)	NV	NV		1.90 U	**20.4**	**1.06 J**	**18.7**	**0.84 J**	**2.15**
Perfluorononanoic acid (PFNA)	NV	NV		1.90 U	**0.46 J**	1.88 U	1.90 U	1.79 U	1.99 U
Perfluorooctanesulfonic acid (PFOS)	2.7	10		1.90 U	**6.67 ***	**13.6 ***	**9.08 ***	**1.89**	**0.89 J**
Perfluorooctanoic acid (PFOA)	6.7	10		1.90 U	**6.31**	**2.12**	**3.67**	**1.83**	**2.23**
Perfluoropentanoic acid (PFPeA)	NV	NV		1.90 U	**24.7**	**1.38 J**	**23.7**	**1.07 J**	**2.36**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	NV		1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	NV		1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	NV		1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
Perfluroroctanesulfonamide (FOSA)	NV	NV		1.90 U	1.93 U	1.88 U	1.90 U	1.79 U	1.99 U
1,4-Dioxane	0.35	1.0		0.20 U	0.20 U	0.20 U	0.20 U	---	---

Notes:

1. Results and regulatory criteria for Per- and Polyfluoroalkyl Substancesare in nanograms per liter (ng/L). Results and regulatory criteria for 1,4-Dioxane in micrograms per liter (µg/L). "MCL" indicates maximum contaminant level. "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. "---" indicate not sampled. Internal laboratory qualifiers are not reported. Detections are bolded.
2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. 1,4-Dioxane analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.
3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.
4. MCL values are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies. Exceedances are underlined.

Table 4
PFHpA, PFNA, PFDA, PFHxS Detection Summary
Developed Area and Hogback Road Landfill

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

Analyte	Area	Number of Detections per Number of Samples Analyzed	Range of Detections (ng/L)	Number of Samples > Recommended NYS DW MCL (10 ng/L)
PFHpA	Developed Area	11/12	0.53 J to 10.0	0*/12
	Hogback Rd. Landfill	5/6	0.55 J to 7.67	0/6
PFNA	Developed Area	11/12	0.41 J to 5.68	0/12
	Hogback Rd. Landfill	1/6	0.46 J	0/6
PFDA	Developed Area	6/12	0.85 J to 1.95	0/12
	Hogback Rd. Landfill	0/6	Not Detected	0/6
PFHxS	Developed Area	11/12	0.83 J to 8.95	0/12
	Hogback Rd. Landfill	5/6	1.06 J to 5.90	0/6

Notes: 1. ng/L= nanograms per liter; NYS = New York State; DW = Drinking Water;
MCL = Maximum Contaminant Level; PFHpA = Perfluoroheptanoic acid;
PFNA = Perfluorononanoic acid; PFDA = Perfluorodecanoic acid;
PFHxS = Perfluorohexanesulfonic acid; J = analyte detected at an estimated concentration
* Detection at the recommended NYS DW MCL

2. Recommended NYS DW MCL value is from the NYS Drinking Water Quality Council March 10, 2022 meeting.

Table 5
PFOS and PFOA Detection Summary
Developed Area

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

Analyte / Criteria	Area	Range of Detections (ng/L)	Number of Samples > NYS GW GV	Number of Samples > NYS DW MCL
PFOA	Developed Area	0.96 to 14.0	5/12	3/12
NYS GW GV: 6.7 ng/L NYS DW MCL: 10 ng/L	Upgradient	0.96 to 4.46	0/2	0/2
	Center-Site	1.96 to 12.1	2/3	2/3
	Downgradient Perimeter	2.24 to 14.0	3/7	1/7
PFOS	Developed Area	2.18 to 327	9/12	5/12
NYS GW GV: 2.7 ng/L NYS DW MCL: 10 ng/L	Upgradient	2.18 to 2.49	0/2	0/2
	Center-Site	6.44 to 327	3/3	2/3
	Downgradient Perimeter	2.63 to 21.9	6/7	3/7

Notes: 1. ng/L= nanograms per liter; NYS = New York State; GW = Groundwater; GV = Guidance Value; DW = Drinking Water MCL = Maximum Contaminant Level; PFOA = Perfluorooctanoic acid; PFOS = Perfluorooctanesulfonic acid

2. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

3. MCL value is from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

Table 6
PFOS and PFOA Detection Summary
Hogback Road Landfill

Emerging Contaminants Groundwater Monitoring Report
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

Analyte / Criteria	Range of Detections (ng/L)	Number of Samples > NYS GW GV	Number of Samples > NYS DW MCL
PFOA NYS GW GV: 6.7 ng/L NYS DW MCL: 10 ng/L	1.83 to 6.31	0/6	0/6
PFOS NYS GW GV: 2.7 ng/L NYS DW MCL: 10 ng/L	0.89 J to 13.6	3/6	1/6

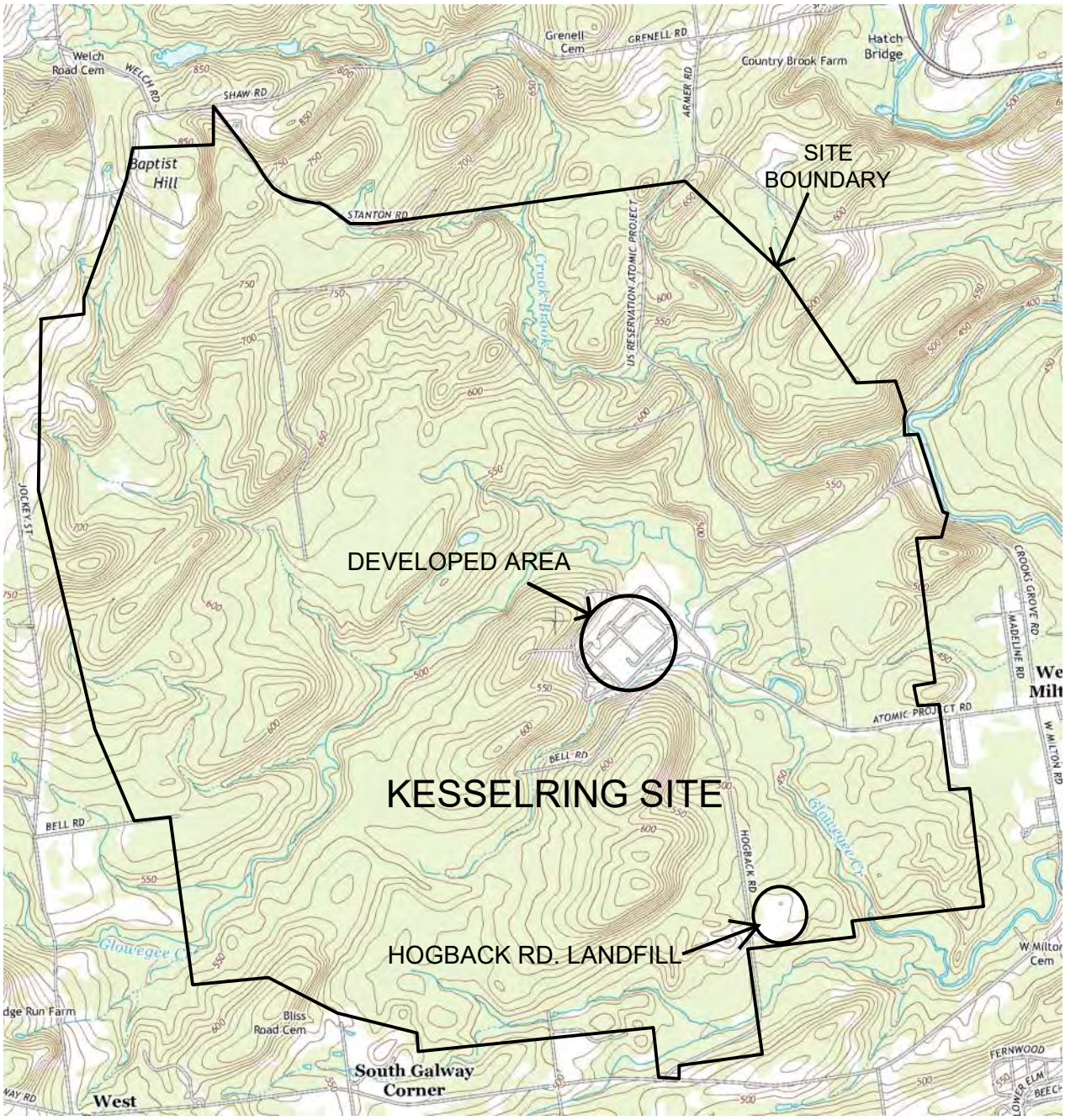
Notes: 1. ng/L= nanograms per liter; NYS = New York State; GW = Groundwater; GV = Guidance Value; DW = Drinking Water MCL = Maximum Contaminant Level; PFOA = Perfluorooctanoic acid; PFOS = Perfluorooctanesulfonic acid; J = analyte detected at an estimated concentration

2. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

3. MCL value is from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

Figures

FIGURE 1



ADAPTED FROM: MIDDLE GROVE, NEW YORK U.S.G.S. 7.5 MIN. QUAD (2013)

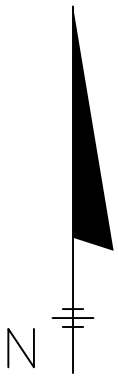
QUADRANGLE LOCATION

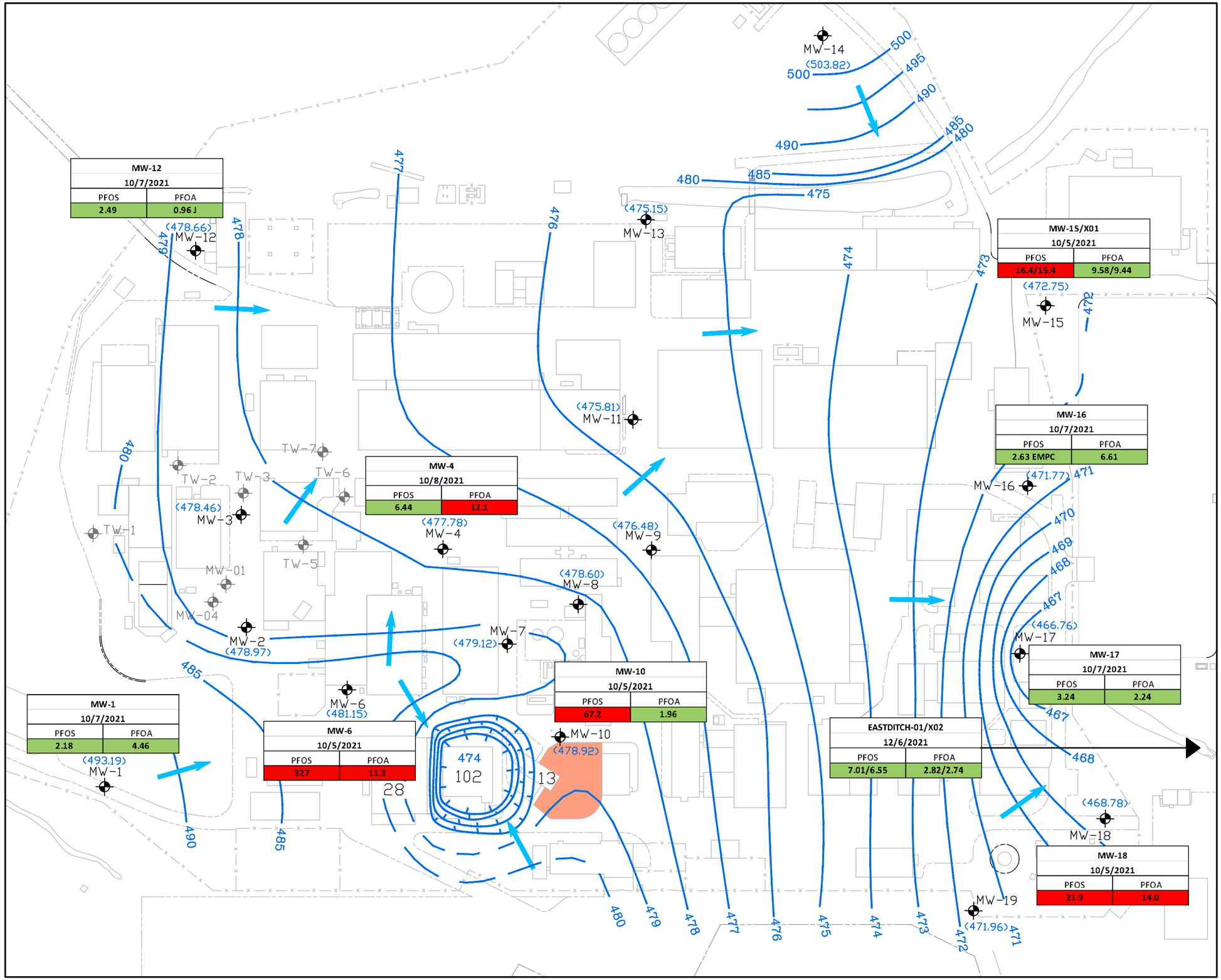
KNOLLS ATOMIC POWER LABORATORY – KESSELRING SITE

WEST MILTON, NEW YORK

EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

SITE LOCATION MAP





Notes:
1. Monitoring wells surveyed in February 2010.
2. Groundwater elevations and contours presented in feet above mean sea level.
3. Groundwater measurements obtained August 26, 2019 for the Stormwater Drain System (SWMU #55) CISC RFA SV Report for Building 93.
4. Results are in nanograms per liter (ng/L). "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration.
5. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.
6. Promulgated Maximum Contaminant Levels (MCLs) are from the 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.

- Contour interval = 1 foot when <480 and 5 feet when >480.
- Red box = PFAS above criteria
- Green box = PFAS below criteria

KNOLLS ATOMIC POWER LABORATORY - KESSELRING SITE
WEST MILTON, NEW YORK

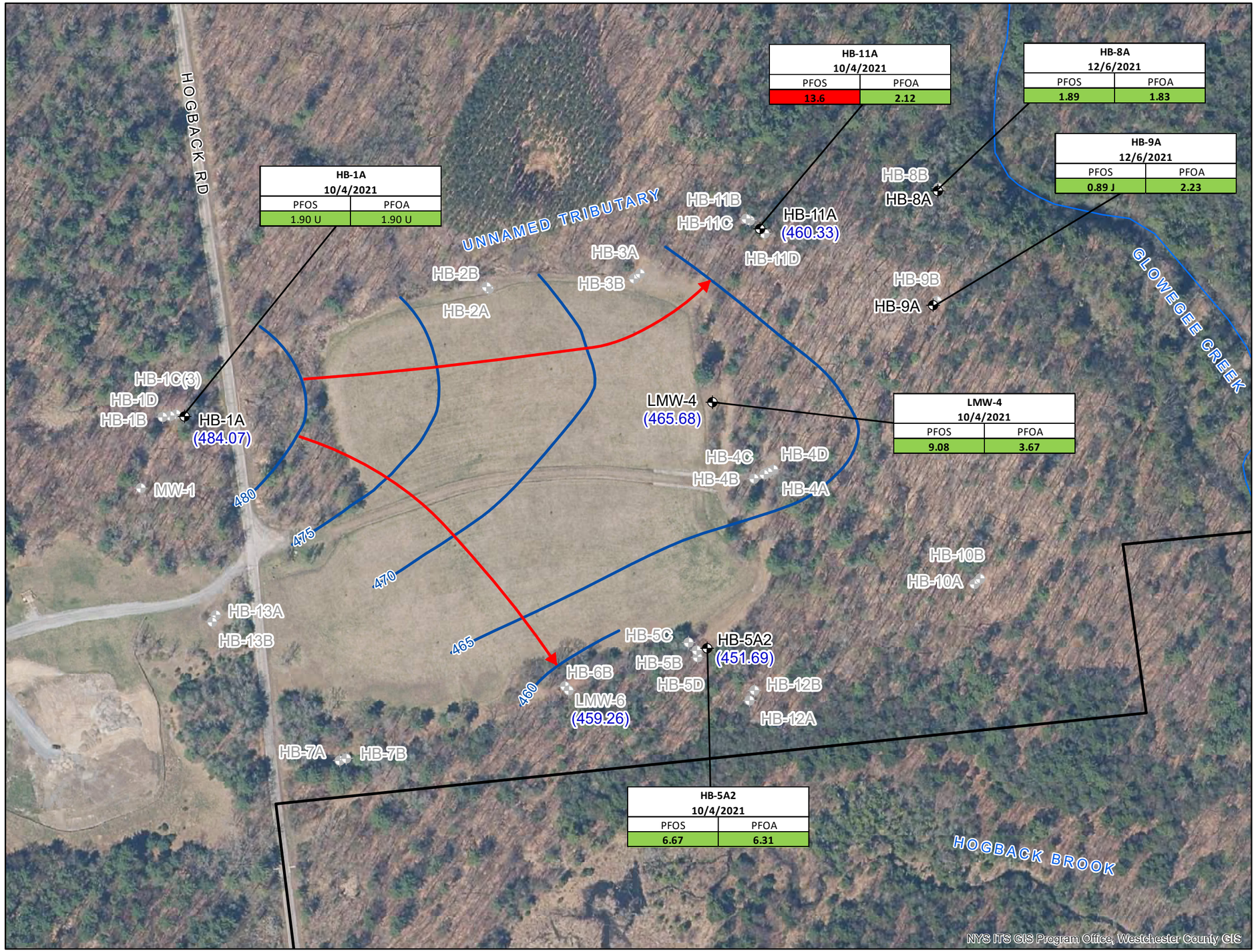
EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 2

DEVELOPED AREA

PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER

140 0 140



N

Legend

- HB1A (484.07) — Sampled Monitoring Wells (Groundwater elevation measured in September 2021)
- Unsampled Monitoring Wells
- Apparent Groundwater Flow Direction
- Groundwater Elevation Contour
- Stream
- Approximate Property Boundary

Notes:

1. Results are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration.
2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.
3. Promulgated Maximum Contaminant Levels (MCLs) are from the 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.
4. Groundwater elevations and contours are presented in feet above mean sea level.

- Contour interval = 5 feet.
- Red box = PFAS above criteria
- Green box = PFAS below criteria

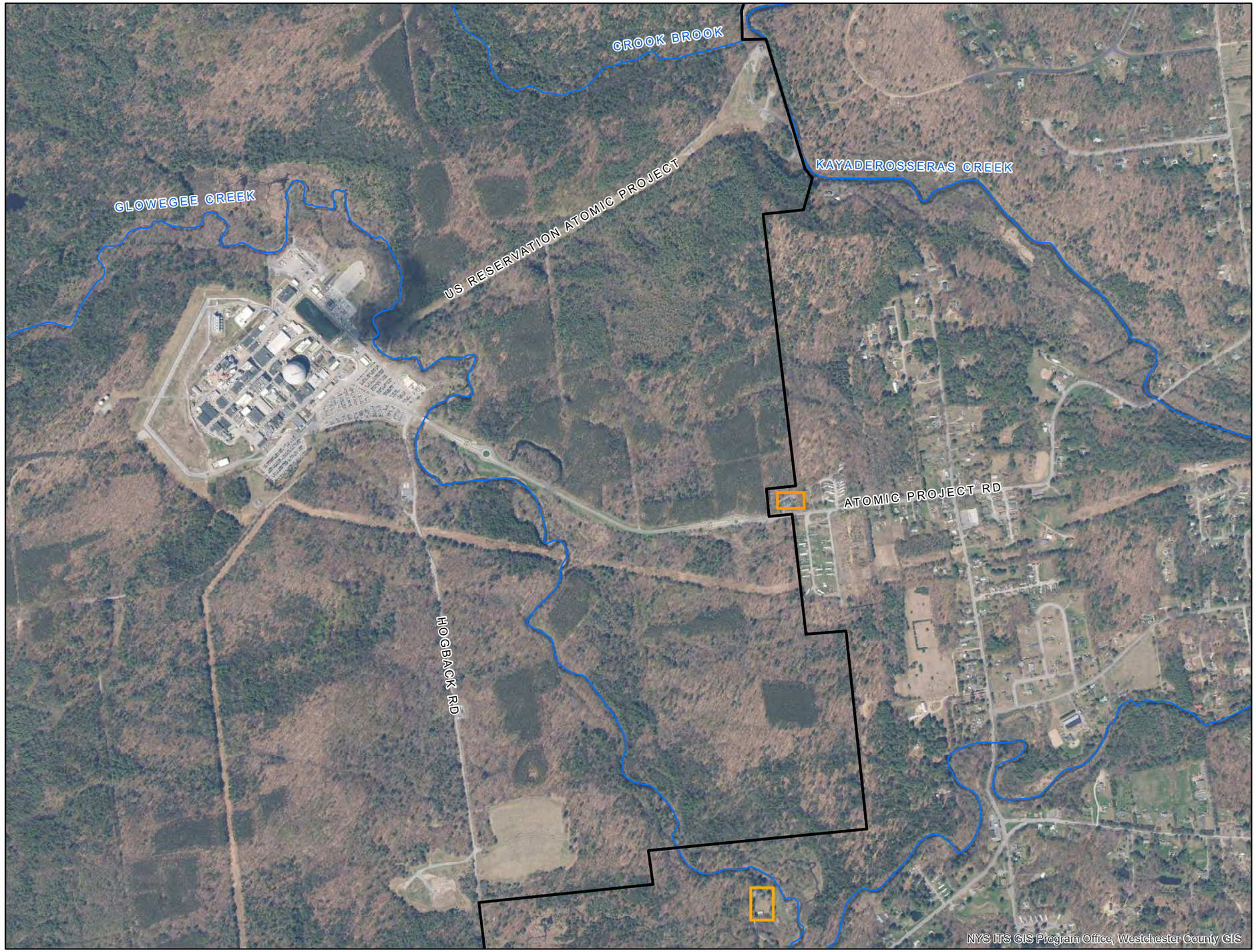
KNOLLS ATOMIC POWER LABORATORY - KESSELRING SITE
WEST MILTON, NEW YORK

EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 3

HOGBACK ROAD LANDFILL
PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER

0 100 200 400
Feet



N

Legend

- Stream
- Approximate Property Boundary
- Nearest Residential Property

KNOLLS ATOMIC POWER LABORATORY - KESSELRING SITE
WEST MILTON, NEW YORK

EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 4

KESSELRING SITE AND ADJACENT PROPERTY

0 500 1,000 2,000
Feet

Appendix A

Data Validation Report

Data Validation Services

120 Cobble Creek Road P.O. Box 208
North Creek, NY 12853

Phone 518-251-4429
harry@frontiernet.net

April 26, 2022

Marc Flanagan
FMP-KAPL
P. O. Box 1072
Schenectady, NY 12301

RE: Knolls Atomic Power Laboratory (KAPL), Kesselring Site (KS) Emerging Contaminants (EC) Sampling Scope of Work Implementation Analytical Data Packages
Eurofins TestAmerica Laboratories Report Nos. 200-60401-1 and 200-61267-1

Dear Mr. Flanagan:

Review has been completed for the data packages generated by Eurofins TestAmerica Laboratories that pertain to aqueous samples collected between 10/04/21 and 12/06/21 as part of the KAPL KS EC Sampling Scope of Work Implementation. In October 2021, thirteen samples, one field duplicate, and two equipment blanks were analyzed for 1,4-dioxane and a list of twenty-one per- and polyfluoroalkyl substances (PFAS). In December 2021, three samples, a field duplicate, and two equipment blanks were analyzed for PFAS. Four rinse blanks collected in October 2021 and two rinse blanks collected in December 2021 were analyzed for PFAS. The samples were processed and analyzed by the United States Environmental Protection Agency (USEPA) SW846 method 8270E Selected Ion Monitoring (SIM) and a modified USEPA Method 537.

Data validation was performed with guidance from the following documents, with consideration of the specific project method requirements.

- Emerging Contaminants Scope of Work for the Kesselring Site, April 2021
- NYSDEC. 2021. Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, January 2021
- USEPA. 2018. USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537, EPA 910-R-18-001, November 2018
- USEPA. 2017. USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, January 2017

The following items were reviewed:

- Data Completeness
- Custody Documentation/Sample Condition
- Holding Times
- Surrogate, Isotopic Dilution, and Internal Standard Recoveries
- Matrix Spike Recoveries/Duplicate Correlations
- Field Duplicate Correlations
- Method/Equipment/Rinse Blanks
- Laboratory Control Samples (LCSs)
- Instrument Tunes

- Calibration Standard Responses
- Method Compliance
- Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was conducted in compliance with project requirements and with adherence to quality criteria. Sample results are usable as reported or with minor qualification.

Validation data qualifier definitions, sample summaries, laboratory qualifier definitions/ glossaries, laboratory case narratives, and chains-of-custody are included in this report, and should be reviewed in conjunction with this text. Also attached is a data summary table displaying the sample results and the qualifications noted in this report.

PFAS compounds are identified by their common acronyms in this report. The data packages and data table reference both the technical names and the acronyms.

Field Duplicate Correlations

The blind field duplicate evaluations were performed for 1,4-dioxane and PFAS on KS-EC-MW-15-100521 and for PFAS on KS-EC-EastDitch-01-120621. The correlations meet validation guidelines.

1,4-Dioxane Analyses by USEPA Method 8270E SIM

The matrix spike accuracy and precision evaluation was performed on KS-EC-MW-1-100721. Recoveries and correlations fall within validation guidelines.

Instrument tune compounds meet fragmentation requirements. Surrogate standard recoveries are within validation guidelines. LCS recoveries are within the required range. Internal standard recoveries are within required ranges. Blanks show no contamination.

Calibration standards show acceptable correlations.

PFAS Analyses by Modified USEPA Method 537

The result for PFOS in KS-EC-MW-16-100721 has been qualified as being Estimated Maximum Possible Concentration (EMPC) due to an outlying ion ratio.

The detected results for PFTeA in KS-EC-HB-8A-120621, KS-EC-HB-9A-120621, and KS-EC-X02-120621 are considered external contamination and edited to reflect non-detection due to presence in the associated method, rinse, and equipment blanks.

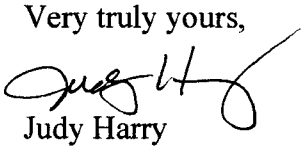
The matrix spike accuracy and precision evaluations were performed on KS-EC-MW-1-100721 and KS-EC-HB-9A-120621. Recoveries and correlations fall within validation guidelines.

Holding time requirements were met. Isotopic dilution standard recoveries are within validation guidelines. LCS recoveries are within required ranges. Internal standard recoveries are within required ranges.

Calibration standards show responses within validation guidelines.

Please do not hesitate to contact me if questions or comments arise during your review of this report.

Very truly yours,



Judy Harry

Attachments:
Validation Data Qualifier Definitions
Sample Summaries
Laboratory Definitions/Glossaries
Laboratory Case Narratives
Chains-of-Custody
Data Summary Table

VALIDATION DATA QUALIFIER DEFINITIONS

U	The analyte was analyzed for, but was not detected above the level of the associated reported quantitation limit.
J	The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
J-	The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased low.
J+	The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased high.
UJ	The analyte was analyzed for, but was not detected. The associated reported quantitation limit is approximate and may be inaccurate or imprecise.
NJ	The detection is tentative in identification and estimated in value. Although there is presumptive evidence of the analyte, the result should be used with caution as a potential false positive and/or elevated quantitative value.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control limits. The analyte may or may not be present.
EMPC	The results do not meet all criteria for a confirmed identification. The quantitative value represents the Estimated Maximum Possible Concentration of the analyte in the sample.

Sample Summaries

Sample Summary

Client: Ramboll US Corporation
Job ID: 200-60401-1
Project/Site: KAPL KL/KS Emerging Contaminant Testing

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
200-60401-1	KS-EC-HB-1A-100421	Water	10/04/21 10:15	10/05/21 13:57
200-60401-2	KS-EC-LMW-4-100421	Water	10/04/21 11:25	10/05/21 13:57
200-60401-3	KS-EC-FRB01-100421	Water	10/04/21 11:30	10/05/21 13:57
200-60401-4	KS-EC-HB-11A-100421	Water	10/04/21 12:45	10/05/21 13:57
200-60401-5	KS-EC-HB-5A2-100421	Water	10/04/21 14:20	10/05/21 13:57
200-60445-1	KS-EC-MW-15-100521	Water	10/05/21 10:40	10/08/21 10:51
200-60445-2	KS-EC-MW-18-100521	Water	10/05/21 13:00	10/08/21 10:51
200-60445-3	KS-EC-FRB02-100521	Water	10/05/21 13:10	10/08/21 10:51
200-60445-4	KS-EC-MW-10-100521	Water	10/05/21 15:00	10/08/21 10:51
200-60445-5	KS-EC-MW-6-100521	Water	10/05/21 16:10	10/08/21 10:51
200-60445-6	KS-EC-X01-100521	Water	10/05/21 00:00	10/08/21 10:51
200-60492-1	KS-EC-MW-17-100721	Water	10/07/21 10:15	10/11/21 12:36
200-60492-2	KS-EC-MW-16-100721	Water	10/07/21 11:55	10/11/21 12:36
200-60492-3	KS-EC-MW-1-100721	Water	10/07/21 13:45	10/11/21 12:36
200-60492-4	KS-EC-EBW01-100721	Water	10/07/21 14:05	10/11/21 12:36
200-60492-5	KS-EC-EBW02-100721	Water	10/07/21 14:20	10/11/21 12:36
200-60492-6	KS-EC-MW-12-100721	Water	10/07/21 15:20	10/11/21 12:36
200-60492-7	KS-EC-FRB03-100721	Water	10/07/21 10:25	10/11/21 12:36
200-60493-1	KS-EC-MW-4-100821	Water	10/08/21 10:15	10/11/21 13:00
200-60493-2	KS-EC-FRB04-100821	Water	10/08/21 10:25	10/11/21 13:00

Sample Summary

Client: Ramboll US Corporation
Project/Site: KAPL KS Emerging Contaminant Testing

Job ID: 200-61267-1
SDG: 200-61267-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
200-61267-1	KS-EC-EastDitch-01-120621	Water	12/06/21 10:30	12/07/21 15:12
200-61267-2	KS-EC-X02-120621	Water	12/06/21 00:00	12/07/21 15:12
200-61267-3	KS-EC-FRB05-120621	Water	12/06/21 10:40	12/07/21 15:12
200-61267-4	KS-EC-EBW03-120621	Water	12/06/21 11:10	12/07/21 15:12
200-61267-5	KS-EC-HB-9A-120621	Water	12/06/21 13:15	12/07/21 15:12
200-61267-6	KS-EC-FRB06-120621	Water	12/06/21 13:05	12/07/21 15:12
200-61267-7	KS-EC-HB-8A-120621	Water	12/06/21 14:10	12/07/21 15:12
200-61267-9	KS-EC-EBW04-120621	Water	12/06/21 14:20	12/07/21 15:12

Laboratory Definitions/Glossaries

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Laboratory Case Narratives

CASE NARRATIVE

Client: Ramboll US Corporation

Project: KAPL KL/KS Emerging Contaminant Testing

Report Number: 200-60401-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISION SUMMARY
The report being provided is a revision of the original report sent on 11/1/2021. The report (revision 2) is being revised due to: Revision to correct method reference in the narrative from 8270D SIM to 8270E SIM.

Report revision history
Revision 1 - 2/1/2022 - Reason - Form 3 for MS/MSD not in data package.

RECEIPT
The samples were received on 10/05/2021, 10/08/2021, 10/11/2021 and 10/11/2021; the samples arrived in good condition.

The container label for sample KS-EC-EBW02-100721 did not match the information listed on the Chain-of-Custody (COC). 1 of the 4 containers omit the 100721 from the sample ID. Logged and labeled according to COC

1,4-DIOXANE
Samples KS-EC-HB-1A-100421, KS-EC-MW-15-100521, KS-EC-MW-17-100721, KS-EC-MW-4-100821, KS-EC-LMW-4-100421, KS-EC-MW-18-100521, KS-EC-MW-16-100721, KS-EC-MW-1-100721, KS-EC-HB-11A-100421, KS-EC-MW-10-100521, KS-EC-EBW01-100721, KS-EC-HB-5A2-100421, KS-EC-MW-6-100521, KS-EC-EBW02-100721, KS-EC-X01-100521 and KS-EC-MW-12-100721 were analyzed for 1,4-Dioxane in accordance with 8270E SIM. The samples were prepared on 10/09/2021, 10/11/2021 and 10/14/2021 and analyzed on 10/09/2021, 10/13/2021, 10/14/2021 and 10/15/2021.

Nitrobenzene-d5 failed the surrogate recovery criteria high for KS-EC-MW-18-100521. Nitrobenzene-d5 failed the surrogate recovery criteria high for KS-EC-X01-100521. Refer to the QC report for details.

1,4-Dioxane exceeded the RPD limit for LCSD 460-805993/3-A. 1,4-Dioxane exceeded the RPD limit for LCSD 460-807006/5-A. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERFLUORINATED HYDROCARBONS
Samples KS-EC-HB-1A-100421, KS-EC-MW-15-100521, KS-EC-MW-17-100721, KS-EC-MW-4-100821, KS-EC-LMW-4-100421, KS-EC-MW-18-100521, KS-EC-MW-16-100721, KS-EC-FRB04-100821, KS-EC-FRB01-100421, KS-EC-FRB02-100521, KS-EC-MW-1-100721, KS-EC-HB-11A-100421, KS-EC-MW-10-100521, KS-EC-EBW01-100721, KS-EC-HB-5A2-100421, KS-EC-MW-6-100521, KS-EC-EBW02-100721, KS-EC-X01-100521, KS-EC-MW-12-100721 and KS-EC-FRB03-100721 were analyzed for Perfluorinated Hydrocarbons in accordance with TAL SOP BR-LC-009. The samples were prepared on 10/10/2021, 10/13/2021 and 10/15/2021 and analyzed on 10/11/2021, 10/13/2021, 10/14/2021 and 10/16/2021.

Several analytes failed the recovery criteria low for the MS of sample 320-80196-2 in batch 320-533899. Perfluorononanoic acid (PFNA) failed the recovery criteria high.

Several analytes failed the recovery criteria low for the MSD of sample 320-80196-2 in batch 320-533899. 6:2 FTS exceeded the RPD limit.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CASE NARRATIVE

Client: Ramboll US Corporation

Project: KAPL KS Emerging Contaminant Testing

Report Number: 200-61267-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISION SUMMARY

The report being provided is a revision of the original report sent on 12/30/2021. The report (revision 1) is being revised due to: Samples KS-EC-EastDitch-01-120621, KS-EC-X02-120621 were excluded from the narrative in error.

RECEIPT

The samples were received on 12/07/2021; the samples arrived in good condition, properly preserved and on ice.

PERFLUORINATED HYDROCARBONS

Samples KS-EC-EastDitch-01-120621, KS-EC-X02-120621, KS-EC-FRB05-120621, KS-EC-EBW03-120621, KS-EC-HB-9A-120621, KS-EC-FRB06-120621, KS-EC-HB-8A-120621 and KS-EC-EBW04-120621 were analyzed for Perfluorinated Hydrocarbons in accordance with TAL SOP BR-LC-009. The samples were prepared on 12/07/2021 and analyzed on 12/08/2021.

Perfluorotetradecanoic acid (PFTeA) was detected in method blank MB 320-548955/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Chains-of-Custody

Chain of Custody/Analysis Report

RAMBOLL

Albany #224

Page 1 of 1

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Project: KAPL - KS Emerging Contaminants Sampling
Location: Kesselring Site, West Milton, N.Y.
Project #: 1940101245

Sampler(s): (Signature) Robert Hornung RH — Sarah Travaly Sarah Travaly

Laboratory: Test America Laboratory, 880 Riverside Pkwy, West Sacramento, CA, 95605
Attn: Kathryn Kelly
Phone: 802-923-1021

Holding Time: 14 days from sample collection to analysis (PFAS)

Package Requirement: NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Lab Use Only
Project Number:
Job Number:
Lab ID:

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Comb. Grab or Composite (C)	Field Filtered (Y / N)	Analysis Required: Preservatives (see key at bottom): 0 — PFAS (21 Compounds) by USEPA Modified Method 537	Lab Sample ID
1	KS-EC-HB-1A-100421	10/04/21	10:15	N	WG	2	G	N	X	
2	KS-EC-LMW-4-100421	10/04/21	11:25	N	WG	2	G	N	X	
3	KS-EC-FRB01-100421	10/04/21	11:30	FB	WQ	2	G	N	X	
4	KS-EC-HB-11A-100421	10/04/21	12:45	N	WG	2	G	N	X	
5	KS-EC-HB-5A2-100421	10/04/21	14:20	N	WG	2	G	N	X	
6										
7										
8				TRIP						
9										
10			10-4-2021							
11										
12										

200-60401 Chain of Custody

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex)

Relinquished by:	Date:	Courier Name:	Date:	Condition:	Other Comments or Notes regarding condition of samples as received:
of:	Time:	Tracking Number:	Time:		
Relinquished by: Sarah Travaly	Date: 10-4-21	Received by:	Date: 10-4-21	Custody Seals intact?	
of: Ramboll	Time: 1625	of: TESTA	Time: 1625		
Relinquished by:	Date:	Received by:	Date: 10-6-21	Cooler Temperature:	
of:	Time:	of: TestAm	Time: 1038		

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify)
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

Y Not Relinquished

1.1°C

Chain of Custody/Analysis Report

Page 1 of 1

RAMBOLL

Sampler(s): (Signature) Robert Hornung, Sarah Travaly

Lab Use Only

Project Number:

Job Number: 200-60401

Lab ID:

Contact: Paul D'Ambale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Ambale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Project: KAPL – KS Emerging Contaminants Sampling
Location: Kesselring Site, West Milton, N.Y.
Project #: 1940101245

Laboratory: TestAmerica Laboratory
777 New Durham Rd
Edison, NJ 08817
Attn: Kathryn Kelly
Phone: 802-923-1021

Holding Time: 7 days from sample collection to analysis (1,4-dioxane)

Package Requirement: NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

5-Day RUSH

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab G or Composite C	Field Filtered Y / N	Analysis Required: Preservatives (see key at bottom): 0 — 1,4-Dioxane by USEPA Method 8270 SIM	Lab Sample ID
1	KS-EC-HB-1A-100421	10/04/21	10:15	N	WG	2	G	N	X	
2	KS-EC-LMW-4-100421	10/04/21	11:25	N	WG	2	G	N	X	
3	KS-EC-HB-11A-100421	10/04/21	12:45	N	WG	2	G	N	X	
4	KS-EC-HB-5A2-100421	10/04/21	14:20	N	WG	2	G	N	X	
5										
6										
7										
8										
9										
10										
11										
12										

10-4-21

200-60401 Chain of Custody

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:	Date 10/4/21	Courier Name: Tracking Number:	Date	Condition:	Other Comments or Notes regarding condition of samples as received:	
Relinquished by: of: Ramboll	Time 1625	Received by: of: ETA	Time			
Relinquished by: of:	Date 10-4-21	Received by: of: FedEx	Date 10/6/21	Custody Seals intact:		
	Time 1625		Time 9:45	Cooler Temperature: IR#9 1.2=0.7		

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify): ETA
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

RAMBOLL

Albany #224

Chain of Custody/Analysis Report

Lab Use Only

Project Number:

Job Number:

Lab ID:

Sampler(s): (Signature) Robert Hornung, Sarah Travaly

Contact: Paul D'Annibale, Amy Spooner Stevens

Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203

Phone: (518) 724-7272

Email: Paul.D'Annibale@ramboll.com Amy.Spooner.Stevens@ramboll.com

Project: KAPL KS Emerging Contaminants Sampling

Location: Kesselring Site, West Milton, N.Y.

Project #: 1940001245

Laboratory:
Test America Laboratory
880 Riverside Pkwy
West Sacramento, CA 95605

Attn: Kathryn Kelly

Phone:
802 923 1021

Holding Time:
14 days from sample collection to analysis (PFAS)

Package Requirement:
NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4 File EDD with NYSDEC EDD reference values

Sample Identification									Analysis Required									
	Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab (G) or Composite (C)	Field Filtered (Y/N)	Preservatives (see key at bottom): 0									
									PFAS (21 Compounds) by USEPA Modified Method 537									Lab Sample ID
1	KS-EC-MW-15-100521	10/05/21	10:40	N	WG	2	G	N	X									
2	KS-EC-MW-18-100521	10/05/21	13:00	N	WG	2	G	N	X									
3	KS-EC-FRB02-100521	10/05/21	13:10	FB	WQ	2	G	N	X									
4	KS-EC-MW-10-100521	10/05/21	15:00	N	WG	2	G	N	X									
5	KS-EC-MW-6-100521	10/05/21	16:10	N	WG	2	G	N	X									
6	KS-EC-X01-100521	10/05/21	—	FD	WG	2	G	N	X									
7																		
8																		
9																		
10																		
11																		
12																		

ST 10/5/21

200-60445 Chain of Custody

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: Sarah Travaly of: Ramboll	Date: 10/5/21 Time: 1730	Courier Name: ETA Lock Box Custody Seal Number: 1631905	Date: 10/5/21 Time: 1730	Condition:	Other Comments or Notes regarding condition of samples as received:
Relinquished by: ETA Lock Box of:	Date: 10/6/21 Time: 0815	Received by: Raul Zacka of: Cargo	Date: 10/6/21 Time: 0815	Custody Seals intact: 1700119	
Relinquished by: Raul Zacka of: Cargo	Date: 10/6/21 Time: 1700	Received by: of:	Date: 10/6/21 Time: 1035	Cooler Temperature: 2-4	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify)

Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control

Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

2-4C

Chain of Custody/Analysis Report

RAMBOLL

Albany #224

Page 1 of 1

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com

Project: KAPL - KS Emerging Contaminants Sampling
Location: Kesselring Site, West Milton, N.Y.
Project #: 1940101245

Sampler(s): (Signature) Robert Hornung, Sarah Travaly

Laboratory: TestAmerica Laboratory
777 New Durham Rd
Edison, NJ 08817

Attn: Kathryn Kelly
Phone: 802-923-1021

Holding Time: 7 days from sample collection to analysis (1,4-dioxane)

Package Requirement: NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Lab Use Only

Project Number:

Job Number: 200-60445

Lab ID:

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab G, or Composite C	Field Filtered? Y / N	Analysis Required: Preservatives: (see key at bottom) 0 — 1,4-Dioxane by USEPA Method 8270 SIM	Lab Sample ID
1	KS-EC-MW-15-100521	10/05/21	10:40	N	WG	2	G	N	X	
2	KS-EC-MW-18-100521	10/05/21	13:00	N	WG	2	G	N	X	
3	KS-EC-MW-10-100521	10/05/21	15:00	N	WG	2	G	N	X	
4	KS-EC-MW-6-100521	10/05/21	16:10	N	WG	2	G	N	X	
5	KS-EC-X01-100521	10/05/21	—	FD	WG	2	G	N	X	
6										
7										
8										
9										
10										
11										
12										

SP 10/5/21

200-60445 Chain of Custody

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex)

Relinquished by: Sarah Travaly	Date 10/5/21	Courier Name: ETA Lock box	Date 10/5/21	Condition:	Other Comments or Notes regarding condition of samples as received:
of: Ramboll	Time 1730	Custody Seal Tracking Number: 163906	Time 1730		
Relinquished by: ETA Lock Box	Date 10/6/21	Received by: Karl Lodin	Date 10/6/21	Custody Seals intact?	
of:	Time 0815	of: Curtin	Time 0815	1700124	
Relinquished by: Karl Lodin	Date 10/6/21	Received by: Via fedex	Date 10/7/21	Cooler Temperature:	
of: Curtin	Time 1700	of:	Time 9:45	ID#9-1.6= 1.1	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify):
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

Chain of Custody/Analysis Report

Page 1 of 1

RAMBOLL

Sampler(s): (Signature) Robert Hornung, Sarah Travaly

Lab Use Only

Project Number:

Job Number:

Lab ID:

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: PaulD'Annibale@ramboll.com Amy.SpoonerStevens@ramboll.com

Project: KAPL - KS Emerging Contaminants Sampling
Location: Kesselring Site, West Milton, N.Y.
Project #: 1940101245

Laboratory: TestAmerica Laboratory
880 Riverside Pkwy
West Sacramento, CA, 95605
Attn: Kathryn Kelly
Phone: 802-923-4021

Holding Time: 14 days from sample collection to analysis (PFAS)

Package Requirement: NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in excel tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab or Composite (C)	Field Filtered (Y/N)	Analysis Required: PFAS (21 Compounds) by USEPA Modified Method 537	Lab Sample ID
	Preservatives: (see key at bottom)					0				
1	KS-EC-MW-17-100721	10/07/21	10:15	N	WG	2	G	N	X	
2	KS-EC-FRBO3-100721	10/07/21	10:25	FB	WQ	2	G	N	X	
3	KS-EC-MW-16-100721	10/07/21	11:55	N	WG	2	G	N	X	
4	KS-EC-MW-1-100721	10/07/21	13:45	N	WG	2	G	N	X	
5	KS-EC-MW-1-100721-MS	10/07/21	13:45	MS	WQ	2	G	N	X	
6	KS-EC-MW-1-100721-MSD	10/07/21	13:45	MS	WQ	2	G	N	X	
7	KS-EC-EBW01-100721	10/07/21	14:05	EB	WQ	2	G	N	X	
8	KS-EC-EBW02-100721	10/07/21	14:20	EB	WQ	2	G	N	X	
9	KS-EC-MW-12-100721	10/07/21	15:20	N	WG	2	G	N	X	
10										
11										
12										

200-60492 Chain of Custody

Page 3827 of 3847

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: [illegible] of:	Date: Time:	Courier Name: Tracking Number:	Date: Time:	Condition:	Other Comments or Notes regarding condition of samples as received:
Relinquished by: Sarah Travaly of: Ramboll	Date: 10-7-21 Time: 1640	Received by: [signature] of: EETA	Date: 10-7-21 Time: 1640	Custody Seals intact: Y	
Relinquished by: [signature] of: EETA	Date: 10-8-2021 Time: 1700	Received by: [signature] of: EPSC	Date: 10/9/21 Time: 925	Cooler Temperature:	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify):
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

* container label omits 100721 from sample ID. 1 of 2 containers, Logged & labeled per OC, NC 10-11-21

1.3°C

Chain of Custody/Analysis Report

RAMBOLL

Page 1 of 1

Lab Use Only

Project Number:

Job Number:

Lab ID: 200-60492

Sampler(s): (Signature) Robert Hornung, Sarah Travaly

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Project: KAPL - KS Emerging Contaminants Sampling
Location: Kesselring Site, West Milton, N.Y.
Project #: 1940101245

Laboratory:
Test America Laboratory
777 New Durham Rd
Edison, NJ 08817
Attn: Kathryn Kelly
Phone:
802-923-1021

Holding Time: 7 days from sample collection to analysis (1,4-dioxane)

Package Requirement: NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab G or Composite C	Field Filtered Y / N	Analysis Required: Preservatives (see key at bottom): 0	1,4-Dioxane by USEPA Method 8270 SIM	Lab Sample ID
1	KS-EC-MW-17-100721	10/07/21	10:15	N	WG	2	G	N		X	1
2	KS-EC-MW-16-100721	10/07/21	11:55	N	WG	2	G	N		X	2
3	KS-EC-MW-1-100721	10/07/21	13:45	N	WG	2	G	N		X	3
4	KS-EC-MW-1-100721-MS	10/07/21	13:45	MS	WQ	2	G	N		X	3
5	KS-EC-MW-1-100721-MSD	10/07/21	13:45	MS	WQ	2	G	N		X	3
6	KS-EC-EBW01-100721	10/07/21	14:05	EB	WQ	2	G	N		X	4
7	KS-EC-EBW02-100721	10/07/21	14:20	EB	WQ	2	G	N		X	5
8	KS-EC-MW-12-100721	10/07/21	15:20	N	WG	2	G	N		X	6
9											
10											
11											
12											

TAT 10-7-2021

200-60492 Chain of Custody

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:	Date: Time:	Courier Name: Tracking Number:	Date: Time:	Condition:	Other Comments or Notes regarding condition of samples as received:
Relinquished by: Sarah Travaly of: Ramboll	Date 10-7-21 Time 1640	Received by: of: EEVA	Date 10-7-21 Time 1640	Custody Seals intact? Y	700150
Relinquished by: of: EEVA	Date 10-8-2021 Time 1302	Received by: of: TAT/FedEx	Date 10/9/21 Time 1500	Cooler Temperature: IR9 2.5/2.0°C	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify):
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

Chain of Custody/Analysis Report

RAMBOLL

Page 1 of 1

Sampler(s): Robert Hornung (Signature) — Sarah Travaly

Lab Use Only

Contact: Paul D'Annibale, Amy Spooner Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner.Stevens@ramboll.com

Project: KAPL - KS Emerging Contaminants Sampling
Location: Kesselring Site, West Milton, N.Y.
Project #: 1940101245

Laboratory:
Test America Laboratory
880 Riverside Pkwy
West Sacramento, CA, 95605

Attn: Kathryn Kelly
Phone:
802-923-1021

Holding Time:
14 days from sample collection to analysis

Package Requirement:
NYSDEC Full ASP Cat B Data Package with a std 30 business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Project Number:

Job Number:

Lab ID:

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab or Composite (C)	Field Filtered (Y/N)	Analysis Required: Preservatives (see key at bottom): 0 — PFAS 21 Compounds by USEPA Modified Method 537	Lab Sample ID
1	KS-EC-MW-4-100821	10/08/21	10:15	N	WG	2	G	N	X	
2	KS-EC-FRB04-100821	10/08/21	10:25	FB	WQ	2	G	N	X	
3										
4										
5				TRG						
6										
7										
8										
9				10-8-2021						
10										
11										
12										

Albany #224

200-60493 Chain of Custody

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Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex)	Date	Courier Name:	Date	Condition:	Other Comments or Notes regarding condition of samples as received:
Relinquished by:	Time	Tracking Number:	Time		
Relinquished by: Sarah Travaly	Date 10-8-21	Received by: Tim Mahler	Date 10-8-2021	Custody Seals intact?	
of: Ramboll	Time 1355	of: EFTA	Time 1355		
Relinquished by: Tim Mahler	Date 10-8-2021	Received by:	Date 10/9/21	Cooler Temperature:	
of: EFTA	Time 1700	of: ETDSL	Time 925		

Sample Type: N = Normal env. sample, FD = field duplicate, FB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify):
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

1.3

RAMBOLL

Chain of Custody/Analysis Report

Page 1 of 1

Sampler(s): Robert Hornung   Sarah Travaly
(Signature) [signature]   [signature]

Lab Use Only

Project Number:

Job Number:

Lab ID:

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Project: KAPL - KS Emerging Contaminants Sampling
Location: Kesselring Site, West Milton, N.Y
Project #: 1940101245

Laboratory:
Test America Laboratory
777 New Durham Rd
Edison, NJ 08817
Attn: Kathryn Kelly
Phone:
802-923-1021

Holding Time:
7 days from sample collection to analysis

Package Requirement:
NYSDEC Full ASP Cat B Data Package with a std 10 business day TAT, prelim analytical results provided in pivot tables

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Analysis Required
Preservatives: (see key at bottom)

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab (G) or Composite (C)	Field Filtered? Y/N	1,4-Dioxane by USEPA Method 8270 SIM (Preservative 0)								Lab Sample ID
1	KS-EC-MW-4-100821	10/08/21	10:15	N	WG	2	G	N	X								
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	

(Unused rows crossed out: TMK 10-8-2021)

Albany #224

Special Instructions:

Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:	Date / Time	Courier Name: Tracking Number:	Date / Time	Condition:	Other Comments or Notes regarding condition of samples as received: 1-700150
Relinquished by: Sarah Travaly of: Ramboll	Date 10-8-21 Time 1335	Received by: Tim Kuhn of: EETA	Date 10-8-21 Time 1335	Custody Seals intact?	
Relinquished by: Tim Kuhn of: EETA	Date 10-8-2021 Time 1700	Received by: [signature] of: [illegible]	Date 10/9/21 Time 1000	Cooler Temperature: IR4 2.5/2.0	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify)
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

Chain of Custody/Analysis Report

Page 1 of 1

RAMBOLL

Sampler(s): William Pierce, Robert Hornung (WGP), Alexandra Golden (AG) ~~Sarah Travaly~~ (Signature)

Lab Use Only

Project Number:

Job Number:

Lab ID:

Contact: Paul D'Annibale, Amy Spooner-Stevens
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203
Phone: (518) 724-7272
Email: Paul.D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com

Laboratory: TestAmerica Laboratory, 880 Riverside Pkwy, West Sacramento, CA, 95605
Attn: Kathryn Kelly
Phone: 802-923-1021

Holding Time: 14 days from sample collection to analysis (PFAS)

Package Requirement: NYSDEC Full ASP Cat B Data Package with a std ~~turnaround~~ TAT, prelim analytical results provided in pivot tables (5 day TAT)

EDD Format: EQuIS 4-File EDD with NYSDEC EDD reference values

Project: KAPL - KS Emerging Contaminants Sampling
Location: Kesselring Site, West Milton, N.Y.
Project #: 1940101245

Analysis Required

Preservatives (see key at bottom): 0

	Sample Identification: Unique Field Sample ID (sys_sample_code)	Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number of Containers	Grab (G) or Composite (C)	Field Filtered? Y / N	PFAS (21 Compounds) by USEPA Modified Method 537	Lab Sample ID
1	KS-EC-East Ditch-01-120621	12-6-21	1030	N	WS	2	G	N	✓	*
2	*KS-EC-X02-120621		—	FD	WS					*
3	KS-EC-FRB05-120621		1040	FB	WQ					
4	KS-EC-EBW03-120621		1110	EB	WQ					
5	KS-EC-HB-9A-120621		1315	N	WG					
6	KS-EC-HB-9A-120621-MS		1315	MS	WQ					
7	KS-EC-HB-9A-120621-MSD		1315	MS	WQ					
8	KS-EC-FRB06-120621		1305	FB	WQ					
9	KS-EC-HB-8A-120621		1410	N	WG					
10	KS-EC-EBW04-120621	↓	1420	EB	WQ	↓	↓	↓	↓	
11										
12		(WGP)								

Special Instructions: *24 hr TAT on KS-EC-East Ditch-01-120621 & KS-EC-X02-120621

Use this space if shipped via courier (e.g. fed-ex) Relinquished by: (WGP) of:	Date: Time:	Courier Name: (WGP) Tracking Number:	Date: Time:	Condition:	Other Comments or Notes regarding condition of samples as received:
Relinquished by: of: Ramboll	Date: 12-6-21 Time: 1545	Received by: Tim Kneller of: EETA	Date: 12-6-21 Time: 1545	Custody Seals intact?	
Relinquished by: Tim Kneller of: EETA	Date: 12-6-2021 Time: 1700	Received by: of: EET-Sac	Date: 12/7/21 Time: 1150	Cooler Temperature:	

Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipment Blank, TB = Trip Blank, MS = Lab Matrix Spike, Other (Specify)
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Surface Water, WW = Waste Water, WP = Potable Water, SQ = Soil Quality Control, WQ = Water Quality Control
Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

Albany #224

• Both containers time 1350 on 12-7-21

0.90c

Data Summary Table

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

	Area	Hogback Road Landfill Area				
	Location ID	HB-1A	HB-5A2	HB-11A	LMW-4	Field Reagent Blank
	Sample ID	KS-EC-HB-1A-100421	KS-EC-HB-5A2-100421	KS-EC-HB-11A-100421	KS-EC-LMW-4-100421	KS-EC-FRB01-100421
	Sample Date	10/4/2021	10/4/2021	10/4/2021	10/4/2021	10/4/2021
Chemical Name	Proposed Guidance Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.74 U	4.82 U	4.71 U	4.75 U	4.68 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.74 U	4.82 U	4.71 U	4.75 U	4.68 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.74 U	4.82 U	4.71 U	4.75 U	4.68 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.90 U	**1.22 J**	**0.61 J**	**1.22 J**	1.87 U
Perfluorobutanoic acid (PFBA)	NV	4.74 U	**10.7**	4.71 U	**10.1**	4.68 U
Perfluorodecanesulfonic acid (PFDS)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluorodecanoic acid (PFDA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluorododecanoic acid (PFDoA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluoroheptanoic acid (PFHpA)	NV	1.90 U	**7.67**	**0.88 J**	**3.35**	1.87 U
Perfluorohexanesulfonic acid (PFHxS)	NV	1.90 U	**3.11**	**5.90**	**1.54 J**	1.87 U
Perfluorohexanoic acid (PFHxA)	NV	1.90 U	**20.4**	**1.06 J**	**18.7**	1.87 U
Perfluorononanoic acid (PFNA)	NV	1.90 U	**0.46 J**	1.88 U	1.90 U	1.87 U
Perfluorooctanesulfonic acid (PFOS)	2.7	1.90 U	**6.67 ***	**13.6 ***	**9.08 ***	1.87 U
Perfluorooctanoic acid (PFOA)	6.7	1.90 U	**6.31**	**2.12**	**3.67**	1.87 U
Perfluoropentanoic acid (PFPeA)	NV	1.90 U	**24.7**	**1.38 J**	**23.7**	1.87 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U
Perfluroroctanesulfonamide (FOSA)	NV	1.90 U	1.93 U	1.88 U	1.90 U	1.87 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

	Area	Hogback Road Landfill Area			Kesselring Facility Area	
	Location ID	HB-8A	HB-9A	Field Reagent Blank	MW-1	MW-4
	Sample ID	KS-EC-HB-8A-120621	KS-EC-HB-9A-120621	KS-EC-FRB06-120621	KS-EC-MW-1-100721	KS-EC-MW-4-100821
	Sample Date	12/6/2021	12/6/2021	12/6/2021	10/7/2021	10/8/2021
Chemical Name	Proposed Guidance Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.47 U	4.98 U	4.38 U	4.78 U	4.59 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.47 U	4.98 U	4.38 U	4.78 U	4.59 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.47 U	4.98 U	4.38 U	4.78 U	4.59 U
Perfluorobutanesulfonic acid (PFBS)	NV	1.79 U	**0.26 J**	1.75 U	**0.52 J**	**2.77**
Perfluorobutanoic acid (PFBA)	NV	4.47 U	4.98 U	4.38 U	**5.05**	**10.4**
Perfluorodecanesulfonic acid (PFDS)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
Perfluorodecanoic acid (PFDA)	NV	1.79 U	1.99 U	1.75 U	1.91 U	**1.05 J**
Perfluorododecanoic acid (PFDoA)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
Perfluoroheptanoic acid (PFHpA)	NV	**0.55 J**	**0.97 J**	1.75 U	**3.28**	**8.77**
Perfluorohexanesulfonic acid (PFHxS)	NV	**1.10 J**	**1.06 J**	1.75 U	**1.14 J**	**1.51 J**
Perfluorohexanoic acid (PFHxA)	NV	**0.84 J**	**2.15**	1.75 U	**4.30**	**14.3**
Perfluorononanoic acid (PFNA)	NV	1.79 U	1.99 U	1.75 U	**0.80 J**	**3.27**
Perfluorooctanesulfonic acid (PFOS)	2.7	**1.89**	**0.89 J**	1.75 U	**2.18**	**6.44 ***
Perfluorooctanoic acid (PFOA)	6.7	**1.83**	**2.23**	1.75 U	**4.46**	**12.1 ***
Perfluoropentanoic acid (PFPeA)	NV	**1.07 J**	**2.36**	1.75 U	**11.9**	**17.5**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.79 U	1.99 U	**0.69 J**	1.91 U	1.84 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U
Perfluroroctanesulfonamide (FOSA)	NV	1.79 U	1.99 U	1.75 U	1.91 U	1.84 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

	Area	Kesselring Facility Area				
	Location ID	MW-6	MW-10	MW-12	MW-15	MW-15
	Sample ID	KS-EC-MW-6-100521	KS-EC-MW-10-100521	KS-EC-MW-12-100721	KS-EC-MW-15-100521	KS-EC-X01-100521
	Sample Date	10/5/2021	10/5/2021	10/7/2021	10/5/2021	10/5/2021
Chemical Name	Proposed Guidance Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	**5.98**	4.56 U	4.75 U	4.77 U	4.63 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	**20.4**	1.82 U	1.90 U	**34.9**	**34.3**
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.66 U	4.56 U	4.75 U	4.77 U	4.63 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.66 U	4.56 U	4.75 U	4.77 U	4.63 U
Perfluorobutanesulfonic acid (PFBS)	NV	**1.80 J**	**1.16 J**	**0.73 J**	**3.17**	**3.23**
Perfluorobutanoic acid (PFBA)	NV	**8.07**	4.56 U	4.75 U	**9.01**	**8.86**
Perfluorodecanesulfonic acid (PFDS)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U
Perfluorodecanoic acid (PFDA)	NV	**0.89 J**	**1.95**	1.90 U	**0.85 J**	**0.88 J**
Perfluorododecanoic acid (PFDoA)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	**1.39 J**	1.82 U	1.90 U	1.91 U	1.85 U
Perfluoroheptanoic acid (PFHpA)	NV	**10.0**	**2.38**	1.90 U	**5.26**	**5.22**
Perfluorohexanesulfonic acid (PFHxS)	NV	**8.95**	**0.92 J**	1.90 U	**2.39**	**2.25**
Perfluorohexanoic acid (PFHxA)	NV	**11.5**	**1.56 J**	1.90 U	**10.9**	**10.6**
Perfluorononanoic acid (PFNA)	NV	**5.17**	**1.70 J**	1.90 U	**5.68**	**5.52**
Perfluorooctanesulfonic acid (PFOS)	2.7	**327 ***	**67.2 ***	**2.49**	**16.4 ***	**15.4 ***
Perfluorooctanoic acid (PFOA)	6.7	**11.3 ***	**1.96**	**0.96 J**	**9.58 ***	**9.44 ***
Perfluoropentanoic acid (PFPeA)	NV	**20.0**	**1.06 J**	1.90 U	**16.1**	**15.4**
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U
Perfluroroctanesulfonamide (FOSA)	NV	1.87 U	1.82 U	1.90 U	1.91 U	1.85 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

	Area	Kesselring Facility Area				
	Location ID	MW-16	MW-17	MW-18	Field Reagent Blank	Field Reagent Blank
	Sample ID	KS-EC-MW-16-100721	KS-EC-MW-17-100721	KS-EC-MW-18-100521	KS-EC-FRB02-100521	KS-EC-FRB03-100721
	Sample Date	10/7/2021	10/7/2021	10/5/2021	10/5/2021	10/7/2021
Chemical Name	Proposed Guidance Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.72 U	4.84 U	4.81 U	4.60 U	4.90 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.89 U	1.94 U	**1.33 J**	1.84 U	1.96 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.72 U	4.84 U	4.81 U	4.60 U	4.90 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.72 U	4.84 U	4.81 U	4.60 U	4.90 U
Perfluorobutanesulfonic acid (PFBS)	NV	**3.52**	1.94 U	**3.04**	1.84 U	1.96 U
Perfluorobutanoic acid (PFBA)	NV	**6.81**	4.84 U	**5.48**	4.60 U	4.90 U
Perfluorodecanesulfonic acid (PFDS)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluorodecanoic acid (PFDA)	NV	1.89 U	1.94 U	**1.22 J**	1.84 U	1.96 U
Perfluorododecanoic acid (PFDoA)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluoroheptanoic acid (PFHpA)	NV	**2.98**	**0.53 J**	**9.54**	1.84 U	1.96 U
Perfluorohexanesulfonic acid (PFHxS)	NV	**0.83 J**	**1.32 J**	**2.18**	1.84 U	1.96 U
Perfluorohexanoic acid (PFHxA)	NV	**6.92**	**0.82 J**	**7.29**	1.84 U	1.96 U
Perfluorononanoic acid (PFNA)	NV	**0.71 J**	**0.41 J**	**4.61**	1.84 U	1.96 U
Perfluorooctanesulfonic acid (PFOS)	2.7	**2.63 EMPC**	**3.24 ***	**21.9 ***	1.84 U	1.96 U
Perfluorooctanoic acid (PFOA)	6.7	**6.61**	**2.24**	**14.0 ***	1.84 U	1.96 U
Perfluoropentanoic acid (PFPeA)	NV	**8.22**	**0.94 J**	**9.12**	1.84 U	1.96 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U
Perfluroroctanesulfonamide (FOSA)	NV	1.89 U	1.94 U	1.92 U	1.84 U	1.96 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

	Area	Kesselring Facility Area	East Ditch Area			Equipment Blank
	Location ID	Field Reagent Blank	EASTDITCH-01	EASTDITCH-01	Field Reagent Blank	Equipment Blank
	Sample ID	KS-EC-FRB04-100821	KS-EC-EASTDITCH-01-120621	KS-EC-X02-120621	KS-EC-FRB05-120621	KS-EC-EBW01-100721
	Sample Date	10/8/2021	12/6/2021	12/6/2021	12/6/2021	10/7/2021
Chemical Name	Proposed Guidance Values					
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	4.32 U	4.40 U	4.47 U	4.56 U	4.61 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	4.32 U	4.40 U	4.47 U	4.56 U	4.61 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	4.32 U	4.40 U	4.47 U	4.56 U	4.61 U
Perfluorobutanesulfonic acid (PFBS)	NV	**0.22 J**	**0.81 J**	**0.90 J**	1.82 U	1.85 U
Perfluorobutanoic acid (PFBA)	NV	4.32 U	**3.22 J**	**3.89 J**	4.56 U	4.61 U
Perfluorodecanesulfonic acid (PFDS)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluorodecanoic acid (PFDA)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluorododecanoic acid (PFDoA)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluoroheptanoic acid (PFHpA)	NV	1.73 U	**1.93**	**2.57**	1.82 U	1.85 U
Perfluorohexanesulfonic acid (PFHxS)	NV	1.73 U	**3.07**	**2.99**	1.82 U	1.85 U
Perfluorohexanoic acid (PFHxA)	NV	1.73 U	**3.32**	**3.05**	1.82 U	1.85 U
Perfluorononanoic acid (PFNA)	NV	1.73 U	**0.47 J**	**0.50 J**	1.82 U	1.85 U
Perfluorooctanesulfonic acid (PFOS)	2.7	1.73 U	**7.01 ***	**6.55 ***	1.82 U	1.85 U
Perfluorooctanoic acid (PFOA)	6.7	1.73 U	**2.82**	**2.74**	1.82 U	1.85 U
Perfluoropentanoic acid (PFPeA)	NV	1.73 U	**5.00**	**5.32**	1.82 U	1.85 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	1.73 U	1.76 U	1.79 U	**0.89 J**	1.85 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U
Perfluroroctanesulfonamide (FOSA)	NV	1.73 U	1.76 U	1.79 U	1.82 U	1.85 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1a
Groundwater Sampling Results - Per- and Polyfluoroalkyl Substances

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

	Area	Equipment Blank		
	Location ID	Equipment Blank	Equipment Blank	Equipment Blank
	Sample ID	KS-EC-EBW02-100721	KS-EC-EBW03-120621	KS-EC-EBW04-120621
	Sample Date	10/7/2021	12/6/2021	12/6/2021
Chemical Name	Proposed Guidance Values			
6:2 Fluorotelomer sulfonate (6:2 FTS)	NV	5.00 U	4.25 U	4.45 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	NV	2.00 U	1.70 U	1.78 U
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	NV	5.00 U	4.25 U	4.45 U
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	NV	5.00 U	4.25 U	4.45 U
Perfluorobutanesulfonic acid (PFBS)	NV	2.00 U	1.70 U	1.78 U
Perfluorobutanoic acid (PFBA)	NV	5.00 U	4.25 U	4.45 U
Perfluorodecanesulfonic acid (PFDS)	NV	2.00 U	1.70 U	1.78 U
Perfluorodecanoic acid (PFDA)	NV	2.00 U	1.70 U	1.78 U
Perfluorododecanoic acid (PFDoA)	NV	2.00 U	1.70 U	1.78 U
Perfluoroheptanesulfonic acid (PFHpS)	NV	2.00 U	1.70 U	1.78 U
Perfluoroheptanoic acid (PFHpA)	NV	2.00 U	1.70 U	1.78 U
Perfluorohexanesulfonic acid (PFHxS)	NV	2.00 U	1.70 U	1.78 U
Perfluorohexanoic acid (PFHxA)	NV	2.00 U	1.70 U	1.78 U
Perfluorononanoic acid (PFNA)	NV	2.00 U	1.70 U	1.78 U
Perfluorooctanesulfonic acid (PFOS)	2.7	2.00 U	1.70 U	1.78 U
Perfluorooctanoic acid (PFOA)	6.7	2.00 U	1.70 U	1.78 U
Perfluoropentanoic acid (PFPeA)	NV	2.00 U	1.70 U	1.78 U
Perfluorotetradecanoic acid (PFTA/PFTeA)	NV	2.00 U	**0.79 J**	**0.70 J**
Perfluorotridecanoic acid (PFTriA/PFTrDA)	NV	2.00 U	1.70 U	1.78 U
Perfluoroundecanoic acid (PFUA/PFUdA)	NV	2.00 U	1.70 U	1.78 U
Perfluroroctanesulfonamide (FOSA)	NV	2.00 U	1.70 U	1.78 U

Notes: 1. Results and regulatory criteria are in nanograms per liter (ng/L). "U" indicates analyte not detected. "J" indicates analyte detected at an estimated concentration. "EMPC" indicates the result is estimated maximum possible concentration. Internal laboratory qualifiers are not reported. Detections are bolded.

2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.

3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. “NV" indicates there are no proposed guidance values available. Exceedances of proposed guidance values are marked with “*”.

Table 1b
Groundwater Sampling Results - 1,4-Dioxane

Emerging Contaminant Sampling
Knolls Atomic Power Laboratory - Kesselring Site
West Milton, New York

Area		Hogback Road Landfill Area				Kesselring Facility Area	
Location ID		HB-11A	HB-1A	HB-5A2	LMW-4	MW-1	MW-4
Sample ID		KS-EC-HB-11A-100421	KS-EC-HB-1A-100421	KS-EC-HB-5A2-100421	KS-EC-LMW-4-100421	KS-EC-MW-1-100721	KS-EC-MW-4-100821
Sample Date		10/4/2021	10/4/2021	10/4/2021	10/4/2021	10/7/2021	10/8/2021
Chemical Name	Proposed Guidance Values						
1,4-Dioxane	0.35	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Area		Kesselring Facility Area					
Location ID		MW-6	MW-10	MW-12	MW-15	MW-15	MW-16
Sample ID		KS-EC-MW-6-100521	KS-EC-MW-10-100521	KS-EC-MW-12-100721	KS-EC-MW-15-100521	KS-EC-X01-100521	KS-EC-MW-16-100721
Sample Date		10/5/2021	10/5/2021	10/7/2021	10/5/2021	10/5/2021	10/7/2021
Chemical Name	Proposed Guidance Values						
1,4-Dioxane	0.35	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Area		Kesselring Facility Area		Equipment Blank	
Location ID		MW-17	MW-18	Equipment Blank	Equipment Blank
Sample ID		KS-EC-MW-17-100721	KS-EC-MW-18-100521	KS-EC-EBW01-100721	KS-EC-EBW02-100721
Sample Date		10/7/2021	10/5/2021	10/7/2021	10/7/2021
Chemical Name	Proposed Guidance Values				
1,4-Dioxane	0.35	0.20 U	0.20 U	0.20 U	0.20 U

Notes:
1. Results in micrograms per liter (µg/L). "U" indicates analyte not detected. Internal laboratory qualifiers are not reported. Detections are bolded.
2. Samples analyzed by Eurofins TestAmerica Laboratories, Inc. of Edison, New Jersey using Environmental Protection Agency (EPA)-SW-846 Method 8270E selected ion monitoring (SIM). Results validated by Data Validation Services of North Creek, New York.
3. Proposed guidance values are from the 2021 addendum to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. Exceedances of proposed guidance values are marked with "*".

Appendix B

Field Data Forms

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-4-21	Personnel	RDH/SET	Weather	±65°F, Rain
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	HB-1A
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	13.70	ft.
Depth to Water *	5.14	ft.
Length of Water Column	8.56	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	-	gallons
2" diameter wells = 0.163 x (LWC) =	1.40	gallons
4" diameter wells = 0.653 x (LWC) =	-	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	0944	0957	0959				
End Time	0949	0956	1004				
Gallons Purged	1.40	1.40	1.40				
Temp (C)	14.3	14.3	14.3				
pH	6.05	6.06	6.03				
Spec. Conduc. (mS/cm)	0.093	0.090	0.088				
ORP (mV)	110.2	110.9	114.1				
DO (mg/L)	5.39	5.38	5.71				
Turbidity (NTU)	3.26	1.13	1.07				

Probe type: YSI Quatro + Lamotte Turbidity meter

Appearance at start: clear, no odor

Appearance at end: clear, no odor

Other Observations: Headspace PID reading: 0.0ppm

Amount of water removed: 4.20 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1015

NOTES:

GROUNDWATER SAMPLING FIELD LOG

Date	10-4-21	Personnel	RDH/SET	Weather	±65°F, Rain
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	(S) ~~LWM-4~~ LMW-4
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	15.00	ft.
Depth to Water *	13.17	ft.
Length of Water Column	1.83	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	—	gallons
2" diameter wells = 0.163 x (LWC) =	0.30	gallons
4" diameter wells = 0.653 x (LWC) =	—	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1105	1108	1112				
End Time	1106	1110	1113				
Gallons Purged	0.30	0.30	0.30				
Temp (C)	13.9	14.0	14.1				
pH	6.61	6.69	6.68				
Spec. Conduc. (mS/cm)	0.75	0.65	0.61				
ORP (mV)	99.3	76.1	66.0				
DO (mg/L)	1.71	2.94	3.20				
Turbidity (NTU)	7.01	3.01	2.21				

Probe type: YSI Quatro

Appearance at start: (S) 10/12 clear, no odor, light gray - clear

Appearance at end: clear, no odor

Other Observations: Headspace PID reading: 0.0ppm

Amount of water removed: 0.90 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1125

NOTES:

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-4-21	Personnel	RDH/SET	Weather	±60°F, Rain
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	**HB-11A**
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well * 14.00 ft.

Depth to Water * 8.53 ft.

Length of Water Column 5.47 ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) = -- gallons

2" diameter wells = 0.163 x (LWC) = 0.89 gallons

4" diameter wells = 0.653 x (LWC) = -- gallons

Well evacuation data:

	Well Volumes 1	2	3				
Start Time	1224	1230					
End Time	1227						
Gallons Purged	0.89						
Temp (C)	13.6						
pH	7.02						
Spec. Conduc. (mS/cm)	0.83	SI 10/4/21	SI				
ORP (mV)	98.0						
DO (mg/L)	0.43						
Turbidity (NTU)	8.64						

Probe type: YSI Quatro + Lamotte Turbidity meter

Appearance at start: Clear, no odors

Appearance at end: Clear, no odors

Other Observations: Headspace PID reading: 0.0ppm

Amount of water removed: 1.11 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537

1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1245

NOTES: Well purged dry after purging 1.75 well volumes. Allow well to recharge prior to sampling.

GROUNDWATER SAMPLING FIELD LOG

Date	10-4-21	Personnel	RDH/SET	Weather	±60°F, rain
Site Name	KS EC Sampling	Evacuation Method	~~Peristaltic~~ Hand Pump w/ foot valve	Well #	HB-5A2
Site Location	West Milton, NY	Sampling Method	~~Peristaltic~~ Hand Pump w/ foot valve	Project #	1940101245

Well information:

Depth of Well *	10/4/21 (ST) 43.69 ~~40.50~~	ft.
Depth to Water *	40.42	ft.
Length of Water Column	3.27	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	—	gallons
2" diameter wells = 0.163 x (LWC) =	0.53	gallons
4" diameter wells = 0.653 x (LWC) =	—	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1350	1357	1407				
End Time	1354	1404	1413				
Gallons Purged	0.53	0.53	0.53				
Temp (C)	12.0	12.1	11.2				
pH	6.60	6.70	6.65				
Spec. Conduc. (mS/cm)	1.08	1.08	1.08				
ORP (mV)	91.0	70.3	61.5				
DO (mg/L)	2.51	3.53	2.88				
Turbidity (NTU)	28.6	61.2	26.1				

Probe type: YSI Quatro + Lamotte Turbidity Meter

Appearance at start: Light brown, metallic odor

Appearance at end: Light brown, Slight metallic odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 1.59 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1420

NOTES: Not enough head differential to use peri pump. Hand pump w/ stainless steel foot valve instead. Foot valve deionized prior to use.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-5-21	Personnel	RDH/SET	Weather	±55°F, overcast
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-15
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	15.10 ~~14.00 + stickup~~ (ST 10/1/21)	ft.	* Measurements taken from
Depth to Water *	6.58	ft.	x Top of Well Casing
Length of Water Column	8.52	ft.	Top of Protective Casing
			(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	--	gallons
2" diameter wells = 0.163 x (LWC) =	1.39	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	0958	1007	1018				
End Time	1004	1015	1026				
Gallons Purged	1.39	1.39	1.39				
Temp (C)	16.9	16.6	16.5				
pH	7.24	7.32	7.34				
Spec. Conduc. (mS/cm)	5.27	4.83	5.04				
ORP (mV)	-24.3	-53.6	-65.5				
DO (mg/L)	0.22	0.30	0.23				
Turbidity (NTU)	4.63	4.09	2.67				

Probe type: YSI Quatro + Lamotte Turbidity Meter

Appearance at start: ~~brown~~ yellow (10/5/21), no odor

Appearance at end: light yellow, no odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 4.17 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1040

NOTES: Collect Field DUP XO1 at this location for PFAS and 1,4-Dioxane

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-5-21	Personnel	RDH/SET	Weather	≈60°F, Overcast
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-18
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	18.10	ft.
Depth to Water *	6.80	ft.
Length of Water Column	11.30	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	–	gallons
2" diameter wells = 0.163 x (LWC) =	1.84	gallons
4" diameter wells = 0.653 x (LWC) =	–	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1228	1239	1249				
End Time	1236	1247	1257				
Gallons Purged	1.84	1.84	1.84				
Temp (C)	16.5	16.5	16.4				
pH	7.20	7.27	7.29				
Spec. Conduc. (mS/cm)	0.79	0.85	0.86				
ORP (mV)	−0.2	−44.6	−48.7				
DO (mg/L)	0.35	0.15	0.12				
Turbidity (NTU)	4.31	1.58	1.25				

Probe type: YSI Quatro + Lamotte Turbidity Meter

Appearance at start: Light brown, no odor

Appearance at end: Clear, no oder

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 5.52 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1300

NOTES: Development tubing in well (HDPE). Leave in well in place during purging and sampling.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-5-21	Personnel	RDH/SET	Weather	±55°F, overcast
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-10
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	~~11.80~~ 12.00 (S) 10/5/21	ft.	* Measurements taken from
Depth to Water *	4.20	ft.	x Top of Well Casing
Length of Water Column	7.80	ft.	Top of Protective Casing
			(Other, Specify)

1" diameter wells = 0.041 x (LWC) = -- gallons
2" diameter wells = 0.163 x (LWC) = 1.27 gallons
4" diameter wells = 0.653 x (LWC) = -- gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1432	1439	1447				
End Time	1436	1444	1452				
Gallons Purged	1.27	1.27	1.27				
Temp (C)	19.1	19.0	19.0				
pH	7.55	7.45	7.43				
Spec. Conduc. (mS/cm)	0.438	0.498	0.497				
ORP (mV)	62.0	65.7	67.7				
DO (mg/L)	7.42	7.01	6.93				
Turbidity (NTU)	20.6	20.6	29.6				

Probe type: YSI Quatro + Lamotte Turbidy meter
Appearance at start: Light brown, no odor
Appearance at end: Light brown, no odor
Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 3.81 gallons
Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1500

NOTES: Bailer in well. Remove to purge and sample, then replace.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-5-21	Personnel	RDH/SET	Weather	±55°F, overcast
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-6
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	~~13.90~~ 14.0	ft.	* Measurements taken from
Depth to Water *	0.36	ft.	x Top of Well Casing
Length of Water Column	13.64	ft.	Top of Protective Casing
			(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	--	gallons
2" diameter wells = 0.163 x (LWC) =	2.22	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1537	1547	1556				
End Time	1545	1554	1603				
Gallons Purged	2.22	2.22	2.22				
Temp (C)	19.1	19.1	19.1				
pH	7.37	7.40	7.40				
Spec. Conduc. (mS/cm)	2.94	2.96	2.97				
ORP (mV)	49.2	33.0	24.7				
DO (mg/L)	1.34	0.12	0.08				
Turbidity (NTU)	36.8	9.33	4.47				

Probe type: YSI Quatro + Lamotte Turbidity Meter

Appearance at start: Gray, no odor

Appearance at end: Clear, no odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 6.66 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1610

NOTES: Tubing in well (HDPE). Leave in place in well during purging and sampling.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-7-21	Personnel	RDH/SET	Weather	±55°F, overcast + foggy
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-17
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	15.50 ~~15.47~~ (ST) 10/7/21	ft.	* Measurements taken from
Depth to Water *	12.31	ft.	x Top of Well Casing
Length of Water Column	3.19	ft.	Top of Protective Casing
			(Other, Specify)

1" diameter wells = 0.041 x (LWC) = -- gallons
2" diameter wells = 0.163 x (LWC) = 0.52 gallons
4" diameter wells = 0.653 x (LWC) = -- gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	0935	0940	0944				
End Time	0937	0943	0946				
Gallons Purged	0.52	0.52					
Temp (C)	16.6	16.4					
pH	7.43	7.39	10/7/21 (ST)				
Spec. Conduc. (mS/cm)	0.84	1.00					
ORP (mV)	109.5	109.2					
DO (mg/L)	4.23	2.88					
Turbidity (NTU)	4.60	6.49					

Probe type: YSI Quatro + Lamotte Turbidity meter
Appearance at start: Clear, no odor
Appearance at end: Clear, no odor

Other Observations: Headspace PID reading: 0.0ppm

Amount of water removed: 1.17 gallons
Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1015

NOTES: Purged well dry after removing 2.75 well volumes. Allow well to recover prior to sampling.

Tubing in well removed prior to purging/sampling and then placed back in well.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-7-21	Personnel	RDH/SET	Weather	±55°F, foggy
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-16
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	~~18.08~~ 18.10 (ST) 10/7/21	ft.	* Measurements taken from
Depth to Water *	11.13	ft.	x Top of Well Casing
Length of Water Column	6.97	ft.	Top of Protective Casing
			(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	--	gallons
2" diameter wells = 0.163 x (LWC) =	1.14	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1114	1123					
End Time	1121	1131					
Gallons Purged	1.14	1.14					
Temp (C)	17.5	16.7					
pH	7.31	7.35	10/7/21 (ST)				
Spec. Conduc. (mS/cm)	3.41	3.17					
ORP (mV)	111.7	109.4					
DO (mg/L)	1.80	5.12					
Turbidity (NTU)	4.86	1.49					

Probe type: YSI Quatro + Lamotte Turbidity Meter

Appearance at start: clear, no odors

Appearance at end: clear, no odors

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 3.14 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1155

NOTES: well purged dry after removing 2 well volumes. Allow well to recover prior to collecting sample

Bailer in well removed prior to purging/sampling and then replaced.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-7-21	Personnel	RDH/SET	Weather	±60°F, Sunny
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-1
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	~~18.80~~ 19.00	ft.	* Measurements taken from
Depth to Water *	14.65	ft.	x Top of Well Casing
Length of Water Column	4.35	ft.	Top of Protective Casing
			(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	--	gallons
2" diameter wells = 0.163 x (LWC) =	0.71	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1312	1319	1326				
End Time	1316	1324	1331				
Gallons Purged	0.71	0.71	0.71				
Temp (C)	15.5	15.9	16.0				
pH	7.45	7.22	7.22				
Spec. Conduc. (mS/cm)	4.89	3.48	3.75				
ORP (mV)	111.6	110.9	111.3				
DO (mg/L)	0.74	6.44	6.40				
Turbidity (NTU)	9.48	6.41	4.59				

Probe type: YSI Quatro + Lamotte turbidity meter

Appearance at start: Light gray, no odor

Appearance at end: clear, no odor

Other Observations: Headspace PID reading: 0.0ppm

Amount of water removed: 2.13 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1345

NOTES: Collect MS/MSD at this location for PFAS and 1,4-Dioxane.

Bailer in well removed prior to purging/sampling and then replaced.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-7-21	Personnel	RDH/SET	Weather	±60°F, Sunny
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-12
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	~~17.58~~ 17.60 (RH) 10/7/21	ft.
Depth to Water *	10.62	ft.
Length of Water Column	6.98	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	--	gallons
2" diameter wells = 0.163 x (LWC) =	1.14	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1451	1458	1506				
End Time	1455	1503	1511				
Gallons Purged	1.14	1.14	1.14				
Temp (C)	16.0	15.7	15.2				
pH	7.89	~~7.78~~ 7.96	7.92				
Spec. Conduc. (mS/cm)	0.84	0.85	0.82				
ORP (mV)	101.8	97.9	97.6				
DO (mg/L)	8.53	8.05	8.84				
Turbidity (NTU)	4.71	23.4	4.26				

Probe type: YSI Quatro + Lamotte Turbidity meter

Appearance at start: clear, no odor

Appearance at end: clear, no odor

Other Observations: Headspace PID reading: 0.0ppm

Amount of water removed: 3.42 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1520

NOTES: Tubing in well removed prior to purging/sampling and then replaced.

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	10-8-21	Personnel	RDH/SET	Weather	±60°F, overcast
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	MW-4
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	~~14.30~~ 13.30 (ST) 10/8/21	ft.	* Measurements taken from
Depth to Water *	3.91	ft.	x Top of Well Casing
Length of Water Column	9.39	ft.	Top of Protective Casing
			(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	--	gallons
2" diameter wells = 0.163 x (LWC) =	1.53	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	0929	0951	1000				
End Time	0948	0958	1008				
Gallons Purged	1.53	1.53	1.53				
Temp (C)	17.1	17.1	17.0				
pH	7.96	7.92	7.75				
Spec. Conduc. (mS/cm)	5.89	5.67	7.93				
ORP (mV)	101.9	101.3	101.2				
DO (mg/L)	3.79	3.35	1.79				
Turbidity (NTU)	84.5	36.9	24.6				

Probe type: YSI Quatro + Lamotte Turbidity meter

Appearance at start: Dark brown, no odor

Appearance at end: Clear, no odor

Other Observations: Headspace PID reading: 0.0ppm

Amount of water removed: 4.59 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537; 1,4-Dioxane by USEPA Method 8270 SIM

Sample Time: 1015

NOTES: Bailer in well. Remove during purging/sampling and then replace. Well is quite turbid at beginning. Needed to pull tubing up to avoid clogging line.

RAMBOLL

ENVIRONMENT & HEALTH

PFAS Pre-Sampling Checklist

Site Name: Kesselring Site EC Sampling

Task: 1940101245

Weather (temp/precip): ±65°F, Rain

Date: 10-4-21

Pre-Mobilization:

- [x] The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

- [x] Using white Tyvek®; not using yellow Tyvek®
- [x] Clothing has not been most recently washed with fabric softeners or other treatments
- [x] Clothing has not been permanently chemically treated for insect resistance or UV protection
- [x] Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist
- [x] Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used
- [x] Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

- [x] Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)
- [x] Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist
- [x] Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon
- [x] Waterproof field books, waterproof paper, and Post-It Notes® are not used
- [x] Markers (e.g., Sharpies®) are used only in the staging area or are not used

Sample Containers:

- [x] Water ice is in use only, not chemical (blue) ice packs
- [x] Sample containers have been received and are made of HDPE or polypropylene
- [x] Bottleware for non-drinking water samples do not contain preservative
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering

Equipment Decontamination (as applicable):

- [x] On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
- [x] Alconox®, Liquinox®, Seventh Generation™, and Citranox® are being used as decontamination cleaning agents; Decon 90® is not being used.

Food Considerations:

- [x] Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
- [x] Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used

Work Area and Vehicle Considerations:

- [x] Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS-containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Jack Yaully

Field Team Leader Name and Signature

0907

Time

RAMBOLL

ENVIRONMENT & HEALTH

PFAS Pre-Sampling Checklist

Site Name: Kesselring Site EC Sampling

Task: 1940101245

Weather (temp/precip): ±55°F, overcast light rain

Date: 10-5-21

Pre-Mobilization:

- [x] The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

- [x] Using white Tyvek®; not using yellow Tyvek®
- [x] Clothing has not been most recently washed with fabric softeners or other treatments
- [x] Clothing has not been permanently chemically treated for insect resistance or UV protection
- [x] Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist
- [x] Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used
- [x] Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

- [x] Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)
- [x] Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist
- [x] Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon
- [x] Waterproof field books, waterproof paper, and Post-It Notes® are not used
- [x] Markers (e.g., Sharpies®) are used only in the staging area or are not used

Sample Containers:

- [x] Water ice is in use only, not chemical (blue) ice packs
- [x] Sample containers have been received and are made of HDPE or polypropylene
- [x] Bottleware for non-drinking water samples do not contain preservative
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering

Equipment Decontamination (as applicable):

- [x] On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
- [x] Alconox®, Liquinox®, Seventh Generation™, and Citranox® are being used as decontamination cleaning agents; Decon 90® is not being used.

Food Considerations:

- [x] Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
- [x] Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used

Work Area and Vehicle Considerations:

- [x] Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS-containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Jack Yeuly

Field Team Leader Name and Signature

0853

Time

RAMBOLL

ENVIRONMENT & HEALTH

PFAS Pre-Sampling Checklist

Site Name: Kesselring Site EC Sampling

Task: 1940101245

Weather (temp/precip): ±55°F, overcast foggy

Date: 10-7-21

Pre-Mobilization:

- [x] The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

- [x] Using white Tyvek®; not using yellow Tyvek®
- [x] Clothing has not been most recently washed with fabric softeners or other treatments
- [x] Clothing has not been permanently chemically treated for insect resistance or UV protection
- [x] Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist
- [x] Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used
- [x] Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

- [x] Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)
- [x] Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist
- [x] Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon
- [x] Waterproof field books, waterproof paper, and Post-It Notes® are not used
- [x] Markers (e.g., Sharpies®) are used only in the staging area or are not used

Sample Containers:

- [x] Water ice is in use only, not chemical (blue) ice packs
- [x] Sample containers have been received and are made of HDPE or polypropylene
- [x] Bottleware for non-drinking water samples do not contain preservative
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering

Equipment Decontamination (as applicable):

- [x] On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
- [x] Alconox®, Liquinox®, Seventh Generation™, and Citranox® are being used as decontamination cleaning agents; Decon 90® is not being used.

Food Considerations:

- [x] Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
- [x] Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used

Work Area and Vehicle Considerations:

- [x] Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS-containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

Sarah Yeilly

Field Team Leader Name and Signature

0905

Time

RAMBOLL

ENVIRONMENT & HEALTH

PFAS Pre-Sampling Checklist

Site Name: Kesselring Site EC Sampling

Task: 1940101245

Weather (temp/precip): ~60°F, overcast

Date: 10/8/21

Pre-Mobilization:

- [x] The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

- [x] Using white Tyvek®; not using yellow Tyvek®
- [x] Clothing has not been most recently washed with fabric softeners or other treatments
- [x] Clothing has not been permanently chemically treated for insect resistance or UV protection
- [x] Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist
- [x] Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used
- [x] Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

- [x] Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)
- [x] Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist
- [x] Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon
- [x] Waterproof field books, waterproof paper, and Post-It Notes® are not used
- [x] Markers (e.g., Sharpies®) are used only in the staging area or are not used

Sample Containers:

- [x] Water ice is in use only, not chemical (blue) ice packs
- [x] Sample containers have been received and are made of HDPE or polypropylene
- [x] Bottleware for non-drinking water samples do not contain preservative
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering

Equipment Decontamination (as applicable):

- [x] On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
- [x] Alconox®, Liquinox®, Seventh Generation™, and Citranox® are being used as decontamination cleaning agents; Decon 90® is not being used.

Food Considerations:

- [x] Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
- [x] Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used

Work Area and Vehicle Considerations:

- [x] Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS-containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

David Young

Field Team Leader Name and Signature

0858

Time

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	12-6-21	Personnel	AJG / WGP	Weather	~40°, overcast
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	HB-8A
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	11.33	ft.
Depth to Water *	6.77	ft.
Length of Water Column	4.56	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	--	gallons
2" diameter wells = 0.163 x (LWC) =	0.74	gallons x 3 = 2.22gal
4" diameter wells = 0.653 x (LWC) =	--	gallons

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1345	1351	1356				
End Time	1351	1356	1402				
Gallons Purged	0.74	0.74	0.74				
Temp (C)	9.1	9.0	8.9				
pH	7.96	7.32	7.32				
Spec. Conduc. (mS/cm)	414.2	415.5	414.4				
ORP (mV)	328.7	342.0	342.7				
DO (mg/L)	10.91	8.42	9.46				
Turbidity (NTU)	3.88	1.70	0.76				

Probe type: YSI Quatro + Lamotte Turbidimeter

Appearance at start: Clear, No odor

Appearance at end: Clear, No odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 2.50 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537

Sample Time: 1410

NOTES:

RAMBOLL

GROUNDWATER SAMPLING FIELD LOG

Date	12-6-21	Personnel	AJG / WDP	Weather	± 45° overcast
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump	Well #	HB-9A
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump	Project #	1940101245

Well information:

Depth of Well *	23.85	ft.
Depth to Water *	15.40	ft.
Length of Water Column	8.45	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	--	gallons
2" diameter wells = 0.163 x (LWC) =	1.38	gallons
4" diameter wells = 0.653 x (LWC) =	--	gallons

1.38 × 3 = 4.14 - 3 WVs

Well evacuation data:

	Well Volumes						
	1	2	3				
Start Time	1211	1230	1248				
End Time	1230	1248	1303				
Gallons Purged	1.38	1.38	1.39				
Temp (C)	10.1	10.1	10.0				
pH	8.04	7.94	7.68				
Spec. Conduc. (mS/cm)	421.7	349.3	344.8				
ORP (mV)	308.7	319.1	326.8				
DO (mg/L)	17.61	12.99	12.47				
Turbidity (NTU)	1.19	3.50	0.45				

Probe type: YSI Quatro + Lamotte Turbidimeter

Appearance at start: Clear, some small particles vis, bk, no odor

Appearance at end: Clear, no odor

Other Observations: Headspace PID reading: 0.0 ppm

Amount of water removed: 4.15 gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537

Sample Time: 1315

NOTES: PID = 0.0 Sample ID KS-EC-HB-9A-120621

* MS/MSD taken here

RAMBOLL

WGP Surface Water **~~GROUNDWATER DEVELOPMENT~~ FIELD LOG**

Date	12-6-21	Personnel	WGP / AJG	Weather	50°F, cloudy
Site Name	Q3 Yard (AOC-005) RFI Fieldwork Groundwater Investigation	Evacuation Method	NA	~~Well #~~ Sample	East Ditch
Site Location	Niskayuna, NY	Sampling Method	Grab	Project #	1940101245

Well information:

Initial Depth of Well *	NA	ft.
Final Depth of Well *	NA	ft.
Depth to Water *	NA	ft.
Length of Water Column	NA	ft.

* Measurements taken from

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

1" diameter wells = 0.041 x (LWC) =	--	gallons
2" diameter wells = 0.163 x (LWC) =	---	gallons
4" diameter wells = 0.653 x (LWC) =	---	gallons

Well evacuation data:

	Well Volumes						
	1025						
Start Time	-						
End Time	-						
Gallons Purged	-						
Temperature (C)	4.6						
pH	7.76						
Spec. Conduc. (mS/cm)	3142						
Turbidity (NTU)	0.78						
ORP	211.6						

Probe type: YSI Quatro

Appearance at start: Clear, no odor

Appearance at end: -

Other Observations: Headspace PID reading:

Amount of water removed: NA - Grab sample gallons

Depth to water before sampling: NM ft. (below top of inner casing)

Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537

Sample Time: 1030

NOTES: FIELD QC 1040

RAMBOLL

ENVIRONMENT & HEALTH

PFAS Pre-Sampling Checklist

Site Name: Knolls ~~Laboratory~~ EC Sampling (Kesselring) Task: 1940101245

Weather (temp/precip): 50°F. Cloudy Date: 12-6-21

Pre-Mobilization:

- [x] The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature

Field Clothing and PPE:

- [x] Using white Tyvek®; not using yellow Tyvek®
- [x] Clothing has not been most recently washed with fabric softeners or other treatments
- [x] Clothing has not been permanently chemically treated for insect resistance or UV protection
- [x] Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist
- [x] Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used
- [x] Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist

Field Equipment:

- [x] Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)
- [x] Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist
- [x] Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon
- [x] Waterproof field books, waterproof paper, and Post-It Notes® are not used
- [x] Markers (e.g., Sharpies®) are used only in the staging area or are not used

Sample Containers:

- [x] Water ice is in use only, not chemical (blue) ice packs
- [x] Sample containers have been received and are made of HDPE or polypropylene
- [x] Bottleware for non-drinking water samples do not contain preservative
- [x] Caps are unlined and made of HDPE or polypropylene

Wet Weather (as applicable):

- [x] Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering

Equipment Decontamination (as applicable):

- [x] On-site or off-site public or private water, if to be used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above laboratory detection limits).
- [x] Alconox®, Liquinox®, Seventh Generation™, and Citranox® are being used as decontamination cleaning agents; Decon 90® is not being used.

Food Considerations:

- [x] Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
- [x] Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used

Work Area and Vehicle Considerations:

- [x] Work areas, including vehicle interiors if used for sample handling, are covered with HDPE or LDPE plastic to prevent contact with potentially PFAS-containing materials and surfaces

If any applicable boxes cannot be checked, describe deviations below and work with field personnel to address issues prior to commencement of that day's work. Materials present and identified as potentially containing PFAS through use of this checklist should be relocated to the support area or other area of the site away from the sampling locations and noted below.

[signature] 0945

Field Team Leader Name and Signature Time