

DEPARTMENT OF ENERGY

NAVAL REACTORS LABORATORY FIELD OFFICE POST OFFICE BOX 1069 SCHENECTADY, NEW YORK 12301-1069

> 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,

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
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

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

- KAPL. 2021. Emerging Contaminants Sampling 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
- 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

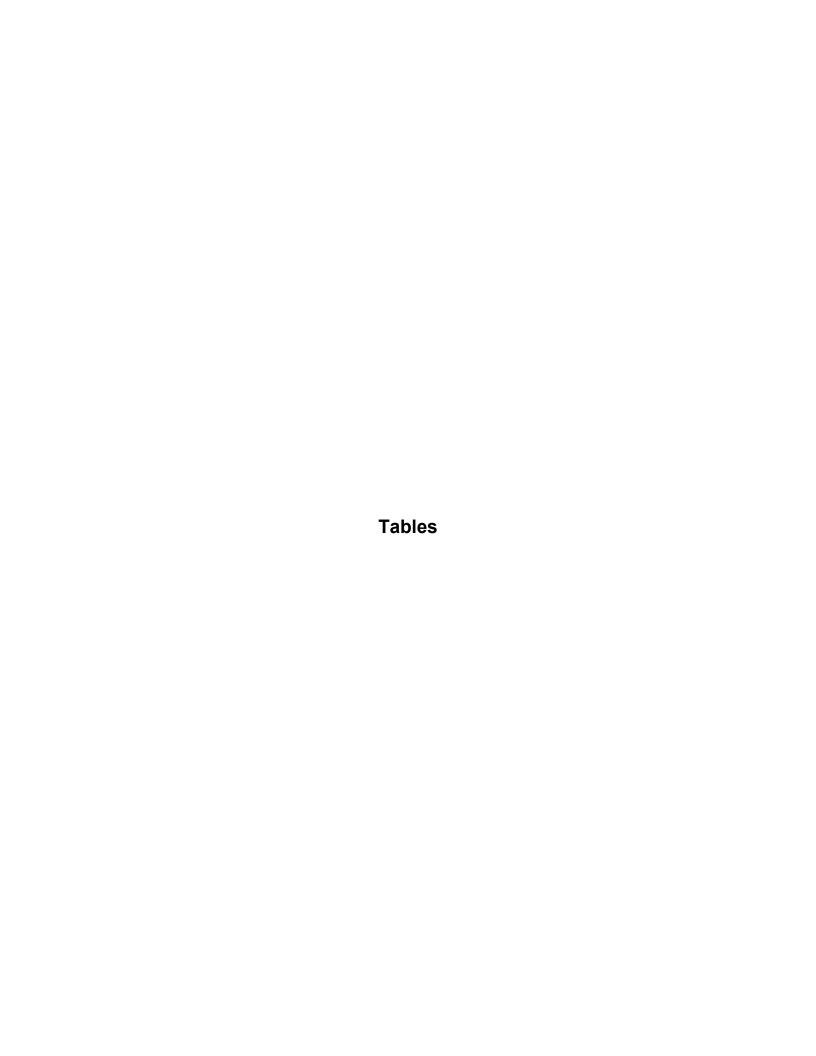


Table 1 **Implementation Summary**

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

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

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.

			APPEAL A					
		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	
	li	Sample Date	9/30/2021	10/1/2021	10/1/2021	10/1/2021	10/1/2021	
	Proposed Guidance	Drinking Water						
Chemical Name	Values	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	<u>13.9 *</u>	1.94 J	1.89 U	6.52 *	
Perfluorooctanoic acid (PFOA)	6.7	10	1.88 U	<u>12.2 *</u>	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	
Perfluroroctanesulfonamide (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.

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	
	Proposed Guidance	Drinking Water						
Chemical Name	Values	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 *	<u>71.7 *</u>	6.70 *	6.77 *	24.0 *	
Perfluorooctanoic acid (PFOA)	6.7	10	8.88 *	<u>34.6 *</u>	<u>10.2 *</u>	7.33 *	<u>12.8 *</u>	
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.

			any day.					
		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	
	1	Sample Date	10/1/2021	12/7/2021	12/8/2021	12/7/2021	12/7/2021	
	Proposed Guidance	Drinking Water						
Chemical Name	Values	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	
Perfluroroctanesulfonamide (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.

		Area				
		Location ID	Q3-MW121	Q3-MW122	Q3-MW187	
		Sample ID	KL-EC-X02-120721 12/7/2021	KL-EC-Q3-MW122-120721	KL-EC-Q3-MW187-120821	
		Sample Date		12/7/2021	12/8/2021	
	Proposed Guidance	Drinking Water				
Chemical Name	Values	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	<u>15.7 *</u>	
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.

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
	Proposed Guidance	Drinking Water					
Chemical Name	Values	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.

[&]quot;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)
DEUnA	Developed Area	16/18	0.27 J to 11.0	1/18
PFHpA	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
PFINA	Undeveloped Area	1/5	0.88 J	0/5
DEDA	Developed Area	5/18	0.33 J to 10.5	1/18
PFDA	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
<u>PFOA</u>	Site Area	1.01 J to 34.6	7/18	5/18
NYS GW GV: 6.7 ng/L	Hillside Area	2.01 to 12.2	1/5	1/5
NYS DW MCL: 10 ng/L	High Yard Area	8.88	1/1	0/1
	Q3 Yard	1.01 J to 34.6	5/12	4/12
<u>PFOS</u>	Site Area	0.99 J to 71.7	8/18	3/18
NYS GW GV: 2.7 ng/L	Hillside Area	1.94 J to 13.9	2/5	1/5
NYS DW MCL: 10 ng/L	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

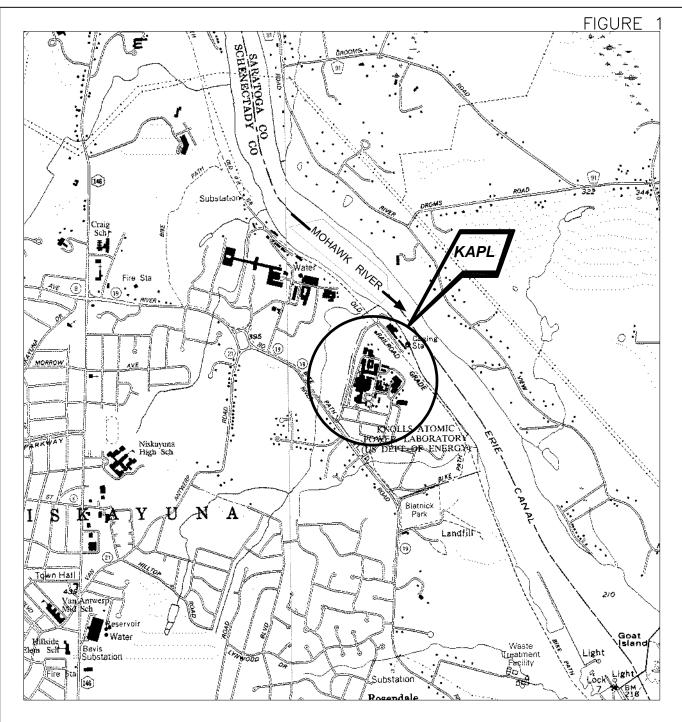
Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory – Knolls Laboratory Niskayuna, New York

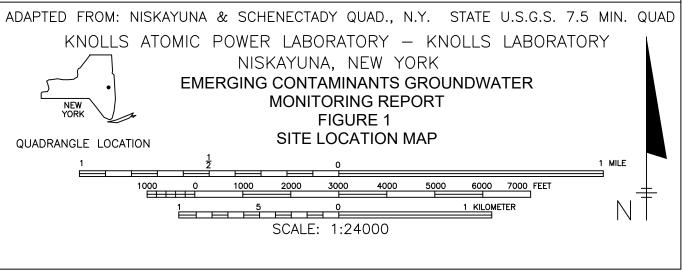
Analyte / Criteria	Area	Range of Detections (ng/L)	Number of Samples > NYS GW GV	Number of Samples > NYS DW MCL
NYS GW GV: 6.7 ng/L NYS DW MCL: 10 ng/L	Closed Landfill	0.92 J to 4.16	0/3	0/3
	Land Disposal Area	2.19 to 4.80	0/2	0/2
PFOS NYS GW GV: 2.7 ng/L NYS DW MCL: 10 ng/L	Closed Landfill	5.35	1/3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

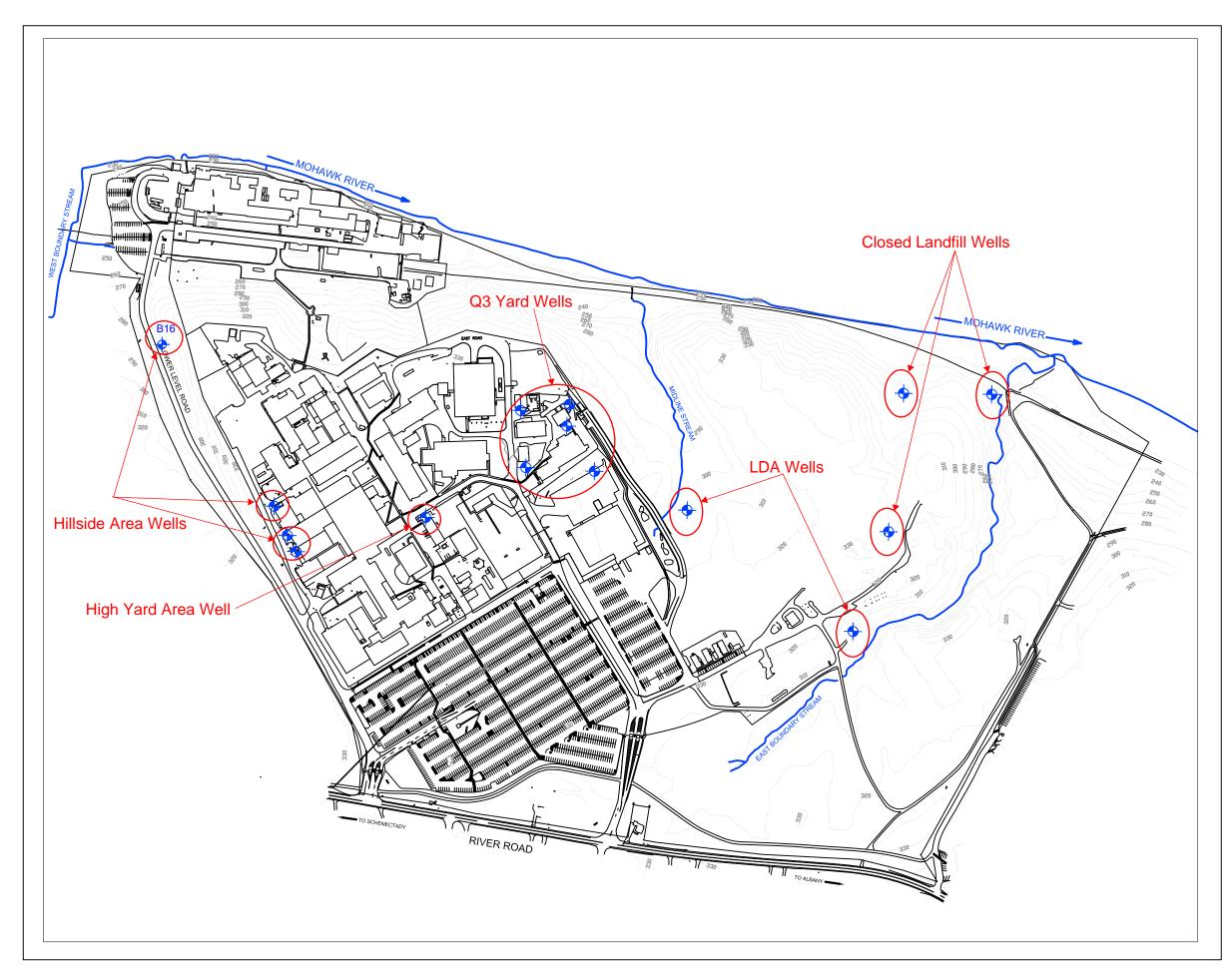
Notes:

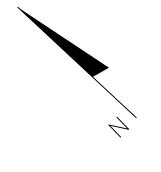
- 1. ng/L= nanograms per liter; NYS = New York State; GW = Groundwater; GV = Guidance Value; DW = Drinking Water MCL = Maximum Contaminant Level; PFOA = Perfluorooctanoic acid; PFOS = Perfluorooctanesulfonic acid; J = analyte detected at an estimated concentration
- 2. Proposed guidance values are from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











LEGEND



MONITORING WELL

Note:

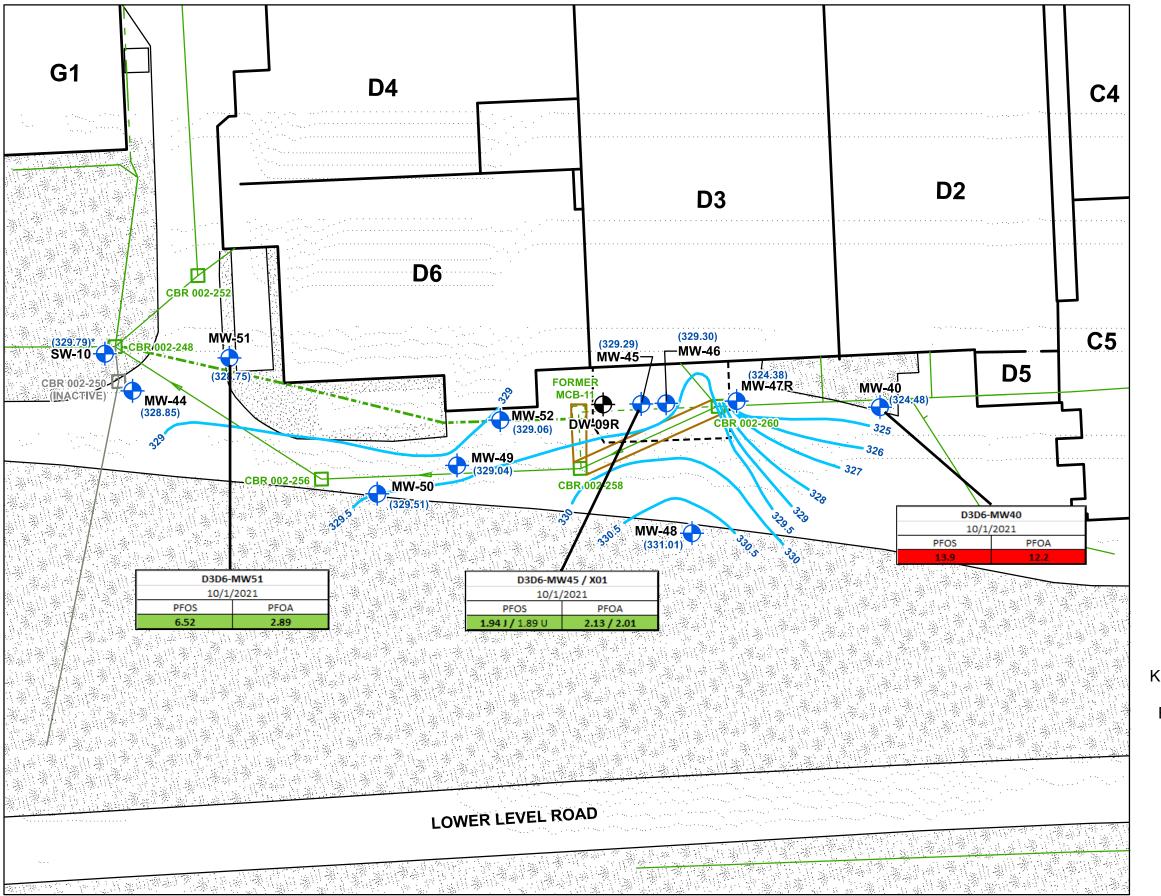
 Vertical datum of topographic contours is National Geodetic Vertical Datum of 1929 (NGVD 29).

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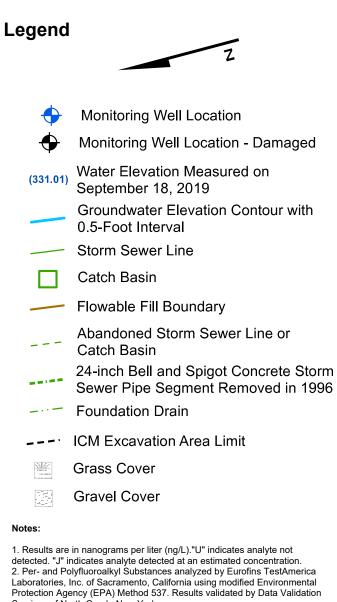
EMERGING CONTAMINANTS
GROUNDWATER MONITORING REPORT

FIGURE 2 SAMPLE LOCATION MAP





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

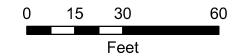


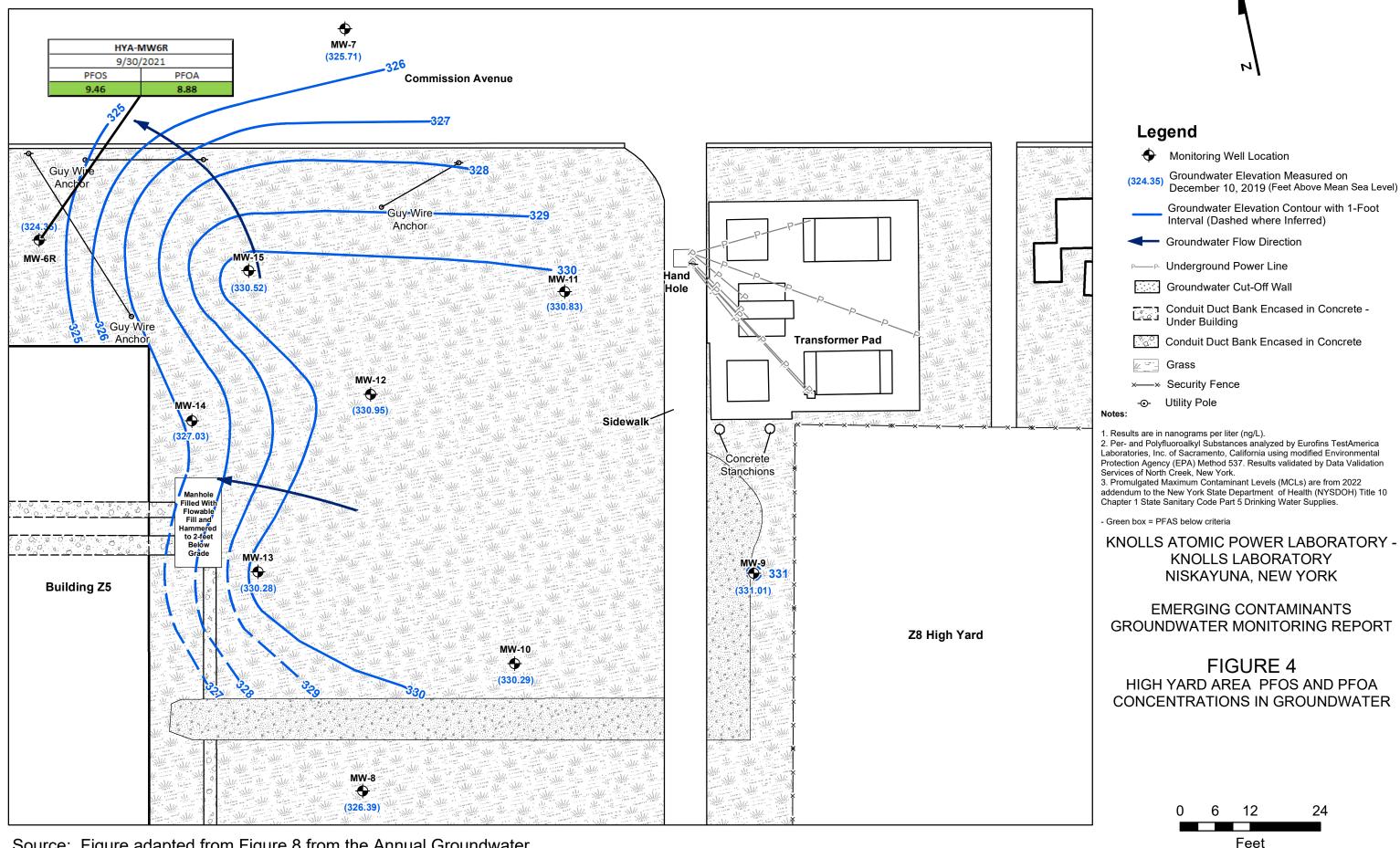
- Services of North Creek, New York.
- 3. Promulgated Maximum Contaminant Levels (MCLs) are from 2022 addendum to the New York State Department of Health (NYSDOH) Title 10 Chapter 1 State Sanitary Code Part 5 Drinking Water Supplies.
- Red box = PFAS above criteria
- Green box = PFAS below criteria

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EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

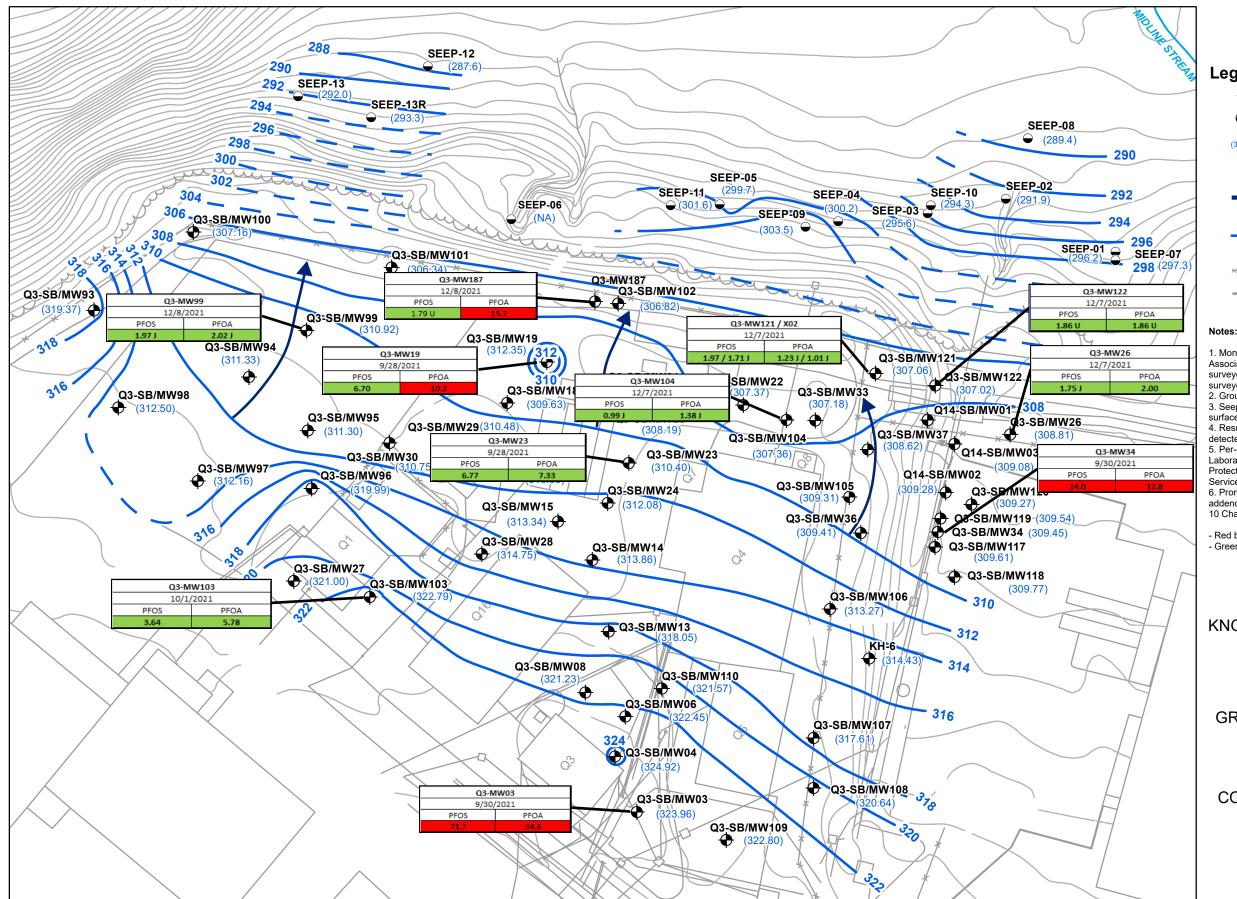
FIGURE 3 HILLSIDE AREA PFOS AND PFOA **CONCENTRATIONS IN GROUNDWATER**





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





Legend

Soil Boring/Monitoring Well Location

Seep Location

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

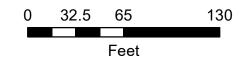
Proposed Utility Footprint

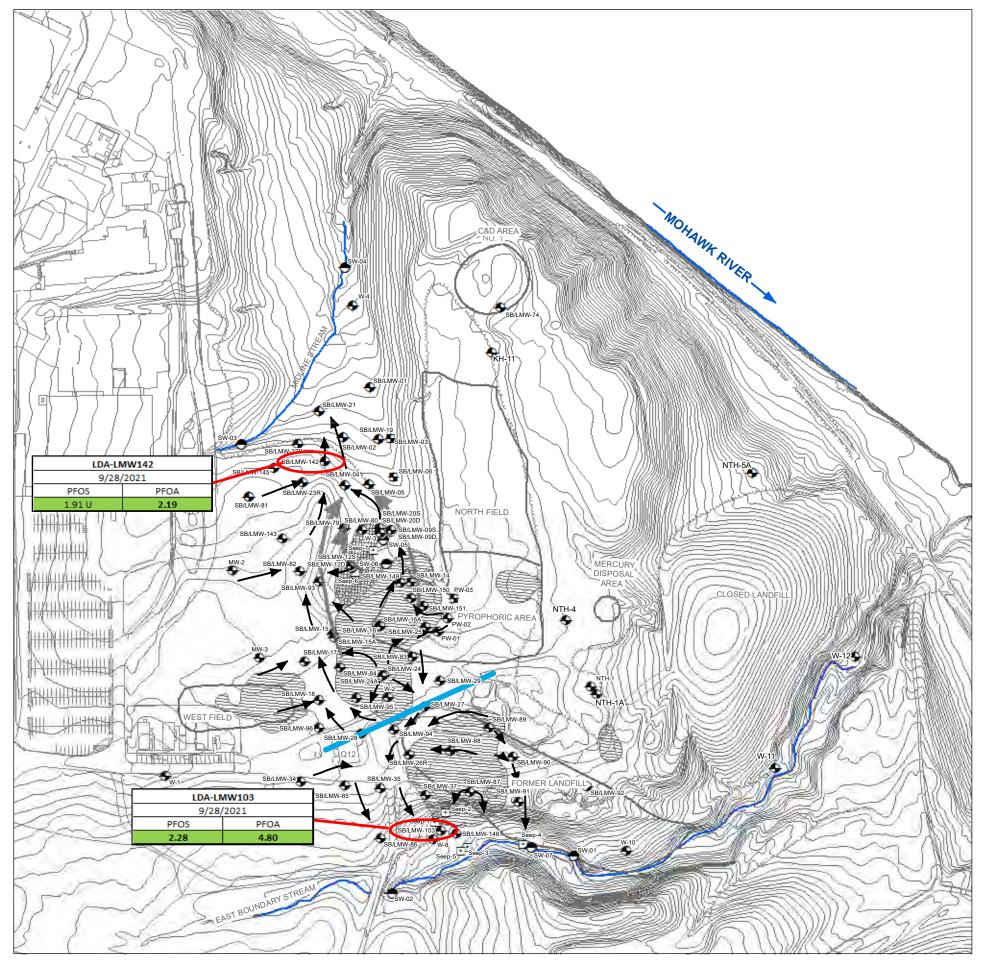
- 1. Monitoring wells and seeps surveyed in 2019 and 2020 by CT Male Associates, with the exception of SB/MW21 and SEEP-3R. SB/MW21 surveyed in 2010 by Richard Rybinski Land Surveying, and SEEP-13R surveyed in 2020 by KAPL contractor
- 2. Ground elevation contour is 2 feet.
- 3. Seep groundwater elevations 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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EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 5 Q3 YARD PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER





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



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

Former Well Location

Surface Water Sampling Location

Seep Sampling Location

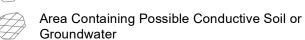
Groundwater Flow Direction

Northern Sub-Plume

Groundwater Divide

Topographic Contour (2-Foot Interval)

Area Containing Possible Buried Metal Objects



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

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EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 6 LAND DISPOSAL AREA PFOS AND PFOA **CONCENTRATIONS IN GROUNDWATER**

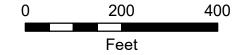


FIGURE 7 CLOSED LANDFILL

PFOS AND PFOA CONCENTRATIONS IN GROUNDWATER NTH-2A 9/27/2021 **PFOS** PFOA [WLS] 5.35 4.16 NTH-5A 9/27/2021 **PFOS PFOA** 0.92 J 2.10 U Spike in 20° Elm Tree LEGEND SSSSSS - Large Rip-Rap - Landfill Limit -WELL NTH-1A 9/27/2021 **PFOS PFOA**

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

Notes:

1.99 U

1.99 U

- 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,

ludy 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 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

Job ID: 200-60278-1

Sample Summary

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

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

Definitions/Glossary

Client: Ramboll US Corporation

Job ID: 200-60278-1 Project/Site: KAPL KL Emerging Contaminant Testing SDG: 200-60278

Qualifiers

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Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
F1	MS and/or MSD recovery exceeds control limits.
Н	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	

TNTC

Too Numerous To Count

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
1	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.

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)

Definitions/Glossary

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

Qualifiers

LCMS

TNTC

Too Numerous To Count

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.

-	
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.
n	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)

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-G3-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

				Chain of	Custody/	Ana	lysis	Rep	ort		Page of 1
RAMBOLL Albany #224	Sample (Signatur		obert Hornung					2	Jan Sarah Ti	avaly	Lab Use Only
#224	Laborat	Laboratory:		Holding Time:			T	T	Analys	is Required	Project Number:
Contact: Paul D'Annibale, Amy Spooner-Stevens	TestAme	TestAmerica Laboratory		14 days from sample collection to analysis (PFAS).					Preservatives: (see ke	at bottom)	1
Address: 94 New Karner Road, Stc. 106, Albany, N.Y. 12203	880 Rive	erside Pkwy	anno de (EE/As)						()		Job Number:
Phone: (518) 724-7272	West Sac	cramento, CA, 95605	Package R	equirement:		1					1
Email: Paul D'Annibale@ramboll.com Amy.Spooner-Stevens@ramboll.com			NYSDEC Full ASP Car B Data Package with a std 10-business day TAT, prelim analytical results provided						CSEPA		Lab ID:
Project: KAPL - KL Emerging Contaminants Sampling	Ann: Ka	ithryn Kelly	in pivot tab		suns provided				16		
Location: Knolls Site, Niskayuna, N.Y.	Phone:					ers	9				
Project #: 1940101245	802-923-	-1021		nat: EQuIS 4 DEC EDD ref		Containers	Omposite (C.	1	nod 5		
Sample Identification				Sample	Sample	ō) or Comp	redd Liftered 7	PFAS (21 Compounds) Modified Method 537		
Unique Field Sample ID (sys_sample_code)		Date	Time	Type (see key)	Matrix (see key)	Number	Cirab (Fredd L	PFAS Modif	Analysis Required Project Number: Lab ID: Lab ID: Lab Sample ID Condition: Condition: Custody Seals intact? 1575 A TACK	
1 KL-EC-NTH-1A-092721		09/27/21	11:25	N	WG	2	6	N	X		
2 KL-EC-NTH-5A-092721		09/27/21	14:25	N	WG	2	G	N	X		
Pa KL-EC-NTH-2A-092721 Page 3315 of 3339		09/27/21	15:45	N	WG	2	6	N	X		
& KL-EC-FRB01-092721		09/27/21	15:30	FB	NQ	2	G	N	X	200-60278 Chain	of Custody
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The Knowlyn	Time	1700	of Eng	Sac	0				Time 1013	1.800	
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Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS =	Surface W	Vater, WW = Waste W	ater, $WP = I$	Porable Water	SQ = Sol(Q)	Juahry C	ontro	I, WQ	= Water Quality Con	tresl	

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

Albania			Page of								
RAMBOLL Albany #224		Sampler(s): Robert Hornung (Signature) Sarah Travaly Yew Yew									Lab Use Only
#224		V	(24 V)					1			
Contact: Paul D'Annibale, Amy Spooner-Stevens	Laborat	•	Holding Time: 7 days from sample collection to							is Required	Project Number:
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203	1	Test America Laboratory 777 New Durham Rd		analysis (1,4-dioxane)					Preservatives: (see ke	y at bottom)	lab Number:
Phone: (518) 724-7272		NJ 08817	Package R	equirement:		1			0		200-60278
Email: Paul.D'Annibale@ramboll.com Amy Spooner Stevens@ramboll.com			NY SDEC Full ASP Cat B Dara Package with a std 10-business day TAT, prelim analytical results provided in pixot tables						1,4-Dioxane by USEPA Method 8270 SIM		Lab ID:
Project: KAPL - KL Emerging Contaminants Sampling	Attn: Ka	thryn Kelly							Meth		
Location: Knolls Site, Niskayuna, N.Y.	Phone:					2	0		Vd:		
Project #: 1940101245	802-923-	1021		rat: EQuIS 4 EC EDD ref	-File EDD erence values	of Containers	or Composite	7.	y USI		
Sample Identification				Sample	Sample		or Coff	rered? \	oxane b		
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2 KL-EC-NTH-5A-092721		09/27/21	14:25	N	WG	2	6	17	X		1
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Albany	Chain of Custody/Analysis Report												Page of		
RAMBOLL Albany #224	Sample (Signatu	7.1	pbert Hornung					2	Sarah Travaly						Lab Use Only
# 224	Labora	tory:		Holding Time:			T		Analysis			s Required		9-	Project Number:
Contact: Paul D'Annibale, Amy Spooner-Stevens	TestAm	TestAmerica Laboratory		14 days from sample collection to analysis (PFAS).					Preservatives: (see key at bottom)				nn)		
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203	880 Riva	erside Pkwy]			()						Job Number:
Phone: (518) 724-7272	West Sa	cramento, CA, 95605	Package R	equirement:											
Email: Paul D'Annibale@ramboll.com Amy Spooner Stevens@ramboll.com			NYSDEC Full ASP Cat B Data Package with a std 10-business day TAT, prelim analytical results provided						USEPA						Lab ID:
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1 KL-EC-LMW-103-092821		09/28/21	09:45	N	W6	2	6	2	X						
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JKL-EC-FRBOZ-0928ZI		09/28/21	11:20	FB	WQ	2	6	N	×						
KL-EC-Q3-MWZ3-092821	*	09/28/21	14:35	N	WG	2	G	N	X						
& KL-EC-03-MW19-092821		15/85/60	15:50	N	W6	2	16	N	X						
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Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equ. Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Preservatives Code: 0 = nonc, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 =	Surface V	Water, WW = Waste W	ater, WP = 1	Potable Water	, SQ = Soil Q		.ontro	l, WQ	= Water	Quality !	Contro	»l			

1	Allo and				Chain of	Custody/	Analy	ysis	Rep	ort					Page of
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6		Laboratory:		Holding T 7 days from	tion to					nalysis				Project Number:	
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	Haran Friday and Indiana and Anna			de:	Sample Type	Sample Matrix	umbe	Grab (G)	eld Filto	1,4-Dioxane SIM					
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2			09/28/21	11:10	2	WG	2	6	N	X		-			
3	KL-EC-Q3-MWZ3-092821		15/85/60	14:35	N	WG	2	6	N	X					
4	KL-EC-Q3-MW19-092821		09/28/21	15:50	2	WG	2	G	2	X					
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Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

Alban	2		Chain of	Custody/	Anal	ysis	Rep	ort					P	age of 1
RAMBOLL #22/	ampler(s): Resignature)	obert Horn	ung					Jan	Saral	h Trav	raly e	A	La	ab Use Only
	aboratory:	Holding T	'ime: r sample colle	non ()					An	alysis	Require	d	P	Project Number:
	estAmerica Laboratory	analysis (1,4						Preservati	ves: (se	e key a	t botton)		ob Number;
	77 New Durham R.I dison, NJ 08817	Package R	equirement:					0		-	_		-	14412 CZ.
Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com		NYSDEC I Package wir	rull ASP Cat l h a std 10-bû	3 Data siness day				od 8270					L	ab ID:
Project: KAPL - KL Emerging Contaminants Sampling	itn: Kathryn Kelly	TAT, prelm in pivot tab		sults provided				Method						
	hone:				ers	J		USEPA						
Project #: 1940101245	02-923-1021		nat: EQuIS 4 EC EDD ref		ntain	posite	1	by USI						
Sample Identification			Sample	Sample	Number of Containers	G, or Composite	reld Filtered? N	1,4-Dioxane b SIM						
Unique Field Sample ID (sys_sample_code)	Date	Time	Type (see key)	Matrix (see key)	Zun	Cirab	Freld	1,4-1 SIM						Lab Sample ID
1 KL-EC-B-16-093021	09/30/21	0955	2	W6	2	G	N	X						1
2 KL-EC-Q3-MW03-093021	09/30/21	1150	N	WG	2	G	2	X						2
	09/30/21	1330	N	WG	2	G	N	Х				2		3
4 KL-EC-Q3-MW34-093021-MS		1330	MS	WQ	2	G	A 1	×				Custod)		9
5 KL-EC-Q3-MW34-093021-M		1330	MS	WQ	2	G		X				₽		3
13 KL-EC-Q3-MW34-093021 14 KL-EC-Q3-MW34-093021-M3 15 KL-EC-Q3-MW34-093021-M3 16 KL-EC-MW-GR-093021	09/30/21	1430	N	WG	2	6	N	X				Chain —		4
KL-EC-EBWO1-093021	09/30/21	1520	EB	WO	2	G	2	X				60348		5
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	ime 1704	Received by	1/1/	1				Time /	SIQ CC		ooler To	mperatur	·C!	
Sample Type: N = Normal env. sample, FD = field duplicate, EB = Equipm Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = St	ient Blank, TB = Trip Blank,					ontrol	, WQ	= Water (Quality (Contro	1 CH (2)	1/	1/14	\$ DO1
Preservatives Code: $0 = \text{nonc}$, $1 = 11\text{CL}$, $2 = 11\text{NO3}$, $3 = 112\text{SO4}$, $4 = \text{Na}$	OH, $5 = Z_0$ Acetate, $6 = M_0$	OH, $7 = Na$	HSO4, $8 = a$						-			14	T B	Z
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RAMBOLL	Sample (Signana		bert Horn	ung					Acu	Sarah I	ravaly	1		Lab Use Only
	Laborat		Holding T	ime:					6)64	Apaly	sis Req	mired		Project Number:
Contact: Paul D'Annibale, Amy Spooner-Sievens		erica Laboratory	14 days from	u sample colle	chon to				Preservative					
Address: 94 New Karner Road, Ste. 106, Albany, N.A. 12203		raide Pkwy	analysis (PF	15)					0		II			Job Number:
Phone: (518) 724-7272		cr.imento, C.A. 95605	Package R	equirement:		1								
			NYSDEC I	ull ASP Cacl					<u> </u>					Lab ID:
Email: Paul D'Annbale@cambull.com Any.Spooner Stevens@ramboll.com				h a sid 10-bio ranalytical ne					(SEP					101/
Project: KAPL - KL Emerging Contaminants Sampling	Atm: Ka	uhryn Kelly	in pivot tables		fini analytical results provided ables				ا ا				AID	any
tion: Knolls Site, Niskayona, N.Y. Pho						ers	-		nd8)				340	201
Project #: 1940101245	802 923	-1021		nat: EQuIS 4 EC EDD ref		ntair	Post St	1	nod;		77 6	and the same of th		
Sample Identification				Sample	Sample	Number of Containers	Mil Link	divide \	PFAS (21 Compounds) Modified Method 537					
		Date	Time	Type	Matrix (see key)	dumb	Sala C	redelid	T-VS Todats					Lab Sample ID
Unique Field Sample ID (sys_sample code)			in 2 i	(see key)	WG	2	1						+	Cab Sample 1D
1 KL-EC-MW-45-100121		10/01/21	1035	2		_	1	2	X	-	+-+			
2 KL-EC-MW-51-100121		10/01/21	1140	N	NG	2	5	2	X	-	+			
B KL-EC-FRB05-100121		12/10/01	1145	FB	WO	2	5	2	X				-	
W KL-EC-MW-40-100121		10/01/21	1235	7	WG	2	6	N	X					
RL-EC-FRB05-100121 KL-EC-MW-40-100121 KL-EC-Q3-MW103-100121 KL-EC-X01-100121		10/01/21	1325	N	WG	1	6	N	X			_		
KL-EC-X01-100121		10/01/21		FD	WG	2	G	2	X		1		1 (
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of Ramboll.	Time	1650	- L	EEt	Ä				Time 16					
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e mala Tenas N. Normal env. sample 140 = field duplicate, EB = 1	quipment Bl.	ank, TB Trip Blank,	MS = Lab X	lairix Spike, (other (Specify	ji		1 11/2 5	= W'	olin Atte	use I	0	100	
Sample Matrix: SF = Sediment, SO = Soil, WG = Ground Water, W Preservatives Code: 0 = none, 1 - HCL, 2 = HNO3, 3 - H2SO4, -	S - Surface V = NaOII, 5	Vater, WW = Waste W Zn Accate, 6 Mc	ater, WP = 30H, 7 = N;	HSO4, 8 -	ther	aranté c	ADDRESO.	1, 11 ()	Water igt	mail: Co.	nikest.	,	•	

	Chain of Custody/Analysis Report											Page 1 of 1
RAMBOLL	Sample (Signatur		obert Horni	ung					Jana	h Tra	valy	Lab Use Only
	Laborat		Holding T				T		A	nalysis	s Required	Project Number:
Contact: Paul D'Annibale, Amy Spooner-Stevens	Test Amo	crica Laboratory	analysis (1,4	sample colle -dioxane)	ction to				Preservatives: (s	ee key ;	at bottom)	
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203	3175	Durham Rd							()			Job Number:
Phone: (518) 724-7272	Edison,	NJ 08817		equirement:					8270			
Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com			Package wit	full ASP Cat h a std 10-bu x analytical re					thod 8%		Alba	any
Project: KAPL - KL Emerging Contaminants Sampling	Attn: Ka	thryn Kelly	in pivot tab						Me		40	Oh
Location: Knolls Site, Niskayuna, N.Y.	Phone:					ers	U		V di		#2	2 ft
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Sample Identification				Sample	Sample	Number of Containers	erab G or Composite C.	reld Filtered?	1.4-Dioxanc by USEDA Method SIM			
Unique Field Sample 1D (sys_sample_code)		Date	Time	Type (see key)	Matrix (see key)	Z	Cerab	Preld	1,4-1. SI M			Lab Sample ID
1 KL-EC-MW-45-100121		10/01/21	1035	N	WEI	2	G	2	X			
2 KL-EC-MW-51-100121		10/01/21	1140	2	WG	2	G	2	X			
3 KL-EC-MW-40-100121		10/01/21	1235	2	WG	2	G	N	×			
+ KL-EC-Q3-MW103-100121		10/01/21	1325	N	WG	1	6	2	×			
5 KL-EC-X01-100121		10/01/21	-	FD	W6	2	6		×			
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Sample Matrix: $SE = Sediment$, $SO = Soil$, $WG = Ground Water$, W						uality (iontrol	, WQ	= Water Quality	Contro	ol Ne	12 TEV
Preservatives Code: $0 = \text{nonc}$, $1 = \text{HCL}$, $2 = \text{HNO3}$, $3 = \text{H2SO4}$, 4	+ - NaOII, 5	$- \times n$. Acetate, $6 = Mc$	CH_{i} $i = N_{i}$	11504, 8 = 6	other							/

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RAMBOLL	Sample		bert Horn	mg//	111				-/	Sarah	Trava	lly (od	en	Lab Use Only
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	Laborat	cory:	Holding T	i <mark>me:</mark> n sample col	1							lequire	d		Project Number:
Contact: Paul D'Annibale, Amy Spooner-Stevens	Test.\me	erica Laboratory	analysis (Pl		- 27				Preservati	vest lace	кеу да	bottom)-		
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203		rreide Pkwy			(49)		diamen, note		()						Job Number:
Phone: (518) 724-7272	West Sac	enimento, C.A. 95605	Package R	equirement	5 da						1				
Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com			Package wit	rull ASP Cat h a aid 107be	B Data TAT				USISDA						Lab ID:
Project: KAPL - KL Emerging Contaminants Sampling	HALLON KA	uhryn Kelly			sults provided				S:						
Location: Knolls Site, Niskayuna, N.Y.	Phone:	mnyn Keny	in pivot tab	CS .		s			s) by						
Project #: 1940101245	rnone;		EDD Form	iat: EQuIS 4	-File EDD	iner	16 (C)		und: 537						
	802-923-	-1021		-	erence values	onta	Post	/	odu Pod						
Sample Identification						Number of Containers	or Composite	中	PEAS (21 Compounds) by Modified Method 537						
		1		Sample	Sample	ber	J. D.	iltere	; (21 fied						
Unique Field Sample 1D (sys_sample_code)		Date	Time	Type (see key)	Matrix (see key)	unz	irab '	ield Filtered?	FAS Tods						1.10
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2 KL-EC-FRB07-120821 3 KL-EC-Q3-HW187-1208			1040	FB	WQ			1	X						
3 KL-EC-03-HW187 - 1208	321	\ \\ \\	1210	N	WG	U	7	V	×						
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ot: EETA	Time	1700	a bester			Time +1280									
Sample Type: N = Normal env. sample, ED = field duplicate, EB = Equ.	upment Bla	nk, TB = Trip Blank,	MS = Lab M	atrix Spike (Other (Specify).				112	5					
Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS = Preservatives Code: 0 = nonc, 1 = HCL, 2 = HNO3, 3 = H2SO4, 4 =	= Surface W NaOH, 5	ater, WW = Waste Wa = Zn Acetate, 6 = Met	iter, WP = P OH $-7 = Na$	otable Water HSO4 - 8 = 7	, SQ = 3nl Qr wher	unthity 1 c	ostrol,	W()	Water (Juahn Ca	outrol				

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RAMBOLL		r(s): William R	berr Horn	mg///	7				Sarah T		Lab Use Only
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Project: KAPL - 100 Himerging Contaminants Sampling	Attn: Ka	thryn Kelly	m pivot tab		sults provided				۵		
Location: Konstanting N.Y. Project #: 1940101245 Knows Site, Wiskingung	Phone:					ers	Ū		537	200-61275 Chain	of Custody
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Constanting of the state of the						oJ Jo	E011	-	Con		
Sample Identification		1		Sample	Sample	per c	G or	alterio	\$ (21) fired		
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			T T	N	WG	2	6	1.1	×		
1 KL-EC-Q3 - MW26-120721	_	12/07/21	1040			1	17	1			
2 KL-EC-Q3-MW26-120721-M			1040	MS	WQ	+	+	+	X		<u> </u>
B. KL-EC-Q3 - MW26-120721-1	1RD		1040	MS	MG	-	11	-	X		
W. KL-EC-Q3-MW122-120721			1205	N	WG		11	Ш	X		
KL-EC-Q3-MW121-12072)			1330	N	WG		Ш		X		* 5
KL-EC-Q3-MW104-120721			1420	N	NG				X		N 0
KL-EC-Q3-MW122-120721-1			1245	EB	WQ		П		X		25
8 KL-EC-FRBO6-120721	.,,,		1250	FB	NQ				X		-
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Sample Type: N = Normal env. sample, FD = field duplicate, EB = Eq.	uipment Bla		MS = Lab A	latrix Spike,	Other (Specify):			1 0,50		

Data Summary Table

	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
	Proposed Guidance					
Chemical Name	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 "*".

	Area	Hillsid	e Area	High Ya	rd 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
	Proposed Guidance					
Chemical Name	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 "*".

	Area	Landfill Dis	sposal 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			
	Proposed Guidance								
Chemical Name	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 "*".

	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					
	Proposed Guidance										
Chemical Name	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 "*".

	Area	rea 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			
	Proposed Guidance								
Chemical Name	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.
 - 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		
	l	Q3-MW121	Q3-MW122	,	Field Descript Disale	Field Desert Pleat
	Location ID			Q3-MW187	Field Reagent Blank	Field Reagent Blank
	Sample ID		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
a	Proposed Guidance Values					
Chemical Name 6:2 Fluorotelomer sulfonate (6:2 FTS)		4.67 U	4.65 U	4.49 U	4.83 U	4.56 U
` ,	NV					
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	Equipme	ent 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
	Proposed Guidance		
Chemical Name	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
	Proposed Guidance						
Chemical Name	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 Dis	sposal 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
	Proposed Guidance					
Chemical Name	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
	Proposed Guidance						
Chemical Name	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

9-23-21 KL EC Sampling Niskayuna, NY on: Depth of Well *	Evacuation I Sampling Me	Method	Peristaltic P			
Niskayuna, NY	Sampling Me		i enstalle i	ump	Well#	NTH-1A
		ethod	Peristaltic P	ump	Project #	1940101245
Depth of Well *						
Depth to Water * Length of Water Column	7.5 18	. 74 82 ,92	ft. ft.	* Measurements	x Top of Wel	ective Casing
2" diameter wells = 0.163 x (L	WC) =		gallons gallons gallons			
on data:				M IIV I		
	1	2	3	Well Volume	s	
Start Time	1035		_			
End Time			1114			
Gallons Purged	3.08	3.08	3.08			1
Temp (C)	14-5	13.6	13.4			
	6.83					
Temp (C)		13.6	13.4			
Temp (C) pH Spec. Conduc. (mS/cm)	6.83	13.6	13.4			
Temp (C) pH	6.83 1.27 22.04	13.6 7.02 1.30	13.4			
	l" diameter wells = 0.041 x (L " diameter wells = 0.163 x (L " diameter wells = 0.653 x (L on data: Start Time End Time	d'ameter wells = 0.041 x (LWC) = "diameter wells = 0.163 x (LWC) = "diameter wells = 0.653 x (LWC) = In data: Start Time 1035 End Time 1047	1" diameter wells = 0.041 x (LWC) =	diameter wells = 0.041 x (LWC) =	diameter wells = 0.041 x (LWC) =	diameter wells = 0.041 x (LWC) = gallons

PFAS (21 Compounds) by Modified USEPA Method 537

NM

Parameters Sampled For:

Depth to water before sampling:

1,4-Dioxane by USEPA Method

8270 SIM

Sample Time:

ft. (below top of inner casing)

NOTES:

KA	MBCLL		GROU	NDWAT	ER SAME	LING FIE	LD LO	G
Date	9-27-21	Personnel		RDH/SET		\	Veather	#75°F, Sunr
Site Name	KL EC Sampling	Evacuation	Method	Peristaltic	Pump	1	Vell#	NTH-2A
Site Location	Niskayuna, NY	Sampling M	ethod	Peristaltic	Pump	F	Project #	1940101245
Well informa	tion:							
	Depth of Well *	22.		ft.	* Measurem	ents taken fron		
	Depth to Water *	9.		ft_			op of Wel	
	Length of Water Column	13.	32	ft_			100	ective Casing
-							Other, Spe	ecify)
V-11	2" diameter wells = 0.163 x (l		2.1	gallons gallons				
Vell evacuat	ion data:				Well Vol	umes		
		1	2	3				
	Start Time	1507	1521					
	End Time		1529					
	Gallons Purged	2.17	1			4		
	Temp (C		1					
	pH		1	(35)				
	Spec. Conduc. (mS/cm)		100	4				_
	ORP (mV		1					
	DO (mg/L)		3	\				
	Turbidity (NTU	31.5		1				
	Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU) Probe type:	6.90 0.84 59-0 1-06 31-5	YSI Quat			turbidity	meter	
	Appearance at start:		orca +	DI GIAMITE	odor			
	Appearance at end:		clear	, no oc	tor			
	Other Observations:	Headspace	PID readin	g: 0.0 p	pm			
	Amount of water removed:			3.26	_gallons			
				0.00	_ 94			

1,4-Dioxane by USEPA Method 8270 SIM

well voldmes

Sample Time:

1545

NOTES:

Date	9-27-21	Personnel		RDH/SET		We	ather	± 75°F SAMY
Site Name	KL EC Sampling	Evacuation [Method	Peristaltic Pu	ump	Wel	II #	NTH-5A
Site Location	Niskayuna, NY	Sampling Me	ethod	Peristaltic Pu	ump	Pro	ject#	1940101245
Well informa	tion:							
	Depth of Well * Depth to Water * Length of Water Column	16. 11.		ft. ft. ft.	* Measurement	х Тор		I Casing sective Casing scify)
	1" diameter wells = 0.041 x (L 2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L	.WC) =	1.92	gallons gallons gallons				
Well evacuat	ion data:				Well Volum	ne		
		1	2	3	well volum	les		
	Start Time	1350	1359	1408				
	End Time		1406	1416				
	Gallons Purged		1.92	1.92				
	Temp (C)		15.5	15-4				
	pH		6.59	6.54		- 1		7
	Spec. Conduc. (mS/cm)	0.76	0.69	0.68				
	ORP (mV)		717	73.5				
	DO (mg/L)		1.95	2.51				1
			1.80	2.97				
	Turbidity (NTU)							

NM

PFAS (21 Compounds) by Modified USEPA Method 537

1,4-Dioxane by USEPA Method

8270 SIM

Depth to water before sampling:

Parameters Sampled For:

NOTES:

ft. (below top of inner casing)

Sample Time:

425

Date	9-28-21	Personnel		RDH/SET			Weather	±60°F,00.
Site Name	KL EC Sampling	Evacuation	Method	Peristaltic	: Pump		Well#	LMW-103
Site Location		Sampling N	/lethod	Peristaltion	Pump		Project#	1940101245
Nell informa	ition:		7.63 .00 @					
	Depth of Well *	8	.00 @	ft.	* Measurem	ents taken fro	1	
	Depth to Water *		54	—ft.		Х	Top of Wel	
	Length of Water Column	-	7.09	_ft.			Top of Prot (Other, Spe	ective Casing
	1.5" drameter = 0.092)	1100-					J(Other, opt	,,,,
	1" diameter wells = 0.041 x (LWC) =	> 0.65	gallons				
	2" diameter wells = 0.163 x (LWC) =	4	gallons				
	4" diameter wells = 0.653 x (LWC) =		gallons				
v 11	J-4							
Vell evacuat	tion data:				Well Vol	umes		
	7	1	2	3				
	Start Time		1	1				
	End Time	0936		1				
	Gallons Purgeo		1	1				
	Temp (C		19	-28-21				
	pl	7-16-5	(55	(37)	-			
	Spec. Conduc. (mS/cm		14	10%				
	ORP (mV		1	1	4			-
	DO (mg/L		1 2	1	\			
	Turbidity (NTU	79		V	1			
	Probe type: Appearance at start: lig	nt gay de		rganic	ode-	-	neter	
	the second of the second	3	7.7	2				
	Other Observations:	Headspace	PID readin	g: 0.0 g	Ppm			
	Amount of water and a second			0.65	gallons			
	Amount of water removed:	ina:	NM	دن.		p of inner cas	ina)	
	Depth to water before sample	ing.	IAIAI		_ ir. (pelow to	,	····9/	
	Parameters Sampled For:		•	1 Compound JSEPA Meth	ds) by Modified nod 537			
			1,4-Die	exane by US 8270 SI	EPA Method	Sample Tim	ο.	0945
				07/1/31	IVI	Janual IIII	· .	- 1

ME	
N U'U L	

GROUNDWATER SAMPLING FIELD LOG

Date	9-28-21	Personnel		RDH/SET			Weather	+60°F, 00
Site Name	KL EC Sampling	Evacuation N	/lethod	Peristaltic F	Pump		Well#	LMW-142
Site Location		Sampling Me	ethod	Peristaltic F	Pump		Project #	1940101245
Well informa	tion:							
	Depth of Well * Depth to Water * Length of Water Column	9.1	78 57 ·21	ft ft ft	* Measurem	ents taken fi	Top of Wel	ective Casing
	1.25" dramek = 3:0512	MC)=	0.78				(Other, Spe	ecify)
	1" diameter wells = 0.041 x (L)	WC) =		gallons				
	2" diameter wells = 0.163 x (L' 4" diameter wells = 0.653 x (L'		**	gallons gallons				
Vell evacuat	ion data:				M-11 W-1			
		1	2	3	Well Vol	umes	1	1
	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		1		
	Turbidity (NTU)	7.77	3,33	3.23				
	Probe type: Appearance at start: Appearance at end:	cle	YSI Quatro			nbidity ht su	fur meter	
	Other Observations	Headspace I	PID reading:	6.00	pm			
	Amount of water removed: Depth to water before sampling	ng:	2.	34	gallons ft. (below to	p of inner ca	asing)	
	Parameters Sampled For:		ÛS	SEPA Method				
			1,4-Diox	ane by USE 8270 SIM		Sample Ti	me:	1110
	NOTES:							

Length of Water Column C, 77 ft. Top of Protect (Other, Special Column) 1" diameter wells = 0.041 x (LWC) =	Peristaltic Pump Project # 1940101245 t. * Measurements taken from ft. x Top of Well Casing Top of Protective Casing (Other, Specify) 28 gallons gallons
Site Location Niskayuna, NY Sampling Method Peristaltic Pump Project # Well information: Depth of Well * 22.22 ft. * Measurements taken from ft.	ft. * Measurements taken from ft. x Top of Well Casing Top of Protective Casing (Other, Specify) 28 gallons gallons
Depth of Well * 22.22 ft. * Measurements taken from Depth to Water * 15.45 ft. Length of Water Column Top of Well Column 1" diameter wells = 0.041 x (LWC) = 2" diameter wells = 0.163 x (LWC) = 4" diameter wells = 0.653 x (LWC) = 3 callons Well evacuation data: Well Volumes	tt. x Top of Well Casing Top of Protective Casing (Other, Specify) gallons gallons
Depth to Water * 15.45 ft. Length of Water Column 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	tt. x Top of Well Casing Top of Protective Casing (Other, Specify) gallons gallons
Length of Water Column C, 77 ft. Top of Protect (Other, Special Column) 1" diameter wells = 0.041 x (LWC) =	ft. Top of Protective Casing (Other, Specify) 28 gallons gallons
1" diameter wells = 0.041 x (LWC) =	(Other, Specify) 28 gallons - gallons
1" diameter wells = 0.041 x (LWC) =	28 gallons - gallons
2" diameter wells = 0.163 x (LWC) = gallons 4" diameter wells = 0.653 x (LWC) = gallons Well evacuation data: Well Volumes	gallons
2" diameter wells = 0.163 x (LWC) = gallons 4" diameter wells = 0.653 x (LWC) = gallons Well evacuation data: Well Volumes	gallons
4" diameter wells = 0.653 x (LWC) = gallons Well evacuation data: Well Volumes	
Well evacuation data: Well Volumes	
Well Volumes	
	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	
	.32 3.53
	.5 58.1
Spec. Conduc. (mS/cm) 3.09 3.32 3.53	
Spec. Conduc. (mS/cm) 3.09 3.32 3.53	\$1 0.55

PFAS (21 Compounds) by Modified USEPA Method 537

Parameters Sampled For:

1,4-Dioxane by USEPA Method 8270 SIM

Sample Time:

NOTES:		

ate	9-28-21	Personnel		RDH/SET			Weather	= 600 Fictory
te Name	KL EC Sampling	Evacuation I	Method	Peristaltic P	ımp		Well#	Q3-MW19
te Location	Niskayuna, NY	Sampling Me	ethod	Peristaltic P	ump	-1	Project #	1940101245
ell informa	tion:							
	Depth of Well *	2	0.40	477	* Measurem	nents taken	_	10-1-
	Depth to Water *		38	ft.		х	Top of Wel	ective Casing
	Length of Water Column		1.02	ft.			(Other, Spe	
	4" diameter wells = 0.653 x (L	.WC) =	- e	gallons				
ell evacuat	ion data:				Mall Vo	lumon		
ell evacuat	ion data:	1	12	3	Well Vo	lumes		1
ell evacuat		1 1206	2	3 1314	Well Vo	lumes		
ell evacuat	ion data: Start Time End Time	1306	1310	1314	Well Vo	lumes		
ell evacuat	Start Time	1308	1310	1314	Well Vo	lumes		
ell evacuat	Start Time End Time	1308 1308 0.37 15.3	1310 1312 0.37 14.6	1314 1316 0.37 13.7	Well Vo	lumes		
ell evacuat	Start Time End Time Gallons Purged Temp (C)	1306 1308 0.37 15.3 7.12	1310 1317 0.37 14.6 7.11	1314 1316 0.37 13.7 7.11	Well Vo	lumes		
ell evacual	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm)	1306 1308 0.37 15.3 7.12 0.84	1310 1312 0.37 14.6 7.11 0.91	1314 1316 0.37 13.7 7.11 0.83	Well Vo	lumes		
ell evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	1306 1308 0.37 15.3 7.12 0.84 32.9	1310 1317 0.37 14.6 7.11 0.91 45.0	1314 1316 0.37 13.7 7.11 0.83 53.7	Well Vo	lumes		
ell evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L)	1306 1308 0.37 15.3 7.12 0.84 32.9 3.28	1310 1312 0.37 14.6 7.11 0.91	1314 1316 0.37 13.7 7.11 0.83 53.7 1.86	Well Vo	lumes		
ell evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	1306 1308 0.37 15.3 7.12 0.84 32.9 3.28	1310 1317 0.37 14.6 7.11 0.91 45.0	1314 1316 0.37 13.7 7.11 0.83 53.7	Well Vo	lumes		
ell evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU)	1306 1308 0.37 15.3 7.12 0.84 32.9 3.28	1310 1317 0.37 14.6 7.11 0.91 45.0 0.82 94.5	1314 1316 0.37 13.7 7.11 0.83 53.7 1.86 17.6			i meter	
ell evacual	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L)	1306 1308 0.37 15.3 7.12 0.84 32.9 3.28	1310 1317 0.37 14.6 7.11 0.91 45.0 0.82 94.5	1314 1316 0.37 13.7 7.11 0.83 53.7 1.86			i meter	

NM

Amount of water removed:

Parameters Sampled For:

NOTES:

Depth to water before sampling:

gallons

PFAS (21 Compounds) by Modified USEPA Method 537

1,4-Dioxane by USEPA Method

8270 SIM

ft. (below top of inner casing)

is very

Sample Time:

1550

				1	
RA	M	R	04		
	UYU		$\overline{}$		

GROUNDWATER SAMPLING FIELD LOG

Date	9-30-21	Personnel		RDH/SET			Weather	±600F area
Site Name	KL EC Sampling	Evacuation N	Method	Peristaltic P	Pump	Ţ	Well#	B-16
Site Location	13971	Sampling Me	ethod	Peristaltic P	ump	•	Project #	1940101245
Well informa	tion:	V.						
	Depth of Well *	17	-80	ft.	* Measurem			
	Depth to Water *	9.	10	ft.		х	Top of Wel	
	Length of Water Column	8	-70	ft.			_	tective Casing
							Other, Spe	ecity)
	1" diameter wells = 0 041 x (L	WC) =		gallons				
	2" diameter wells = 0.163 x (L		1.42	gallons				
	4" diameter wells = 0.653 x (L			gallons				
Well evacua	tion data:				Well Vol	umes		
		1	2	3	11011101			
	Start Time	0926	0932	0938			1	
	End Time	0930	0936	0943				
	Gallons Purged		1-42	1-42				
	Temp (C)	14.9	15.0	15.0				
	pH	7.21	7.14	7.14				
	Spec. Conduc. (mS/cm)		2.78	2.81				
	ORP (mV)	-1.0	2.9	-3.4				
	DO (mg/L)	0.37	0.22	0.16		1		
	Turbidity (NTU)	10.95	2.77	1.69				
	Probe type: Appearance at start: Appearance at end:	Clea	20 00	oder		oidity	mete	r
	Other Observations	Headspace	PID reading	0.000	<u> </u>			
	Amount of water removed: Depth to water before sampling	ng:	<u></u> И.	26	gallons ft. (below to	p of inner ca	asing)	
				SEPA Method				
	Parameters Sampled For:		1,4-Diox	ane by USEI	r A Metriod			MORI
	Parameters Sampled For:		1,4-Diox	8270 SIM		Sample Ti	me:	0955
		atte for	1,4-Diox	8270 SIM				0955 other.

RAMBOLI			GROUN	IDWAT	ER SAMPI	ING F	IELD LO	G
Date 9-30-21	Pers	onnel		RDH/SET			Weather	=65F over
Site Name KL EC Sampling	Evac	uation	Method	Peristaltic F	⊃ump		Well#	Q3-MW03
Site Location Niskayuna, NY	Sam	pling M	ethod	Peristaltic F	Pump		Project #	1940101245
Well information:		-						
Depth of Well *	(39	_ft,	* Measuremen	ts taken f	-	
Depth to Water *	_	6	.12	ft.	_	Х	Top of Wel	
Length of Water Colu	mn	8	.2+	_ft_	-		Top of Prot (Other, Spe	tective Casing
1" diameter wells = 0. 2" diameter wells = 0.			0.34	_gallons _gallons				
2" diameter wells = 0. 4" diameter wells = 0.	163 x (LWC)	=	0.34 	- -				
2" diameter wells = 0. 4" diameter wells = 0.	163 x (LWC)	=	0.34	gallons	Well Volun	nes		
2" diameter wells = 0. 4" diameter wells = 0.	163 x (LWC) 653 x (LWC)	=	2	gallons gallons	Well Volun	nes		
2" diameter wells = 0. 4" diameter wells = 0. Well evacuation data:	163 x (LWC) 653 x (LWC) 1	32	2	gallons gallons	Well Volun	nes		
2" diameter wells = 0. 4" diameter wells = 0. Well evacuation data: Sta	163 x (LWC) 653 x (LWC) 1 art Time 1	32	2 (136	gallons gallons	Well Volun	nes		
2" diameter wells = 0. 4" diameter wells = 0. Well evacuation data: Sta En Gallons	163 x (LWC) 653 x (LWC) 1 art Time 11 nd Time 11 Purged D	3Z 33 34	2 1136 1137 0.34	gallons gallons 3 11.37 1141 0.34	Well Volun	nes		
2" diameter wells = 0. 4" diameter wells = 0. Well evacuation data: Sta En Gallons	163 x (LWC) 653 x (LWC) 1 art Time 11 and Time 11 Purged D	32 33 34 8-6	2 (136	gallons gallons 3 11,37 1141 0.34 18-7	Well Volun	nes		
2" diameter wells = 0. 4" diameter wells = 0. Well evacuation data: Sta En Gallons Te	163 x (LWC) 653 x (LWC) 1 art Time nd Time Purged pH pH	32 33 34 8-6	2 1136 1137 0.34 18.6	gallons gallons 3 1139 1141 0.34 18-7 7.19	Well Volun	nes		
2" diameter wells = 0. 4" diameter wells = 0. Well evacuation data: Sta En Gallons Te Spec. Conduc. (r	163 x (LWC) 653 x (LWC) 1 nrt Time nd Time Purged ph ph mS/cm)	32 33 34 8-6	2 1136 1137 0.34	gallons gallons 3 11,37 1141 0.34 18-7	Well Volun	nes		

DO (mg/L) 1. 74	3.01				
Turbidity (NTU) 99.0	60.6 35.4	1			
Probe type: Appearance at start: Synt boom - C Appearance at end:	, , , , ,	mothe T	Urbidit	y Me	le r
	e PID reading: O. O.	pm			
Amount of water removed: Depth to water before sampling:	1.02 NM	gallons ft. (below to	p of inner cas	ing)	
Parameters Sampled For:	PFAS (21 Compou USEPA Me	, -	ľ		
	1,4-Dioxane by U 8270 \$		Sample Tim	e:	1150
NOTES:					

ate	9-30-21	Personnel		RDH/SET			Weather	\$650F, O.re
ite Name	KL EC Sampling	Evacuation	Method	Peristaltic P	ump	_	Well #	Q3-MW34
ite Location		Sampling M	ethod	Peristaltic P	ump	_	Project #	1940101245
Vell informa	tion:							
	Depth of Well *	<u> </u>	.82	ft.	* Measurer	nents taken f		
	Depth to Water *		201	ft.		X	Top of Well	_
	Length of Water Column	((. 81	_ft.			Top of Prote (Other, Spe	ective Casing cify)
	1" diameter wells = 0.041 x (L'	WC) =	0.48	gallons				
	2" diameter wells = 0.163 x (L'		<u></u>	gallons				
	4" diameter wells = 0.653 x (L'	•		gallons				
ell evacuat	ion data:							
	ļ				Well Vo	lumes		
		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-+	7.23		-	-	-
	pH	7.23	7.26	3.88				-
	Spec. Conduc. (mS/cm)	3.03	3.56			_	-	
	ORP (mV)	82.4	82.2	81-9			_	-
	DO (mg/L)	52-9	36.4	36.1				+
	Turbidity (NTU)							

PFAS (21 Compounds) by Modified USEPA Method 537

Parameters Sampled For:

1,4-Dioxane by USEPA Method

8270 SIM

Sample Time:

330

NOTES:

Site Name KL EC Sampling Evacuation Method Peristaltic Pump Well # MW-6R 1940101 Well information: Depth of Well * 17.00 ft. * Measurements taken from Depth to Water * 6.91 ft. * Top of Well Casing Top of Protective Casi (Other, Specify) 1" diameter wells = 0.041 x (LWC) = 2" diameter wells = 0.163 x (LWC) = 4" diameter wells = 0.653 x (LWC) = 9 allons Well evacuation data: Well Volumes Start Time 1414	Site Name KLEC 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. * Measurements taken from Depth to Water * 10.09 ft.	Date	9-30-21	Personnel		RDH/SET			Weather	±65°F were
Site Location Niskayuna, NY Sampling Method Peristaltic Pump Project # 1940101 Well information: Depth of Well * 17.00 ft. * Measurements taken from Depth to Water * 6.91 ft.	Site Location Niskayuna, NY Sampling Method Peristaltic Pump Project # 1940101245 Well information: Depth of Well * Depth to Water * Length of Water Column Length of Water Column 17.00 18. *Measurements taken from 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 Start Time I/I /	Site Name		Evacuation	Method	Peristaltic P	ump		Well#	•
Depth of Well * 17.00 ft. * Measurements taken from Depth to Water * 6.91 ft. Length of Water Column 10.09 ft. Top of Well Casing Top of Protective Casi (Other, Specify) 1" diameter wells = 0.041 × (LWC) =	Depth of Weil * 17.00 ft. * Measurements taken from tell to Water * 6, 91 ft. Length of Water Column 1 * It. 1 * Measurements taken from tell to the fit. 1 * Measurements taken from tell tell tell tell tell tell tell tel	Site Location		Sampling M	/lethod	Peristaltic Po	ump		Project #	1940101245
Depth to Water * 6.91 ft.	Depth to Water * Length of Water Column	Well informa								
Length of Water Column id . 59 ft. Top of Protective Casi (Other, Specify) 1" diameter wells = 0.041 x (LWC) =	Length of Water Column i 0 09 ft. Top of Protective Casing (Other, Specify) 1" diameter wells = 0.041 x (LWC) = 2" diameter wells = 0.163 x (LWC) = 3 gallons 4" diameter wells = 0.653 x (LWC) = 3 gallons Well evacuation data: Well Volumes 1 2 3 Start Time 1414 End Time i416 Gallons Purged 0.41 Temp (C) 16.6 pH 7.25 ST) Spec. Conduc. (mS/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: Appearance at start: YSI Quatro + Lamptie Turbidity (Mater-Appearance at start:					_	* Measureme			
Cother, Specify Cother, Specify	Cother, Specify					_	-	X		
1" diameter wells = 0.041 x (LWC) = 2" diameter wells = 0.163 x (LWC) = 4" diameter wells = 0.653 x (LWC) = gallons 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 37 Spec. Conduc. (ms/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: YSI Quatro + Lamptie Turbidity Moter	1" diameter wells = 0.041 x (LWC) = 2" diameter wells = 0.163 x (LWC) = 3 gallons 4" diameter wells = 0.653 x (LWC) = - gallons Well evacuation data:		Length of Water Column	i0 .	.04	—ft.	1		ALC:	-
2" diameter wells = 0.163 x (LWC) =	2" diameter wells = 0.163 x (LWC) =						L		(Other, Spe	ecify)
2" diameter wells = 0.163 x (LWC) =	2" diameter wells = 0.163 x (LWC) =		1" diameter wells = 0 041 y (I	\\(\C\) =	A 41	gallone				
4" diameter wells = 0.653 x (LWC) =	## diameter wells = 0.653 x (LWC) =		•	,	0011	_				
Well evacuation data: Start Time	Well evacuation data: Vell Volumes 1		· ·		-	_				
Start Time 1414 End Time 1416 Gallons Purged 0.41 Temp (C) 16.6 pH 7.25 ST Spec. Conduc. (mS/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: YSI Quatro + Lamplie Turbidity Make-	Start Time 1414 End Time 1416 Gallons Purged D.41 Temp (C) 16.6 pH 7.25 ST Spec. Conduc. (mS/cm) ORP (mV) -91.2 DO (mg/L) Turbidity (NTU) Probe type: Appearance at start: Well Volumes Well Volumes YSI Quatro + Lamptic Turbidity Make-		,	,,,		_ 9				
Well Volumes 1 2 3	Start Time 1414 End Time 1416 Gallons Purged D.41 Temp (C) 16.6 pH 7.25 ST Spec. Conduc. (mS/cm) ORP (mV) -91.2 DO (mg/L) Turbidity (NTU) Probe type: Appearance at start: Well Volumes Well Volumes YSI Quatro + Lamptic Turbidity Make-	Well evacuat	tion data:							
Start Time 1414 End Time 1416 Gallons Purged 0.41 Temp (C) 16.6 pH 7.25 ST Spec. Conduc. (mS/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: YSI Quatro + Lamplie Turbidity Make-	1 2 3						Well Volu	mes		
End Time 1416 Gallons Purged 0.41 Temp (C) 16.6 pH 7.25 37 Spec. Conduc. (mS/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: YSI Quatro + Lamptie Turbidity Make-	End Time 1416 Gallons Purged D. 41 Temp (C) 16.6 pH 7.25 ST Spec. Conduc. (mS/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: Appearance at start: UAH 9004 100 Cdoc			1	2	3				
End Time 1416 Gallons Purged 0.41 Temp (C) 16.6 pH 7.25 37 Spec. Conduc. (mS/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: YSI Quatro + Lamptie Turbidity Make-	End Time 1416 Gallons Purged D. 41 Temp (C) 16.6 pH 7.25 ST Spec. Conduc. (mS/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: Appearance at start: UAH 9004 100 Cdoc		Ctest Time		1					
Gallons Purged 0.41	Gallons Purged 0.41 Temp (C) 16.6 pH 7.25 (ST) Spec. Conduc. (mS/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: Appearance at start: UAH 9COU 100 Codoc		Start Time		11					
Temp (C) 16.6 pH 7.25 ST SS Spec. Conduc. (mS/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: YSI Quatro + Lamptie Turbidity (Make -	Temp (C) 16.6 pH 7.25 ST ST ST ST ST ST ST S			1416	11					
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 + Lamptie Turbidity (Make -	PH 7.25 (ST) (ST) Spec. Conduc. (mS/cm) 1.40		End Time							
Spec. Conduc. (mS/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: YSI Quatro + Lamptie Turbidity (Make-	Spec. Conduc. (mS/cm) 1.40 ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: Appearance at start: Ught acau 100 cdoc		End Time Gallons Purged	0.41						
ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 Probe type: YSI Quatro + Lamptie Turbidity Make-	Probe type: Appearance at start: ORP (mV) -91.2 DO (mg/L) 0.87 Turbidity (NTU) 77.0 YSI Quatro + Lamptie Turbidity (Material Probe type: Appearance at start: Ught acau 100 codoc		End Time Gallons Purged Temp (C)	0.41	(31)	(8)				
Probe type: YSI Quatro + Lamptie Turbidity Make-	Probe type: Appearance at start: DO (mg/L) 0.87 Turbidity (NTU) 77.0 YSI Quatro + Lamptie Turbidity Mater		End Time Gallons Purged Temp (C) pH	0.41 16.6 7.25	(37)	(3)				
Probe type: YSI Quatro + Lamptie Turbidity Mate-	Probe type: Appearance at start: VSI Quatro + Lamptile Turbidity Mater Appearance at start: USAH ACQUITED CODE		End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm)	0.41 16.6 7.25 1.40	(37)	(3)				
Probe type: YSI Quatro + Lamptie Turbidity Make-	Probe type: YSI Quatro + Lamptie Turbidity Meter Appearance at start: Light 900 0000		End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	0.41 16.6 7.25 1.40 -91.2	3	(3)				
	Appearance at start: Light gray, no odo-		End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L)	0.41 16.6 7.25 1.40 -91.2 0.87	1					
	Appearance at start: Light gray no odo-		End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L)	0.41 16.6 7.25 1.40 -91.2 0.87	1					
Accompanies at State 11 to 12	Appearance at end: Light gray, no odor RDH 11/2/21		End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU)	0.41 16.6 7.25 1.40 -91.2 0.87			lia Tu	h: J:h	1/10/10/2	
Appearance at and: Light grow shielder 1 RDH 11/2/21	Appearance at end.		End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU) Probe type:	0.41 16.6 7.25 1.40 -91.2 0.87 77.0	YSI Quatro	o + Lamo		bidity	more-	
Appearance at end: Light gray, no-odor - Nort 1/2/21			End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU) Probe type: Appearance at start:	0.41 16.6 7.25 1.40 -91.2 0.87 77.0	YSI Quatr	+ Lamo		bidity	more-	

PFAS (21 Compounds) by Modified USEPA Method 537

NM

1,4-Dioxane by USEPA Method

8270 SIM

Sample Time:

ft. (below top of inner casing)

1430

NOTES:

Depth to water before sampling:

Parameters Sampled For:

volume.

Date	9-30-21	Personnel		RDH/SET			Weather	160°F, 0000
Site Name	KL EC Sampling	Evacuation	Method	Peristaltic I	Pump	-	Well #	Q3-MW103
Site Location		Sampling M		Peristaltic I		3	Project #	1940101245
		Jamping		1 011010101				
Well informa	ation:							
	Depth of Well *		.39	_ft.	* Measuren	nents taken f	rom	
	Depth to Water *	7	1.50	_ft.		х	Top of Well	Casing
	Length of Water Column		.89	_ft.			_	ective Casing
							Other, Spe	cify)
	411 45	\\(\O\) -	A (2					
	1" diameter wells = 0.041 x (L 2" diameter wells = 0.163 x (L	,	0.12	_gallons				
	4" diameter wells = 0.653 x (L	•		gallons				
	4 diameter wells = 0.003 x (L	.vvC) =		gallons				
Well evacua	tion data:							
ven evacua	data.				Well Vo	lumes		
		1	2	3	11010	T		
	Start Time	1055	1058	1100				
	End Time	1056	1059	1101				
	Gallons Purged		0.12	1				
	Temp (C)	20.8	20.6					
	pH	7.57	7.64	9/30/	IZ.			
	Spec. Conduc. (mS/cm)	9-10	11.07	(37)				
	ORP (mV)	55.1	54.8	7				
	DO (mg/L)	0.49	0.26	1				
	Turbidity (NTU)	-	643	1				
			1012					
				1ex	9/30/21		0.8	V
	Probe type:		YSI Quatro	1 1	Diaxo	ne lan	note Turl	sidy Meter
	Appearance at start:	ligh	+ brow	1-grace	1 . 0	o odov		
	Appearance at end:	Wal	t boo	www.	So Ac	10.		
		0		,				
	Other Observations;	Headspace I	PID reading:	0,000m				
	Other Observations,	Treadspace	rib reading.	U.C. ppn				
	Amount of water removed:		۸	.30	gallons			
	Depth to water before sampling	od.	NM	.00	•	p of inner ca	sina)	
	Doptil to water before admiplif	9	14161		it. (DOIOW to	ט וטווווטן טמ	J. 19)	
			PFAS (21	Compounds') by Modified			
	Parameters Sampled For:			EPA Method				10-1-21
			4.4.0:	ane by USEF				

well volumes. NOTES: Sampled the following day. Slow to recharge limited volume for sample collection 50

8270 SIM

1325

Sample Time:

9	10-1-21	Personnel		RDH/SET			Weather	#550F, Sur
Name	KL EC Sampling	Evacuation I	Method	Peristaltic F	Pump		Well#	MW-45
Location	Niskayuna, NY	Sampling M	ethod	Peristaltic F	Pump		Project #	1940101245
l informa	ition:							
	Depth of Well *		.00	ft.	* Measure	ments taken	from	
	Depth to Water *	5	.39	ft,		х	Top of Well	Casing
	Length of Water Column		0.61	- ft,			Top of Prote (Other, Spe	ective Casing ecify)
evacuat	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L ion data:	,	1.73	gallons gallons				
CVGGGG	ion data.							
	19				Well Vo	olumes		
		1	2	3	Well Vo	olumes		
	Start Time	0954	1004	103	Well Vo	olumes		
	Start Time End Time	-	1004		Well Vo	olumes		
		0954 (002 1.73	1004	1020	Well Vo	olumes		
	End Time	0954 (002 1.73 19.0	1004	1020	Well Vo	olumes		
	End Time Gallons Purged Temp (C) pH	0954 1002 1.73 19.0 7.83	1004 1100 1.73 19.0 7.85	103 1020 1.73 19.0 7.81	Well Vo	olumes		
	End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm)	0954 (002 1.73 19.0 2.83 3.01	1004 1100 1.73 19.0 7.85 3.02	103 1020 1.73 19.0 7.81 3.02	Well Vo	olumes		
	End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	0954 1002 1.73 19.0 2.83 3.01 98.0	1004 1100 1.73 19.0 7.85 3.02 90.2	103 1020 1.73 19.0 7.81 3.02 76.3	Well Vo	olumes		
	End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm)	0954 (002 1.73 19.0 2.83 3.01	1004 1100 1.73 19.0 7.85 3.02	103 1020 1.73 19.0 7.81 3.02	Well Vo	olumes		

PFAS (21 Compounds) by Modified USEPA Method 537

1,4-Dioxane by USEPA Method

8270 SIM

Sample Time:

ft. (below top of inner casing)

NOTES:

Parameters Sampled For:

Date	10-1-21	Personnel		RDH/SET			Weather	±55°F, Sun
Site Name	KL EC Sampling	Evacuation	Method	Peristaltic	Pump		Well#	MW-51
Site Location	Niskayuna, NY	Sampling M	ethod	Peristaltic	Pump	-	Project #	1940101245
Well informa	tion:							
	Depth of Well *		.12	_ft.	* Measuren	nents taken f	rom	
	Depth to Water *		.90	ft.		х	Top of Well	Casing
	Length of Water Column	12	.22	ft.			Top of Prot (Other, Spe	ective Casing
						-	(Other, Spe	city)
	1" diameter wells = 0.041 x (L		0.50	gailons				
	2" diameter wells = 0.163 x (L			gallons				
	4" diameter wells = 0.653 x (L	.WC) =		gallons				
Well evacuat	ion data:							
			(3)2.4.21		Well Vo	lumes		
		1 1117		3				
	Start Time	11195		1125				
	End Time	- W	1123	1127			-	
	Gallons Purged Temp (C)	18.2	18.3	18-4				
	Hq	7.63	7.61	7.62			-	
	Spec. Conduc. (mS/cm)	2.69	7.71	2.74				
	ORP (mV)	100.6	100.3	100.8		-		
	DO (mg/L)	0.31	0.17					
	Turbidity (NTU)		48.5	17-6				
	Probe type:		YSI Quatro					
	Appearance at start:	Bro	wh .	00 0	dor			
	Appearance at end:	Ligh			no odi	00		
	Other Observations:	Headspace F	PID reading:	0.100	2			
	Amount of water removed:		1.5	50	gallons			
	Depth to water before sampling	ng:	NM		ft. (below to	p of inner ca	sing)	
					s) by Modified			
	Parameters Sampled For:		US	EPA Metho	d 537			
	Parameters Sampled For:			EPA Metho ane by USE 8270 SIM	PA Method			1140

NOTES:

	10-1-21	Personnel		RDH/SET		_	Weather	±550 F. Sun
Site Name	KL EC Sampling	Evacuation M	lethod	Peristaltic	Pump		Well #	MW-40
Site Location	Niskayuna, NY	Sampling Me	thod	Peristaltic	Pump	_	Project #	1940101245
Well informa	ition:							
	Depth of Well *	15.9		_ft.	* Measurer	ments taken f		
	Depth to Water *		.47	– ^{ft.}		х	Top of Well	-
	Length of Water Column	5.	46	– ^{ft.}			Other, Spe	ective Casing cify)
	1" diameter wells = 0.041 x (I		0.22	_gallons				
	2" diameter wells = 0.163 x (l 4" diameter wells = 0.653 x (l			_gallons gallons				
	4 diameter wens – 0.000 x (t		-	_ gallons				
Vell evacuat	tion data:							
		1	2	3	Well Vo	lumes	_	
	Start Time		1	1		+		1
	End Time		1	1				
	Gallons Purged		1	1				
			1_					
	Temp (C)	10-2		1				
	remp (C)		(8)	(.)				
		8.21	(3)	(30)				
	pH	1.06	<u>(B)</u>	(5)				
	pH Spec. Conduc. (mS/cm)	1.06	(<u>G</u>)	(5)				

Depth to water before sampling: PFAS (21 Compounds) by Modified Parameters Sampled For: USEPA Method 537

NM

1,4-Dioxane by USEPA Method

8270 SIM

Sample Time:

ft. (below top of inner casing)

gallons

NOTES:

Amount of water removed:

volume.





Site Name: Knolls Laboratory EC Sampling	Task: 1940101245
Weather (temp/precip): ±60°F , Rom in Pr	1 Date: 9-27-21
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	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 Jaboratory detection limits).
Field Favinaces	Alconox®, Liquinox® Seventh Generation™ and Citranox are being used as decontamination cleaning agents;
Field Equipment: Subcontractor (e.g., driller) materials and	Decon 90° is not being used.
equipment conform to the requirements of this checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	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 to commencement of that day's work. Materials present and in checklist should be relocated to the support area or other area below.	dentified as notentially containing PFAS through use of this
Sent Jeny	0919
Field Team Leader Name and Signature	Time



Site Name: Knolls Laboratory EC Sampling	Task: 1940101245
Weather (temp/precip): ±60°F, Sunny	Date: 9-28-21
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	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).
Field Equipment: Subcontractor (e.g., driller) materials and equipment conform to the requirements of this	Alconox®, Liquinox®, Seventh Generation™, and Citrano are being used as decontamination cleaning agents; Decon 90® is not being used.
checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	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 deviation to commencement of that day's work. Materials present and checklist should be relocated to the support area or other are below.	identified as potentially containing PFAS through use of this
Field Team Leader Name and Signature	Time



Site Name: Knolls Laboratory EC Sampling	Task: 1940101245				
Weather (temp/precip): $\pm 60^{\circ} \text{F}$ outer CaS+	Date: 9-30-21				
Pre-Mobilization:	Sample Containers:				
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs				
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene				
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative				
fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene				
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):				
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering				
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):				
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	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 boratory detection limits)				
Field Equipment: Subcontractor (e.g., driller) materials and equipment conform to the requirements of this	Alconox®, Liquinox®, Seventh Generation™, and Citrano are being used as decontamination cleaning agents; Decon 90® is not being used.				
checklist (as applicable)	Food Considerations:				
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area				
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used				
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:				
Markers (e.g., Sharpies®) are used only in the staging area or are not used	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 deviation to commencement of that day's work. Materials present and checklist should be relocated to the support area or other are below	ons below and work with field personnel to address issues prior d identified as potentially containing PFAS through use of this rea of the site away from the sampling locations and noted				
Dent Fally	0851				
Field Team Leader Name and Signature	Time				



Site Name: Knolls Laboratory EC Sampling	Task: 1940101245				
Weather (temp/precip): ± 55°F, overcost	Date: 10 -1-21				
Pre-Mobilization:	Sample Containers:				
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs				
	Sample containers have been received and are made of HDPE or polypropylene				
Field Clothing and PPE: Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative				
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene				
Clothing has not been permanently chemically	Wet Weather (as applicable):				
treated for insect resistance or UV protection Clothing has not been treated with materials or	Wet weather gear made of polyurethane and PVC				
formulations potentially containing PTFE or other PFAS products listed named in this checklist	only, or is being worn under white Tyvek® covering				
Any personal care products, if used, have been applied outside sampling zone, hands have been					
washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable): On-site or off-site public or private water, if to be				
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	used for equipment decontamination, has been analyzed and is "PFAS-free" (water that does not contain any site-specific target PFAS analytes above Jaboratory detection limits).				
	Alconox®, Liquinox®, Seventh Generation™, and Citranox				
Field Equipment:	are being used as decontamination cleaning agents; Decon 90° is not being used.				
Subcontractor (e.g., driller) materials and equipment conform to the requirements of this					
checklist (as applicable)	Food Considerations:				
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area				
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used				
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:				
Markers (e.g., Sharpies®) are used only in the staging area or are not used	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 deviatio to commencement of that day's work. Materials present and checklist should be relocated to the support area or other are below.	ns below and work with field personnel to address issues prior didentified as potentially containing PFAS through use of this ea of the site away from the sampling locations and noted				
South Fourth	0858				
Field Team Leader Name and Signature	Time				

RA	MBGLL	
Date	12/07/21	Perso
Site Name	KL EC Sampling	Evacu
Site Location	Niskayuna, NY	Samp

						PLING F			
Date	12/07/21	Personnel		AJ6	WGP	-		30, Group	
Site Name	KL EC Sampling	Evacuation f	Method	Peristaltic	Pump	_	Well#	Q3-MW(C	
Site Location	Niskayuna, NY	Sampling Method		Peristaltic	Pump	-	Project #	1940101245	
Nell informa	tion:								
	Depth of Well *	26.0	65	_ft.	* Measurem	ents taken fro	om		
	Depth to Water *	17.5		_ft.		x	Top of Wel	l Casing	
	Length of Water Column	8.8	3-1	_ft.			4	ective Casing	
							(Other, Spe	ecify)	
	1" diameter wells = 0.041 x (L	.WC) =	0.36	_gallons					
	2" diameter wells = 0.163 x (L	.WC) =	-	gallons					
	4" diameter wells = 0.653 x (L	.WC) =		gallons					
Vell evacuat	ion data:								
				1	Well Vol	umes			
	Chart Time	13.59	1403	1408					
	Start Time End Time	-1/	11100		4	-		_	
	Gallons Purged		0 310	0.36					
	Temp (C)		13 9	Tu. 0					
	рН	. 69	6.80	10.77	F				
	Spec. Conduc. (mS/cm)	3629	3695	3787	-				
	ORP (mV)	274.7	284.3	292.5	5				
	DO (mg/L)	2.71	1.67	2.10					
	Turbidity (NTU)	81.1	21.0	12.5					
						**			
	Probe type:		YSI Quatro	+ Lamotte	Turbidimeter				
	Appearance at start:	BNU	10			14.			
	Appearance at end:	Cieur							
	Other Observations:	Headspace F	PID reading	0.0					
	Amount of water removed:		1.10)	_gallons				
	Depth to water before sampling	ng:	NM		ft. (below to	o of inner casi	ng)		
					77				
	Parameters Sampled For:			Compounds SEPA Metho	s) by Modified d 537				
ï					***	Sample Tim	e:	1420	
	NOTES:			0					

	- 10 10 1		GROUI		ER SAMP	LING		
Date	12721	Personnel		42P	WOP		Weather	+30 light 200
Site Name	KL EC Sampling	Evacuation I	Method	Peristaltic F	Pump		Well #	63-MW12
Site Location	_Niskayuna, NY	Sampling M	ethod	Peristaltic F	ump		Project #	1940101245
Well informa	tion:							
	Depth of Well *		.37	ft.	* Measureme	nts taken fr		
	Depth to Water *		12.01	-		x	Top of We	
	Length of Water Column		1.36	ft.	-	_	-	otective Casing
			,		L		(Other, Sp	decity)
	1" diameter wells = 0.041 x (L	WC) =	0.38	gallons				
	2" diameter wells = 0.163 x (L		-	gallons				
	4" diameter wells = 0.653 x (L	WC) =	1,000	gallons				
Nell evacuat	ion data:				Well Volu	mos		
		1	2	3	vveii void	illes		
	Start Time	1303	1308	1314				
	End Time	1308	1314	1320				
	Gallons Purged	33%	138	.38				
	Temp (C)	11.7	12.0	12.2				
	pH	7.04	7.02	4.99				
		Berines	2472	2593				
	Spec. Conduc. (mS/cm)	100	~~					
	Spec. Conduc. (mS/cm) ORP (mV)	171.0	159.1	164.5				
		171.6	2.92	2,60				
	ORP (mV)	171.6	159.1 2.92 79.5	2.64.7				
	ORP (mV) DO (mg/L)	171.6	159.1 2.92 79.5	41.2				
	ORP (mV) DO (mg/L)	171.0	759.1 2.92 79.5 YSI Quatro	164.5 2.64 41.2 + Lamotte T	urbidimeter			
	ORP (mV) DO (mg/L) Turbidity (NTU)	171.0 2.105 119		41.2				
	ORP (mV) DO (mg/L) Turbidity (NTU) Probe type:	171.0 2.105 110 Box	n, 1	+ Lamotte T		-10		

NM

* DUP her

PFAS (21 Compounds) by Modified USEPA Method 537

Depth to water before sampling:

Parameters Sampled For:

NOTES:

ft. (below top of inner casing)

Sample Time:



Date 12 12	RA	MBCLL		GROU	NDWAT	ER SAM	PLING F	IELD LO	G
Site Name KL EC Sampling Evacuation Method Peristaltic Pump Well # MV 12-2 Site Location Niskayuna, NY Sampling Method Peristaltic Pump Well # MV 12-2 Well Information: Depth of Well *	Date	12 7 21	Personnel		ATI	LINIS	D	Weather ±	30 1.411+
Site Location Niskayuna, NY Sampling Method Peristaltic Pump Project # 1940101245 Well Information: Depth of Well *	I	KL FC Sampling		Method	2000		٦		W/122
Well information: Depth of Well * Depth to Water * Length of Water Column 7.6 ft. Length of Water Column 7.6 ft. Length of Water Column 7.6 ft. * Measurements taken from Top of Well Casing Top of Protective Casing (Other, Specify) 11 diameter wells = 0.041 x (LWC) = gallons 27 diameter wells = 0.653 x (LWC) = gallons 47 diameter wells = 0.653 x (LWC) = gallons 48 diameter wells = 0.653 x (LWC) = gallons Start Time 1440 1/3	l						_	,	1940101245
Depth of Well * 17.4 ft. Measurements taken from 17.4 ft. Top of Well Casing Top of Protective Casing Top of Well Casing Top of Protective Casing Top of Well Casing Top of Protective Casing Top of Top of Protective Casing Top of Top of Protective Casing Top of Protective Casing Top of Top of Protective Casing Top of Top o	Site Location	Niskayulla, NT	Sampling IVI	Striod	renstattic	rump	_	1 TOJECT #	1340101243
Depth to Water* Length of Water Column C . C C	Well informa	tion:							
Length of Water Column 7.6 ft. Top of Protective Casing (Other, Specify) 1" diameter wells = 0.041 x (LWC) = 2" diameter wells = 0.163 x (LWC) = 3 gallons 4" diameter wells = 0.653 x (LWC) = - gallons Well evacuation data: Well evacuation data: Well volumes Start Time H/D		Depth of Well *	17.6	1	_ft.	* Measurer	nents taken fr	om	
Cother, Specify Cother, Sp	l	Depth to Water *	10.0	O	_ft.		x	Top of Well	Casing
1" diameter wells = 0.041 x (LWC) = 2" diameter wells = 0.163 x (LWC) = 4" diameter wells = 0.653 x (LWC) = — gallons gallons Well evacuation data:	l	Length of Water Column	7.0	61	ft.				-
2" diameter wells = 0.163 x (LWC) =								Other, Spe	cify)
2" diameter wells = 0.163 x (LWC) =		1" diameter wells = 0.041 x //	\\(C) =	0.31	gallone				
Well evacuation data: Well volumes	I	·		(1,2)	-				
Well evacuation data: Well Volumes Well Volumes	1	•	•		_ ~				
Start Time H/D 1/3 15 15 15 15 15 15 15 1		4 diameter wens – 0.000 x (i		-	_ ganons				
Start Time	Well evacuat	ion data:							
Start Time End Time Gallons Purged Gallons Purged Temp (C) Tem						Well Vo	lumes		
End Time 11 15 1204				2					
Gallons Purged (23 1 03 1 0.3) Temp (C) 11.2 12.4 12.9 pH 7.47. 1.05 1.05 Spec. Conduc. (mS/cm) 32 0 2.38 0 3903 ORP (mV) 16.7 6 16.5 9 146.3 DO (mg/L) 17.2 0 2.84 2.28 Turbidity (NTU) 96 79.9 57.1 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: 0.0 Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time: 1205		Start Time	1140	1177-	1159				
Temp (C) 2			11.	1159	1204				
Spec. Conduc. (mS/cm) 32 0 2 38 61 3903 ORP (mV) / 47 4 103 9 1443 DO (mg/L) 12 0 2 84 2 29 Turbidity (NTU) 96 79.0 57.1 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: 0.0 Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time: 1205			0.31	0.31	0.31				
Spec. Conduc. (ms/em) 3202 38 61 3903 ORP (mv) / 67 6 103 9 / 643 DO (mg/L) 120 2 84 2 29 Turbidity (NTU) 96 79.0 57.1 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: 0.0 Amount of water removed: Depth to water before sampling: NM gallons NM ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time: 1205	1		11.2	12.4	12.9				
ORP (mV) 10 7 0 103 9 104 3 DO (mg/L) 1 2 0 2 84 2 29 Turbidity (NTU) 96 79 0 57 1 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: 0 0 Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time: 1205		pH	7.42	7.05	7.05				
Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: J. D Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time: Probe type: YSI Quatro + Lamotte Turbid/meter Are added to the control of the co		Spec. Conduc. (mS/cm)	3202	38 01	3903				
Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time: YSI Quatro + Lamotte Turbidimeter Arount of water Other Observations: Headspace PID reading: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537		ORP (mV)	167.6	163.9	144.3				
Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time: YSI Quatro + Lamotte Turbidimeter Appearance at end: B. U. D. O. O. O. Other Observations: Headspace PID reading: Depth to water removed: NM gallons FFAS (21 Compounds) by Modified USEPA Method 537		DO (mg/L)	9,20	2.84	2.28				
Appearance at start: Appearance at end: Other Observations: Headspace PID reading: J. J Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time: 1205		Turbidity (NTU)	96	79.0	57.1				
Depth to water before sampling: NMft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 Sample Time:		Appearance at start: Appearance at end:		y, no	odor Cie		, ho	oder	
NOTES: * hut to but in finite point @ 1640		Depth to water before sampling	ng:	NM PFAS (21	Compounds	ft. (below to	I		1205-
restart @ 1050		NOTES: X 1/1	of hi	Test 1	0 188	Well t	Miny	@ 1640	
		resta	V7 @14	50	1.0				

RA	MBCLL	GRO	UNDWAT	ER SAMPLI	NG FIELD LO	OG
Date	12-7-21	Personnel	120		Weather †	
Site Name	KL EC Sampling	Evacuation Method	Peristaltic		Well#	03 -MU-21
Site Location			Peristaltic			1940101245
Site Location	I Niskayuria, NY	Sampling Method	renstant	rump	Project #	1940101243
Well informa	ation:					
	Depth of Well *	1321	ft.	* Measurements	taken from	
	Depth to Water *	4.97	ft.		x Top of We	ell Casing
	Length of Water Column	P. 24	ft.		Top of Pro	tective Casing
					(Other, Sp	ecify)
	411	_wc) = 0,33	2	2 1 - 1 0	vac-	
	1" diameter wells = 0.041 x (l 2" diameter wells = 0.163 x (l		gallons gallons	0.1 = 1.0	Gen	
	4" diameter wells = 0.653 x (I	· ——	gallons		3	
	4 diameter wens – 0.000 x (i		galloris			
Well evacua	tion data:					
				Well Volume	s	
		1 2	3			
	Start Time		1027			
	End Time	1001	7 1033			
	Gallons Purged	11 100	20.53			
	Temp (C)	. 71	1 6 87			_
	Spec. Conduc. (mS/cm)		22 (2.72)			
	ORP (mV)	101 7 171	0 ,00 0			
	DO (mg/L)	12 54 26	0 2 23			
	Turbidity (NTU)	67 7 77	1 1087			
	Turblatty (1410)	172. +1 15.	1100.4			
	Probe type:	YSI Qua	atro + Lamotte	Turbidimeter		
	Appearance at start:	Brun +	turvid	n house,	accet	
	Appearance at end:	inuncia, no	201			
		1.7				
	Other Observations:	Headspace PID read	ing: (). ()			
	Amount of water removed:	1.	Oi	gallons		
	Depth to water before sampling	ng: NM		ft. (below top of in	nner casing)	
	Parameters Sampled For:		21 Compounds USEPA Metho			

× MS/MSI) here

NOTES:

1040

Sample Time:

	12 8 21		CITOU	TO TOTAL		LING	FIELD LO	
Date	12.8 21	Personnel				-	Weather	29°F. Snow
Site Name	KL EC Sampling	Evacuation	Method	Peristaltic F		_	Well #	Q3-MW96
Site Location	Niskayuna, NY	Sampling M	ethod	Peristaltic P	Pump	-	Project #	1940101245
Well informa	tion:		3.4					
	Depth of Well *	14,5		ft.	* Measurem	ents taken f	rom	
	Depth to Water *	12-	<u> 36</u>	_ft.		X	Top of Well	l Casing
	Length of Water Column	2,0	5.3	_ft.			-1	ective Casing
							(Other, Spe	ecify)
	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L	•	-	gallons gallons				
Well evacuat	ion data:							
Well evacuat	ion data:				Well Vol	umes		
Well evacuat	ion data:	1	2	3	Well Vol	umes		
Well evacuat	ion data: Start Time	4	2	102-	Well Vol	umes		
Well evacuat	Start Time End Time	10.3	1016	1023	Well Vol	umes		
Well evacuat	Start Time End Time Gallons Purged	10.3	1014	102-	Well Vol	umes		
Well evacuat	Start Time End Time Gallons Purged Temp (C)	10.3	1016 0.10	1023	Well Vol	umes		
Well evacuat	Start Time End Time Gallons Purged Temp (C)	10.3	11.2 6.10 11.2 6.36	102- 1023 0 10 119 6.82	Well Vol	umes		
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm)	10.3 0.10 10.5 69.4 1.908	11.2 6 % 1.874	102- 1023 0 10 119 6.82 1.879	Well Vol	umes		
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	10.3 0.10 10.5 69.4 1.908 167.1	1014 0.10 11.2 6.36 1.874 160-1	102- 1023 0-10 11-9 6-82 1-879 163-9	Well Vol	umes		
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L)	10.3 0.10 10.5 6.9.4 1.908 167.1 2.95	1014 0.10 11.2 6 35 1.874 160.1 2.52	102- 1023 0 10 119 6.82 1.879 163.9 2.39	Well Vol	umes		
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	10.3 0.10 10.5 69.4 1.908 167.1	1014 0.10 11.2 6.36 1.874 160-1	102- 1023 0-10 11-9 6-82 1-879 163-9	Well Vol	umes		
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU)	10.3 0.10 10.5 6.9.4 1.908 167.1 2.95	1014 1016 0-10 11.2 6-86 1.874 160-1 2-52 56.5	102- 1023 0 10 11-9 6.82 1.879 163-9 2.39		umes		
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU)	10.3 0.10 10.5 6.9.4 1.908 167.1 2.95	1014 1016 0-10 11.2 6-86 1.874 160-1 2-52 56.5	102- 1023 0 10 119 6.82 1.879 163.9 2.39	urbidimeter			
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU) Probe type: Appearance at start:	10.3 0.10 10.5 6.9.4 1.908 167.1 2.95 1223	1014 1016 0.10 11.2 6.36 1.874 160.1 2.52 56.5 YSI Quatro	102- 1023 0 10 11-9 6.82 1.879 163-9 2.39				
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU)	10.3 0.10 10.5 6.9.4 1.908 167.1 2.95	1014 1016 0.10 11.2 6.36 1.874 160.1 2.52 56.5 YSI Quatro	102- 1023 0 10 11-9 6.82 1.879 163-9 2.39	urbidimeter			

Depth to water before sampling: ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 Parameters Sampled For:

NOTES:

Sample Time:

1030

RAMBO	II.		GROUND	WATER D	EVELOPN	MENT FIEL	.D LOG		
Date	12 - 8 - 21 Q3 Yard (AOC- 005) RFI Fieldwork	Personnel	1	54, NO	2		Weather	<u> - 25</u>	, SIGW MW187
Site Name Site Location	Groundwater Investigation Niskayuna, NY	Evacuation Methodology			Itic Pump		Well # Q	319	4W187
Well informa	tion:								
	Initial Depth of Well * Final Depth of Well * Depth to Water * Length of Water Column	22.9 kols = \$ 15.0	82	ft. ft. ft. ft.	* Measuremen	ts taken from	Top of We Top of Pro (Other, Sp	tective	
	1" diameter wells = 0.041 x (I 2" diameter wells = 0.163 x (I 4" diameter wells = 0.653 x (I	_WC) ≃		gallons gallons gallons					
Well evacuat	ion data:								
			1)		Well Volumes				
			Kad		1	I	1		
	Start Time	1125	1133	1200					
	End Time	1133	1139	1205				T	
	Gallons Purged	110/	10.00	0.20		i	i		
	Temperature (C)	12 7	13 3	12				_	
	pH	7.08	13.3	13 74				+	
		500	770	75.				-+	
	Spec. Conduc. (mS/cm)		7.70	8.37	ļ			_	
	Turbidity (NTU)	12011	MN 📚	1287					
	3	4	2)						
	Probe type:		'SI Quatro						
	Appearance at start:		Cak						
	Appearance at end:	B	tun						
	Other Observations:	Headspace PID r		0 2000					
	Amount of water removed: Depth to water before sampling	ng:	0.87 NM		gallons ft. (below top o	finner casing)			
	Parameters Sampled For: NOTES: **	Cincincia	ompounds) by PA Method 53	HOUJ C	xventer		1st Valt	12	210
		whic)	FHI	3WIJIB	pura		· VIII		

1) Day after 2nd reading NTU reciding

Note: Samples were twood





Site Name: Knolls Laboratory EC Sampling	_{Task:} 1940101245
Weather (temp/precip): \$32, Snowne	Date: 12-7-21
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been	141
washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	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).
Stald Services and	Alconox®, Liquinox®, Seventh Generation™, and Citrano
Field Equipment: Subcontractor (e.g., driller) materials and	are being used as decontamination cleaning agents; Decon 90° is not being used.
equipment conform to the requirements of this checklist (as applicable)	
/	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	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 to commencement of that day's work. Materials present and ic checklist should be relocated to the support area or other area below.	dentified as potentially containing PFAS through use of this
Field Team Leader Name and Signature	
ricia ream ecauci Nume una Dignature	THIC



ENVIRONMENT & HEALTH

LNOW Latora PFAS Pre-Sampl	ing Checklist
Site Name: Kesselring-Site EC Sampling	Task: 1940101245
Weather (temp/precip): 125° Sixwy	Date: 12/8/21
Pre ₇ Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fatric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	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).
Field Equipment: Subcontractor (e.g., driller) materials and	Alconox®, Liquinox®, Seventh Generation™, and Citranox are being used as decontamination cleaning agents; Decon 90® is not being used.
equipment conform to the requirements of this checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and /Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	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 be to commencement of that day's work. Materials present and ide checklist should be relocated to the support area or other area or below.	ntified as potentially containing PFAS through use of this
ally, Mr	0.930
Field Team Leader Name and Signature	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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Appendix A Data Validation Report
Appendix B Field Data Forms

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 coarsegrained 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

- KAPL. 2021. Emerging Contaminants Sampling 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
- 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
- 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

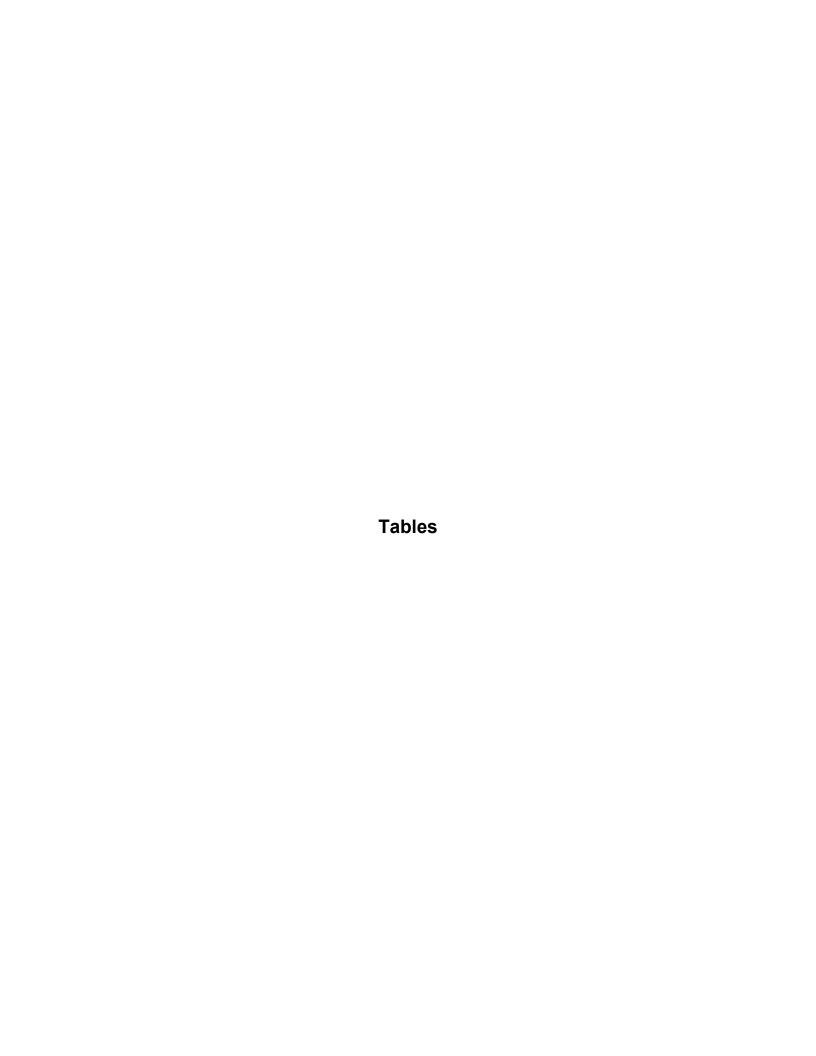


Table 1 Implementation Summary

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

Notes:

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

- 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
	Proposed Guidance	Drinking Water					
Chemical Name	Values	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

		_ 1					
		Area		T	Kesselring Facility Area	ı	ı
		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
	1	Sample Date	10/5/2021	10/5/2021	10/7/2021	10/7/2021	10/5/2021
	Proposed Guidance	Drinking Water					
Chemical Name	Values	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	<u>16.4 *</u>	<u>15.4 *</u>	2.63 EMPC	3.24 *	21.9 *
Perfluorooctanoic acid (PFOA)	6.7	10	9.58 *	9.44 *	6.61	2.24	<u>14.0 *</u>
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
Perfluroroctanesulfonamide (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 Dit	ch 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
	Proposed Guidance	Drinking Water		
Chemical Name	Values	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
Perfluroroctanesulfonamide (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

		A			Hardand Bar	d 1 df:11 A		
		Area		ı		d 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
	Proposed Guidance	Drinking Water						
Chemical Name	Values	MCL						
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 *	<u>13.6 *</u>	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 Substances are 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)
DEUnA	Developed Area	11/12	0.53 J to 10.0	0*/12
PFHpA	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
FFINA	Hogback Rd. Landfill	1/6	0.46 J	0/6
PFDA	Developed Area	6/12	0.85 J to 1.95	0/12
PFDA	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:

MCL = Maximum Contaminant Level; PFHpA = Perfluoroheptanoic acid;

PFNA = Perfluorononanoic acid; PFDA = Perfluorodecanoic acid;

PFHxS = Perfluorohexanesulfonic acid; J = analyte detected at an estimated concentration

^{1.} ng/L= nanograms per liter; NYS = New York State; DW = Drinking Water;

^{*} 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
<u>PFOA</u>	Developed Area	0.96 to 14.0	5/12	3/12
NYS GW GV:	Upgradient	0.96 to 4.46	0/2	0/2
6.7 ng/L NYS DW MCL:	Center-Site	1.96 to 12.1	2/3	2/3
10 ng/L	Downgradient Perimeter	2.24 to 14.0	3/7	1/7
PFOS	<u>Developed Area</u>	2.18 to 327	9/12	5/12
NYS GW GV:	Upgradient	2.18 to 2.49	0/2	0/2
2.7 ng/L NYS DW MCL:	Center-Site	6.44 to 327	3/3	2/3
10 ng/L	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

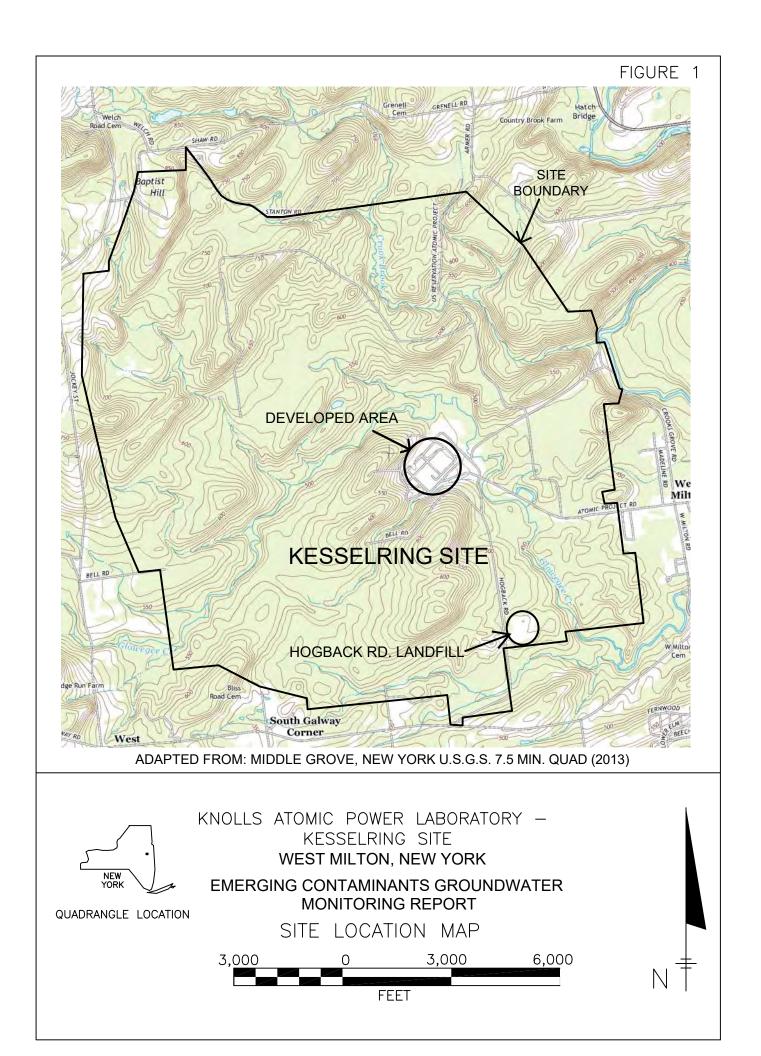
Emerging Contaminants Groundwater Monitoring Report Knolls Atomic Power Laboratory - Kesselring Site West Milton, New York

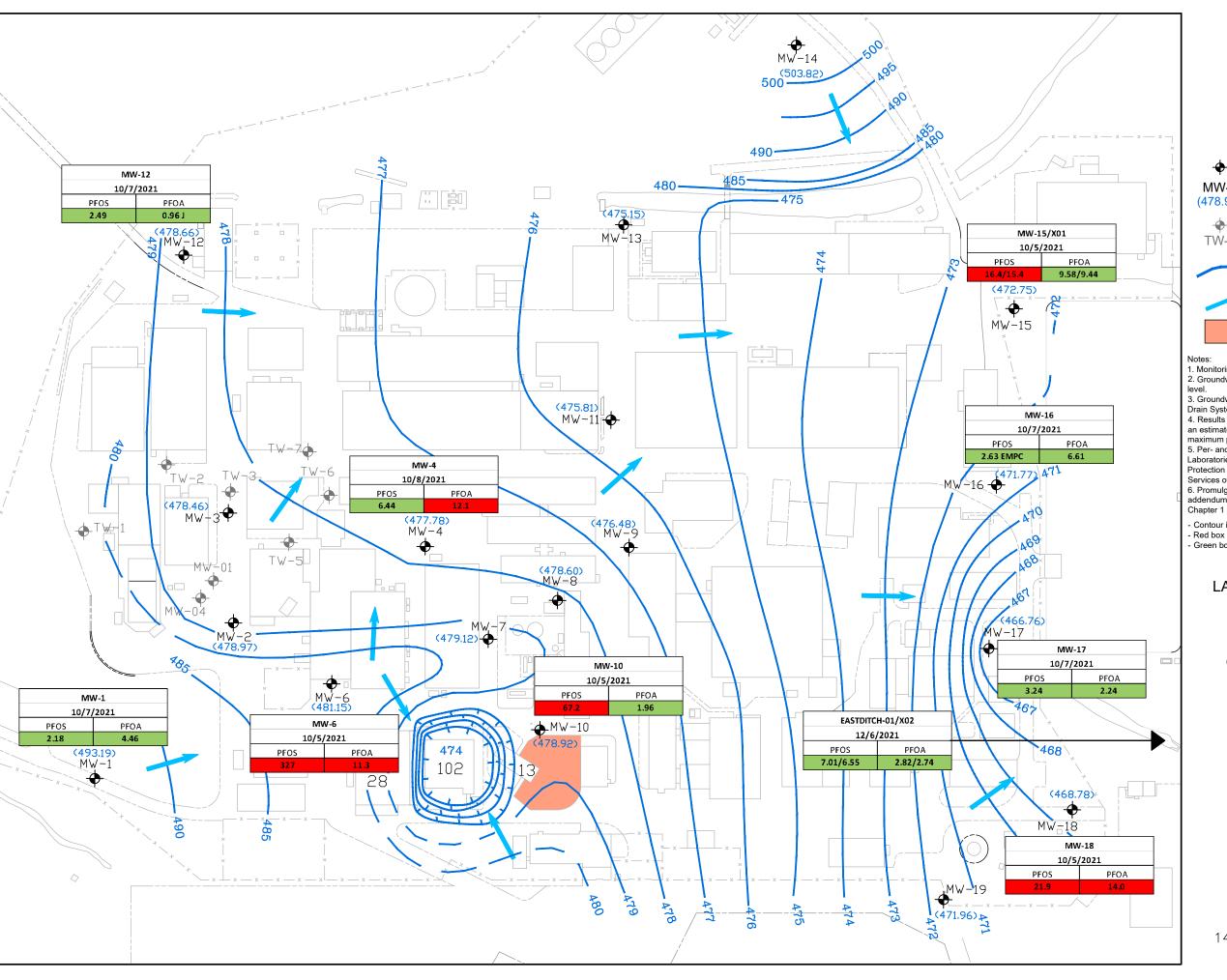
Analyte / Criteria	Range of Detections (ng/L)	Number of Samples > NYS GW GV	Number of Samples > NYS DW MCL
PFOA			
NYS GW GV: 6.7 ng/L NYS DW MCL: 10 ng/L	1.83 to 6.31	0/6	0/6
PFOS			
NYS GW GV: 2.7 ng/L NYS DW MCL: 10 ng/L	0.89 J to 13.6	3/6	1/6

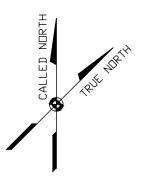
Notes:

- 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.









Monitoring Well Location with Groundwater Elevation Measured on (478.97) August 26, 2019

TW-7

Monitoring Well Not Measured

Groundwater Elevation Contour (Dashed where inferred)



Groundwater Flow Direction



Possible Fire Fighting Training Area

- 1. Monitoring wells surveyed in February 2010.
- 2. Groundwater elevations and contours presented in feet above mean sea 3. Groundwater measurements obtained August 26, 2019 for the Stor
- 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

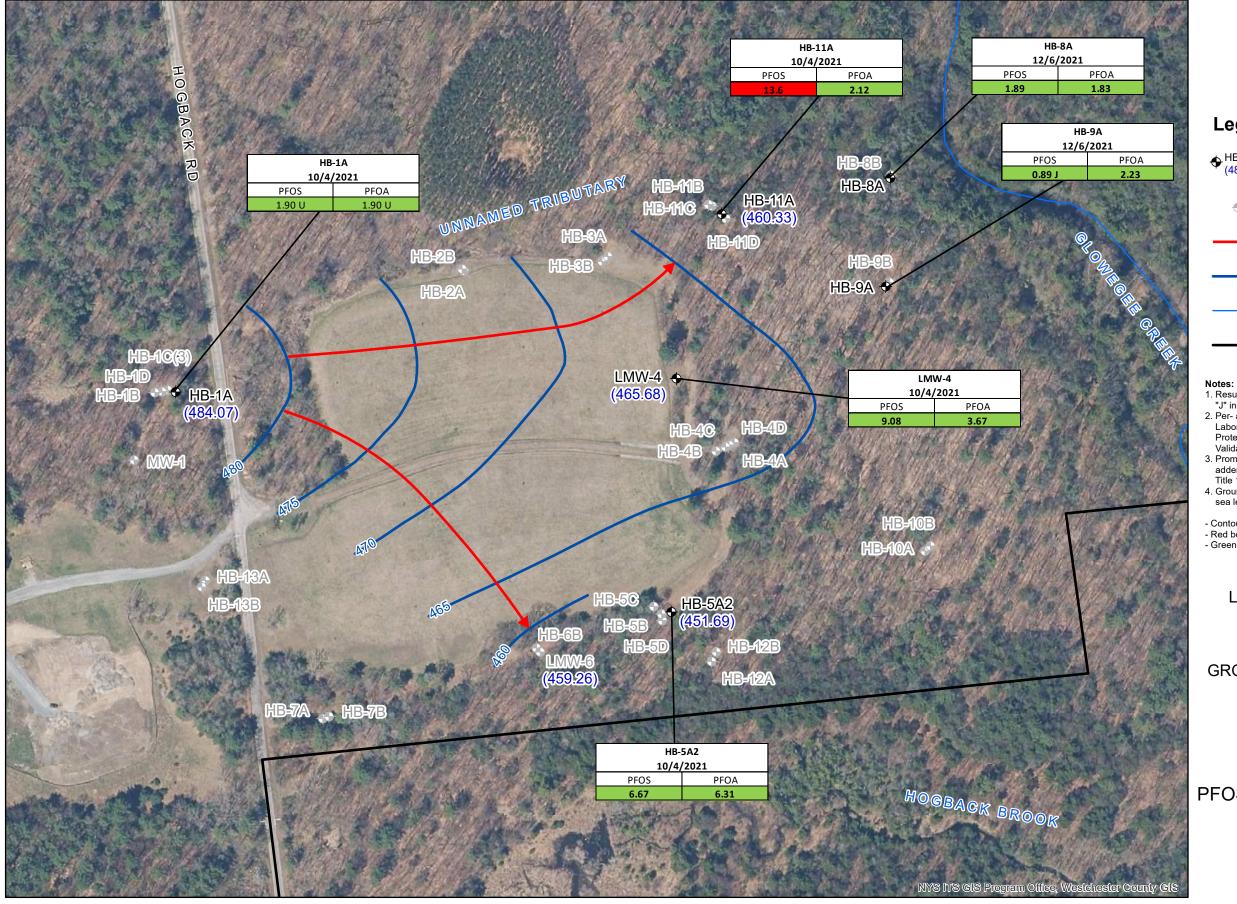
EMERGING CONTAMINANTS GROUNDWATER MONITORING REPORT

FIGURE 2

DEVELOPED AREA

PFOS AND PFOA **CONCENTRATIONS IN GROUNDWATER**





Legend

+B1A Sampled Monitoring Wells (Groundwater elevation measured in September 2021)

Unsampled Monitoring Wells

Apparent Groundwater Flow Direction

Groundwater Elevation Contour

----- Stream

Approximate Property Boundary

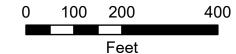
- 1. Results are in nanograms per liter (ng/L). "U" indicates analyte not detected.
 "J" indicates analyte detected at an estimated concentration.
 2. Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica
- Per- and Polyfluoroalkyl Substances analyzed by Eurofins TestAmerica Laboratories, Inc. of Sacramento, California using modified Environmental Protection Agency (EPA) Method 537. Results validated by Data Validation Services of North Creek, New York.
- 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

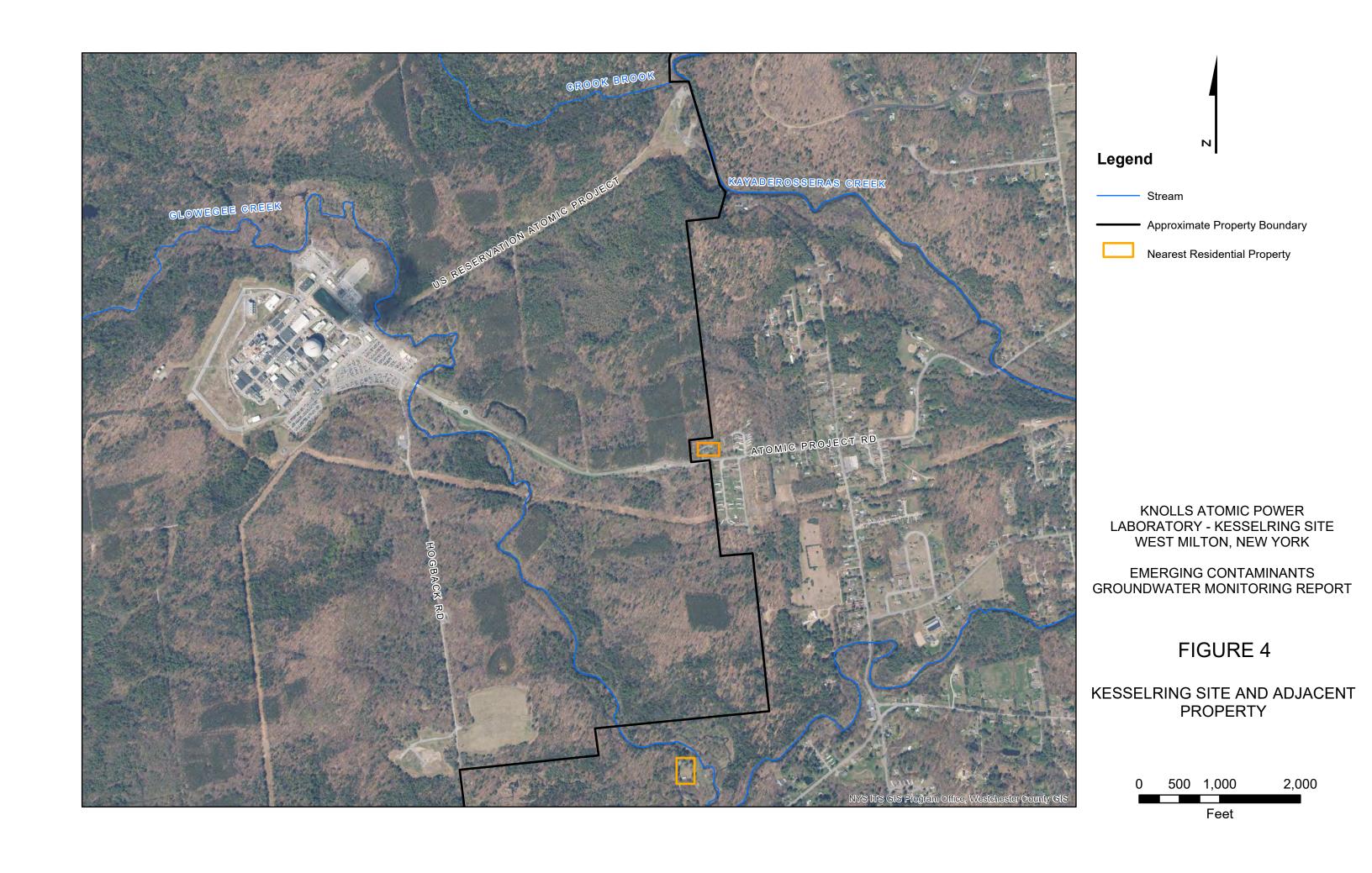
KNOLLS ATOMIC POWER LABORATORY - KESSELRING SITE WEST MILTON, NEW YORK

EMERGING CONTAMINANTS
GROUNDWATER MONITORING REPORT

FIGURE 3

HOGBACK ROAD LANDFILL
PFOS AND PFOA CONCENTRATIONS
IN GROUNDWATER





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

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

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

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

Laboratory Definitions/Glossaries

Definitions/Glossary

Job ID: 200-60401-1 Client: Ramboll US Corporation

Project/Site: KAPL KL/KS Emerging Contaminant Testing

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	

Value is EMPC (estimated maximum possible concentration). 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)

Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample DL, RA, RE, IN

DLC Decision Level Concentration (Radiochemistry)

Estimated Detection Limit (Dioxin) **EDL** LOD Limit of Detection (DoD/DOE) LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level" MDA Minimum Detectable Activity (Radiochemistry) Minimum Detectable Concentration (Radiochemistry) MDC

MDL Method Detection Limit Minimum Level (Dioxin) MLMPN Most Probable Number MQL Method Quantitation Limit

NC Not Calculated

Not Detected at the reporting limit (or MDL or EDL if shown) ND

NEG Negative / Absent Positive / Present POS

PQL Practical Quantitation Limit

PRES Presumptive **Quality Control** QC

RER Relative Error Ratio (Radiochemistry)

Reporting Limit or Requested Limit (Radiochemistry) RL

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) Toxicity Equivalent Quotient (Dioxin) **TEQ**

TNTC Too Numerous To Count

Definitions/Glossary

Client: Ramboll US Corporation

Job ID: 200-61267-1 Project/Site: KAPL KS Emerging Contaminant Testing SDG: 200-61267-1

Qualifiers

LCMS

Qualifier	Qualifier Description
В	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

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
MOI	Method Quantitation Limit

Method Quantitation Limit NC Not Calculated

Not Detected at the reporting limit (or MDL or EDL if shown) ND

NEG Negative / Absent POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive **Quality Control** QC

RER Relative Error Ratio (Radiochemistry)

Reporting Limit or Requested Limit (Radiochemistry) RL

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/	Anal	ysis	Rep	ort							Page L of L
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J KS-EC-FRB01-100421		10/04/21	11:30	FB	WQ	2	6	2	X							
KS-EC-FRB01-100421 KS-EC-HB-11A-100421 KS-EC-HB-5A2-100421	1	10/04/21	12:45	2	WG	2	6	N	X							
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3 KS-EC-HB-11A-1004Z1		10/04/21	12:45	N	MG	2	16	N	X								
1 KS-EC- HB-5AZ-1004Z1		10/04/21	14:20	7	WG	2	6	2	X								
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Sample Type: N = Normal env. sample, FD = field duplicate, FB = F Sample Matrix: SE = Sediment, SO = Soil, WG = Ground Water, W3	quipment Black W	nk, TB = Trip Blank,	MS = 126 M	atris Spike, C	Other (Specify)	ii	E	TA	- Water t	Sealer f	Contra						
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#KS-EC-MW-10-100521		10/05/21	15:00	2	WG	2	G	2	× .					
3KS-EC-MW-6-1005Z1		10/05/21	16:10	7	WG	12	G	N	X					
& KS-EC-XOI-1005ZI		10/05/21	-	FD	wG	2	6	N	X					
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12			135)			-			200-00				I
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Relinquished by: James James	Time	1730	Custaly	Secil 16	31905					730				regarding condition of samples received:
Relinquished by ETA Lock Box	Date	10/4/21	Received by	Rad	Zach	~			17.140/	4/21	Cast	ody Scals		
of:	Time	0815	of: (th	rather	-					815	1/		0119	1
Reducquished In: Rock Lock	Date	0/4/21	Recent	114	_				DatyG/		1,5636	2-1	erature:	
Sample Type: \= Normal env. sample, 140 = field duplicate, 148 = 1	Time	1700	of:	111					Time U	>/		6-7		

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	Mhanil				Custody/	Anal	ysis	Rep	ort			Page of
RAMBOLL	Albany Samp	ler(s):	obert Horni	ung					Sarah T	ravaly //		Lab Use Only
	4004		Will !					_ 4		amy		
Contact: Paul D'Annibale, Amy Spooner-Stevens			Holding T	ime: sample collo	ction to					sis Required		Project Number:
Address: 94 New Karner Road, Stc. 106, Albany, N.Y. 122		merica Laboratory	analysis (1,4						Preservatives: (see ke	y at bottom)		Job Number:
Phone: (518) 724-7272		w Durham Rd , NJ 08817	D. J. D. D	equirement:		1			0		-	200-60445
				ull ASP Car l					Method 8270			Lab ID:
Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ra	mboll.com			h a std 10-bu o analytical re	sinc≃ day sults provided				thod			
Project: KAPL - KS Emerging Contaminants Sampling	Attn: K	Cathryn Kelly	in pivot tab		- Constitution				Mc Mc			
Location: Kesselring Site, West Milton, N.Y. Project #: 1940101245	Phone	:	EDD E	nat: EQuIS 4	ED PLANS	ners	U		USBPA			
Froject #: 1940101245	802-92	3-1021			erence values	ntai	posite	1	in i			
Sample Identification						Number of Containers	or Composite	Y ip	1,4-Dioxanc by USIM			
		1		Sample	Sample	pher	5	reld Filter)iox			
Unique Field Sample 1D (sys_sampl	e_code)	Date	Time	Type (see key)	Matrix (see key)	Z E	Grab	held	1,4-1 NIS			Lab Sample ID
1 KS-EC-MW-15-100521		10/05/21	10:40	N	WG	2	G	2	X		T	
2 KS-EC-MW-18-100521		10/05/21	13:00	N	WG	2	G	12	X			
13 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	7	WG	2	G	N	X			
3 KS-EC-MW-10-100521 4 KS-EC-MW-6-100521 5 KS-EC-X01-100521		10/05/21		FD	WG	2	G	7	X			
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Special Instructions:												
Use this space if shipped viz tourier (e.g., Fed Fx) Relinquished by:	Date	10/5/21	Courier Na	CIP	Lock	DOX:			Date 10/5/21	Condition:		Other Comments or Notes regarding condition of samples a
of Rambon	Time	1730	Lustaby S	eal unber 1/a	31906				Time 1730			received:
Relineurished by:	Date	10/4/21	Regerved by	Was	Local				Date 10 14/21	Custody Seals into	act?	-
of ETA Lock BOX		0815	of Out	reful	0 1				Time 0815	1700012		
Relinquished by: Rail Loan	Date	10/4/21	Received by	150 9	7 /				Day 07/4	Cooler Temperat		1,,
of: Curfi	Time	1700	Not 1	11a+	e diet				1119:45	ID#9-1	1.6=	-1.1
Sample Type: N = Normal env. sample, FD = field dup									/			
Sample Matrix: SE = Sediment, SO = Soil, WG = Group Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 1						zuality (ontro.	1, 11()	g = Water Quality Cor	ntrol		

		Chain of Custody/Analysis Report												Page 1 of 1	
RAMBOLL	Sample (Signatur	Λ.	A	ung					0	Sarah		valy	Le	W	Lab Use Only
	Laborat	tory:	Holding Time: 14 days from sample collection to									Requ		0	Project Number:
ontact: Paul D'Annibale, Amy Spooner-Stevens	TestAm	enca Laborators	analysis (Pt		Chon to				Preservativ	es: (sec	ker	ai bom	oitt)		
ddress: 94 New Kamer Road, Stc. 106, Albany, N.Y. 12203		rside Pkwy				1	1	١.	10						Job Number:
hone: (518) 724 7272	West Sa	ceimenio, C.A. 95605		equirement:	. (5-)										
mail: Paul D'Aambale@ramboll.com Amy Spooner Stevens@ramboll.com				full ASP Car I h a sid 10-bu					USEDA						Lab 1D:
roject: KAPL - KS Emerging Contaminants Sampling	Attn: Ka	uticon Kelly	TAT, prelin		sults provided				p. 1.5						
ocation: Kesselring Site, West Milton, N.Y.	Phone:					2									
roject #: [940]01245	802-923	-1021	1	nat; EQuIS 4 FG EDD refi		Containe	7814.1	,	noon od 53						
Sample Identification	100-000		With X Lord	73,12272 (61	seriec varies	ō	or Coding	denuti 3	1 Com						
Unique Field Sample 1D (sys-sample-code)		Date	Time	Sample Type (see key)	Sample Matrix (see key)	Number	Cimb C	Pickl Files	PEAS (21 Compounds) Modified Method 537						Lab Sample 1D
KS-EC-MW-17-100721		10/07/21	10 15	7	WG	2	6	2	X						
KS-EC-FRBOS-100721		10/07/21	10:25	FB	NQ	2	G	2	X						
1 KS-EC-MW-16-100721		10/07/21	11.55	7	WG	2	6	7	X		1				50 FOR 1800 (SELECTION
1 KS-EC-MW-1-100721		10/07/21	13 45	2	. W.G	2	6	2	χ						
1 KS-EC-MW-1-100721-MS		10/07/21	13 45	ms	MQ	2	6	2	X						
6 KS -EC-MW-1-100721-MS	D	15/50/01	13:45	MS	NQ	2	6	7	×		200-	60492	Chair	of Cust	tody
KS-EC-EBWO1-100721.		15/50/01	14:05	EB.	MQ.	2	6	N	. X						
* KS-EC-EBLOZ-100721		15/10/01	14:20	EB.	QW	2	6	N	X						
, KS-EC-MN-12-100721		10/07/21	15:20	N	146	. 2	6	2	X						
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se this space if shipped a securier (e.g., Fed Es)	Date	······································	Courier Na	ne:				-	Date			Conditi	(31 1 :		Other Comments or Notes
chinquished by:	Time		Tracking N	imbre					Time		-				regarding condition of samples as received:
chiquished by Jank Yerry	Date 1	0-7-21	Received by		mil	2	,		Date 10 -	7-2	,	Custod	Scals	macir	- ,
Ramboll	Time	1640	on E	FTA	, .	3		. 1	Time / 64			y	,		
clinquished by:	Date / C	1-8-3021	Received by	50					Date 10/9			Cooler	Tempe	rature	
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umple Type: $N = Normal \text{ cm.}$ sample, $PD = \text{field duplicate}$, $EB = 1$ umple Matrix: $SE = \text{Sediment}$, $SO = \text{Soil}$, $WG = \text{Ground Water}$, W								WO	= W.a. = 1 h	mla - 1		, i			
reservatives Code: $0 = \text{none}$, $1 = \text{HCL}$, $2 = \text{HNOS}$, $3 = \text{H2SO4}$, 4						uanti C	Kriine	, n Q	- Water Qu	namely 1	.cotttf	1 21			

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	RAMBOLL	Sample (Signatur	A	obert Horn	ung			Sarah		aly	Lab Use Only					
L		Laborat	ory:		Ana	lysis I	Requir	Project Number:								
1	ntact: Paul D'Annibale, Amy Spooner-Stevens	Test.\me	erica Laboratory	days from analysis (1.4	rsample colle (-dioxane)	ction to				Preservativ	es: (see	key at	bottor			
Ad	dress: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203		Durham Rd		·					-()-						Job Number:
Ph	one: (518) 724 7272	Edison,	NJ 08817		equirement:					270						
	nail: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com		NYSDEC Full ASP Car B Data Package with a std 10-business day TAT, prelim analytical results provided							Method 8270						Lab ID:
	oject: KAPL - KS Emerging Contaminants Sampling	Atın: Ka	thryn Kelly	in pivot tab						N. Mc						200- 60492
Ł.,	cation: Kesselring Site, West Milton, N.Y. oject #: 1940101245	Phone:		EDD Form	nat: EQuIS 4	161. 17111	ners	20 3		AGE IS						
) (CH. 1740101243	802-923-	1021		HC EDD ref		of Containers	nposit	4	oy US						
L	Sample Identification				Sample	Sample	ber of C	G or Composite	reld Filtered?	1,4-Dioxanc by USEPA SIM						
	Unique Field Sample ID (sys_sample_code)		Date	Time	Type (see key)	Matrix (see key)	Number	Grab G	Field I	1,4-D SIM						Lab Sample ID
1	KS-EC-MW-17-100721		10/07/21	10:15	7	WG	2	6	2	X						1
2	KS-EC-MW-16-100721		10/07/21	11:55	N	WG	2	G	N	X						2
U	KS-EC-MW-1-100721		15/40/01	13:45	N	WG	2	G	N	X						3
agĕ	KS-EC-MW-1-100721-MS		10/07/21	B:45	MS	MQ	2	G	N	Х						3
382	KS-EC-MW-1-100721-MSD		10/07/21	13:45	ms	NQ	2	G	N	X						3
O.	KS-EC-EBW01-100721		10/07/21	14:05	EB	WQ	2	G	2	X						Y
Page 3829 of 3847	KS-EC-EBW02-100721		15/50/01	14:20	EB	WQ	2	6	N	X						(
8	1110 50 1011112 1125771		10/07/21	15:20	N	WG	2	6	N	X						4
9						2010										
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	e this space if shipped via courier (e.g., Fed Ex) linguished by:	Date		Courier Na	me:					Date		Cc	onditio	11:		Other Comments or Notes regarding condition of samples as
of:)	Time		Tracking N	umber:					Time						received:
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οĚ	Ramboll	Time	1640	of:	SEN	F			Ω	Time 14	40		4	,		170013
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ofi	EEM	Time	1)01	of. P	" "	AT C		1		Time	00		189	L.	3/40	
Sai	mple Type: N = Normal env. sample, FD = field duplicate, FB = Equal mple Matrix: SE = Sediment, SO = Soil, WG = Ground Water, WS eservatives Code: $0 = \text{none}$, $1 = \text{HCL}$, $2 = \text{HNO3}$, $3 = \text{H2SO4}$, $4 = \text{H2SO4}$	= Surface W	Vater, WW = Waste W	arer, $WP = I$	Potable Water	SQ = Soil Q		Contro	l, WQ	= Water Qu	rality (ontrol				

				(Chain of	Custody/	Anal	vsis	Repo	rt						Page of	
	RAMBOLL	Sampler(s): Robert Hornung Sarah Travaly													Lab Use Only		
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		Laborat		Holding T	me:					Λ	nalys	-	auire	G)		Project Number:	
Cor	ntact: Paul D'Annibale, Amy Spooner Stevens	TestAme	nea Laboratory		n sample coll		P	eservalives: p			•						
Add	Iress: 94 New Karner Road, Stc. 106, Albany, N.Y. 12203	880 Rive	rside Plays	analysis						()	T				T	Job Number:	
Pho	one: (518) 724 7272		ramento, CA, 95605	Package R	equirement		1										
					ull ASP Car					2						Lab ID:	
Em	uil; Paul D'Annibale@ramboll.com Amy Spooner Stevens@ramboll.com				hastd 10 bu					CSED							
Pro	ject: KAPL - KS Emerging Contaminants Sampling	Aun: Ka	thryn Kelly	in pivot tabl		sults provided				ă.							
Loc	cation: Kesselring Site, West Milton, N.Y.	Phone:					ers	-		37 37							
Pro	ject #: 1940101245		121		iac EQuIS 4		tain	Mile	/	od 5							
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	Sample Identification						Number of Containers	or Contrastit	131	PPAS (21 Compounds) Modified Method 537							
					Sample Type	Sample Matrix	nbei	15	- I sh	S S S							
	Unique Field Sample ID (sys_sample_code)		Date	Time	(see key)	(see key)	Z	Grab G	Lield Littered?	No.						Lab Sample HD	
1	KS-EC-MW-4-100821		10/08/21	10:15	N	WG	2		N	X							
,	KS-EC-FRBO4-1008Z1 .		10/08/21	10:25	FB	WQ	2	6	N	~							
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of-	Ramboll	Time	1335		RTA	+ ' .	•		100	me /325							
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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, WQ = Water Quality Control, Preservatives Code: 0 = none, 1 = HCL, 2 = HSO3, 3 = H2SO4, 4 = NaOH, 5 = Zn Acetate, 6 = MeOH, 7 = NaHSO4, 8 = other

				Chain of	Custody/	/Anal	lysis	Rep	ort				Page of
RAMBOLL	Sample: (Signature	Λ /	obert Horn	ung					Sarah	Trav		eille	Lab Use Only
	Laborate		Holding T			T	T		Ana		Require		Project Number:
Contact: Paul D'Annibale, Amy Spooner-Stevens	Test \me	rica Laboratory	7 days fron analysis	r sample colle	Tion to				Preservatives: (see	key at	t bottom)	
Address: 94 New Karner Road, Ste. 106, Albany, N.Y. 12203	777 New	Durham Rd							0				Job Number:
Phone: (518) 724-7272	Edison, N	NJ 08817		equirement:		1			270				
Email: Paul.D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com			Package wi	Full ASP Cat th a std 10-bu					Method 8270				Lab ID:
Project: KAPL - KS Emerging Contaminants Sampling	Attn: Kat	thryn Kelly	in pivot tab		iuns provided				M				
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Sample Identification				Sample	Sample		G of Composite	reld Entered?	1,4-Dioxane by USIM				
Unique Field Sample ID (sys_sample_code)		Date	Time	Type (see key)	Matrix (see key)	Number	Grab G	Freld 1	1,4-1) SIM				Lab Sample ID
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Page 3834 of 3847			1	N	1					4			* D
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Use this space if shipped via courier (e.g., Fed Ex) Rehnquished by:	Date		Councr Na	mic.					Date		ondition	:	Other Comments or Notes regarding condition of samples
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RESULT MOLINE	Time	1700	1	(en)		٥,	MA	11	Time Time	1	1/29	2.5/1	. 1)
of: EEVA Sample Type: N = Normal env. sample, FD = field duplicate, EB = E			10t:	100 17	July (Si - 11)	1	201-	1	DOY		1	-10	
Sample Type: $A = A$ Commarch, sample, $A = A$ Commarch, $A = A$ Sample Matrix: $A = A$ Schment, $A = A$ Soil, $A = A$ Ground Water, $A = A$									= Water Quality Co	mirol			
		= Zn Acetate, 6 = Mc						-	Willer Stuffer 13	71111171			

RAMBOLL	Sample				Custody,		youd	rech	-	6-1	lexand			Page of
KAMBOLL	(Signatur	r(s): William	Pierce	Mul.	MAC		-		Minde			60100	?	Lab Use Only
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Contact: Paul D'Annibale, Amy Spooner-Stevens		rica Laboratory	analysis (12		echen m				Preservatives:	(see key	at botto	m)		
Address: 94 New Karner Road, Stc. 106, Albany, N.Y. 12203		rside Pkwy framento, CA, 956	.05			-			11					Job Number:
Phone: (518) 724-7272 Email: Paul D'Annibale@ramboll.com Amy.Spooner Stevens@ramboll.com	West Sac	ramento, C.A, 250	NYSDEC Package w	Requirement Full ASP Car ith a std 1935 m analytical re	B Data 5 do	COP	}		USEPA					Lab ID:
Project: KAPL - KS Emerging Contaminants Sampling	Aune Ka	theya Kelly	in pivot tal		sins provide				20		// ///////////////////////////////////	 	I Diana	
Location: Kesselring Site, West Milton, N.Y. Project #: 1940101245	Phone: x02-923-	1021		mat: FQuIS 4 DEC FDD tel		Containers	npostic IC.	X	l Compounds) Method 537					
Sample Identification				Sample	Sample	Number of C	C, or Co.	Hiteraff	2 3	20	00-6126	7 Chain	of Cus	tody
Unique Field Sample 1D (sys_sample_code)		Date	Time	Type (see key)	Matrix (see key)	Z	Crab	Fredd	PI-AS Modifi					Lab Sample ID
KS-EC-East Ditch-01-1206	21	12-6-	21 1030	N	WS	12	G	N					X	-
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KS-EC-EBW03-120621			1110	EB	WQ									
KS-EC-HB-9A-120621			1315	N	WG									
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* KS-EC-F2B06-12062)		1305	FB	Wa									12 2
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Special Instructions: 24 hr TAT on 1	S-EC-E	ast Dite	h-01-12	0621	f KS	-EC	(XO	2-12	06	21			
Use this space if shipped via counce (c.v. ledd). Reiniquished by	Date		Courier N	ime:	(we)	3			Date		Conditu	211		Other Comments or Notes regarding condition of samples a
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Sample Type: N = Normal env. sample, 1:D = field duplicate, 1:B =	Equipment Bla		ank, MS = Lab N	dams Spike,	Other (Specify):	-	-	1136	/	IL			II.
Sample Matrix: 8E = Sediment, SO = Soil, WG = Ground Water, Preservatives Code: 0 = none, 1 = HCL, 2 = HNO3, 3 = H2SO4	WS = Surface W	Vater, WW = Was	at Water, WP =	Potable Water	SQ = Sol C		ontro	l, W()	= Water Qual	in Cont	rol			

Data Summary Table

	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
	Proposed Guidance					
Chemical Name	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 "*".

	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
	Proposed Guidance					
Chemical Name	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 "*".

	Area			Kesselring Facility Area		
	Location ID	MW-6	MW-10	MW-12	MW-15	MW-15
		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 ID Sample Date		10/5/2021	10/7/2021	10/5/2021	10/5/2021
	 	10/3/2021	10/3/2021	10/7/2021	10/3/2021	10/3/2021
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	1.96 1.06 J	1.90 U	16.1	15.4
Perfluorotetradecanoic acid (PFTA/PFTeA)		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		1.91 U	1.85 U
	NV			1.90 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 "*".

	Area			Kesselring Facility Area		
	Location ID Sample ID	MW-16 KS-EC-MW-16-100721	MW-17 KS-EC-MW-17-100721	MW-18 KS-EC-MW-18-100521	Field Reagent Blank KS-EC-FRB02-100521	Field Reagent Blank KS-EC-FRB03-100721
	Sample Date	10/7/2021	10/7/2021	10/5/2021	10/5/2021	10/7/2021
	Proposed Guidance					
Chemical Name	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 "*".

	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
	Proposed Guidance					
Chemical Name	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 "*".

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
	Proposed Guidance			
Chemical Name	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

	Area		Hogback Road	d Landfill Area		Kesselring I	acility 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
	Proposed Guidance						
Chemical Name	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 F	acility 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
	Proposed Guidance						
Chemical Name	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 I	Facility Area	Equipment Blank			
	Location ID		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		
	Proposed Guidance						
Chemical Name	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

Date	10-4-21	Personnel		RDH/SET			Weather	±65°F, R
Site Name	KS EC Sampling	Evacuation I	Method	Peristaltic Pur	mp		Well#	HB-1A
	West Milton, NY	Sampling Me	ethod	Peristaltic Pur	пр		Project#	1940101245
Well informa	tion:							
	Depth of Well *			ft. *	Measurements	taken f	-	
	Depth to Water *		.14	ft.		X	Top of Wel	
	Length of Water Column	8	,56	ft.			-	ective Casing
					L		Other, Spe	,Giry)
	2" diameter wells = 0.163 x (l 4" diameter wells = 0.653 x (l	•		gallons gallons				
Well evacua	tion data:							
			ra d		Well Volume	S		T
		1 10000	2	0959		-		
	Start Time		0957	1004		-		
	End Time		1.40					
	Gallons Purged Temp (C)		14.3	14.3				
	pH		6.06	6.03				
	Spec. Conduc. (mS/cm)		0.090	0.088				
	ORP (mV)	11- 0	110-9	114.1				
	DO (mg/L)		5.38	5.71				
		-		0.1			_	
	Turbidity (NTU)	3.26	1.13	1.07				

PFAS (21 Compounds) by Modified USEPA Method 537

1,4-Dioxane by USEPA Method

Parameters Sampled For:

8270 SIM

Sample Time:

1015

NOTES:		
NOTES.		
		

			To A	
RA	M	RO	6	
	UTU			

GROUNDWATER SAMPLING FIELD LOG

ate	10-4-21	Personnel		RDH/SET			Weather	+65°F Rain	
e Name	KS EC Sampling	Evacuation M	lethod	Peristaltic P	ump		Well# SEWM-4 LMW-4		
te Location	West Milton, NY	Sampling Me	thod	Peristaltic P	ump	-	Project # 1940101245		
ell informa	tion:								
	Depth of Well *		.00	ft.	* Measurem	ents taken fro	1		
	Depth to Water *	13	.17	ft,		Х	Top of Well C		
	Length of Water Column		-83	ft.			Top of Protec		
							(Other, Speci	fy)	
	1" diameter wells = 0.041 x (L		420	gallons					
	2" diameter wells = 0.163 x (L		0.30	gallons					
	4" diameter wells = 0.653 x (L	.vvc) =		gallons					
II evacuat	tion data:								
					Well Vo	lumes	1		
	0.47		2	3					
	Start Time		1110	1112					
	End Time Gallons Purged		0.30	0.30					
	Temp (C)	13.9	14-0	14.1					
	pH	661	6.69	6.68					
	Spec. Conduc. (mS/cm)	0.75	0.65	0.61					
	ORP (mV)	0.0	76.1	66.0					
	DO (mg/L)		2.94	3.20					
	Turbidity (NTU)		3.01	2.21	7-1-1				
	Taxana Arman		0 -						
	Probe type:	10/1/21	YSI Quatro		E Taran		-1		
	Appearance at start:	as che	20,00	pdo	- light	+ Gray	- clear		
	Appearance at end:	_ clear	(100	990°	9	3			
	01 01 01	L landonnoù F	OID reading:	4 000					
	Other Observations:	Headspace F	PID reading:	S.Opp	4				
	Amount of water removed:		0	.90	gallons				
	Depth to water before sampli	ng)	NM		ft. (below to	p of inner cas	sing)		
			PFAS (21	Compounds	by Modified	i			
	Parameters Sampled For:		US	EPA Method	1 537				
			1,4-Diox	ane by USE		O ! T'		1125	
				8270 SIM		Sample Tim	ie.	1100	
	NOTES:								

Date	10-4-21	Personnel		RDH/SET		Weather	+60°F, Ran
Site Name	KS EC Sampling	Evacuation !	Method	Peristaltic Pum	р	Well#	HB-11A
Site Location	West Milton, NY	Sampling Mo	ethod	Peristaltic Pum	p	Project#	1940101245
Well informa	ation:		,				
	Depth of Well *	- 14	1.00	-	leasurements take		
	Depth to Water *	- 9	.53	ft_	×	Top of Wel	_
	Length of Water Column	5	.47	_ft			ective Casing
					-	(Other, Spe	еслу)
	48 diamata	14(0) -	5	callens			
	1" diameter wells = 0.041 x (l		0.89	gallons			
	2" diameter wells = 0.163 x (L			gallons			
	4" diameter wells = 0.653 x (l	_vvC) =		gallons			
Well evacuat	tion data:				Well Volumes		
					well volumes		
		4	10	2			
	0.17	1	2	3		= 1	
	Start Time		1730				
	End Time	1227	-				
	End Time Gallons Purged	1227	-				
	End Time Gallons Purged Temp (C)	0.89	-				
	End Time Gallons Purged Temp (C) pH	1227 0.89 13.6 7.02	1230				
	End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm)	1227 0.89 13.6 7.02 0.83	-				
	End Time Gallons Purged Temp (C) pH	1227 0.89 13.6 7.02 0.83	1230				
	End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm)	1227 0.89 13.6 7.02 0.83 98.0	1230				

ft. (below top of inner casing)

Sample Time:

1245

PFAS (21 Compounds) by Modified USEPA Method 537

1,4-Dioxane by USEPA Method 8270 SIM

Parameters Sampled For:

NOTES:

Depth to water before sampling:

Date Site Name	ID-U-ZI KS EC Sampling	Personnel Evacuation		RDH/SET Peristallio	Pump w/ foc	d value	Weather 'Well #	±604 pay
Site Location	West Milton, NY	Sampling Mo	ethod 197/2	Peristaltic F	oump w/ fee	ivalve	Project #	1940101245
Well informa	tion: Depth of Well * Depth to Water * Length of Water Column	9 ⁴¹	0.42	ft. ft.	* Measurement	ts taken fro	Top of Well	ective Casing
	1" diameter wells = 0.041 x (L 2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L	.WC) =	0.53	gallons gallons gallons				
	tion data:							
Well evacua					Well Volum	ies		
Well evacua		1	2	3	Well Volum	ies		
Well evacua	Start Time	1 1350	1357	3 1407	Well Volum	ies		
Well evacua			1357		Well Volum	les		
well evacua	Start Time	1354	1357	1407 1413 0.53	Well Volum	les		
well evacua	Start Time End Time	0.53	1357	1407 1413 0.53 11.2	Well Volum	les		
Well evacua	Start Time End Time Gallons Purged	0.53	1357 1404 0.53 12.1 6.70	1407 1413 0.53 11.2 6.65	Well Volum	les		
Well evacua	Start Time End Time Gallons Purged Temp (C)	1354 0.53 12.0 6.60 1.08	1357 1404 0.53 12.1 6.70 1.08	1407 1413 0.53 11.2	Well Volum	es		
Well evacua	Start Time End Time Gallons Purged Temp (C)	1354 0.53 12.0 6.60	1357 1404 0.53 12.1 6.70	1407 1413 0.53 11.2 6.65	Well Volum	ies		
Well evacua	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm)	1.3.5 4 0.53 12.0 6.60 1.08 91.0	1357 1404 0.53 12.1 6.70 1.08	1407 1413 0.53 11.2 6.65 1.08	Well Volum	es		
Well evacua	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	1.354 0.53 12.0 6.60 1.08 91.0 2.51	1357 1404 0.53 12.1 6.70 1.08 70.3	1407 1413 0.53 11.2 6.65 1.08	Well Volum	es		
Well evacua	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	1354 0.53 12.0 6.60 1.08 91.0 2.51 28.6	1357 1404 0.53 12.1 6.70 1.08 70.3 3.53 61.2	1407 1413 0.53 11.2 6.65 1.08 61.5 26.1	the Turb	dity.	Meter Lic od	

PFAS (21 Compounds) by Modified USEPA Method 537

Parameters Sampled For:

1,4-Dioxane by USEPA Method

8270 SIM

Sample Time:

ft. (below top of inner casing)

NOTES:

Depth to water before sampling:

	MD	di	
RA		U	- 6

GROUNDWATER SAMPLING FIELD LOG

ate ite Name ite Location	KS EC Sampling	Personnel Evacuation N Sampling Me		RDH/SET Peristaltic P Peristaltic P			Weather Well # Project #	#559F, Drevio MW-15 1940101245	
Vell informa	tion: Depth of Well * Depth to Water * Length of Water Column	6.3	.10 stickup & 58 52	ft. ft. ft.	* Measureme	ents taken fro x			
	1" diameter wells = 0.041 x (L 2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L	WC) =	1.39	gallons gallons gallons					
ell evacuat	ion data:				Well Volu				
		1	2	3	well volu	ines			
	Start Time	0958	1007	1018					
	End Time	1004	10:5	1026				A	
	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			10 - 10		
	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: Appearance at start: Appearance at end: Other Observations:	Headspace	YSI Quatro	0.0 pp	10 A	chidit Var	y met	er	
	Amount of water removed: Depth to water before samplir Parameters Sampled For:	ng:	NM PFAS (21	'	gallons ft. (below top) by Modified d 537	of inner cas	sing)		
			1,4-Diox	ane by USEI 8270 SIM		Sample Tir	ne:	1040	
	NOTES: (ollec	FFAS	and and	P X0	oxare	this	bratio	^	

ate	10-5-21	Personnel		RDH/SET			Weather	=60°F, over
ite Name	KS EC Sampling	Evacuation	Method	Peristaltic P	ump		Well#	MW-18
ite Location	cation West Milton, NY Sam		mpling Method Peris		Peristaltic Pump		Project #	1940101245
Vell informa								
	Depth of Well *		.10	ft	* Measurem	nents taken f	Top of Well	Casina
	Depth to Water *		80	ft		X	-	ective Casing
	Length of Water Column		.30	ft			(Other, Spe	
								• /
	1" diameter wells = 0.041 x (L	WC) =		gallons				
	2" diameter wells = 0.163 x (L		184	gallons				
	4" diameter wells = 0.653 x (L		- 1.0 .	gallons				
	,,							
		,,,		g				
Vall avacua	ion data:							
Vell evacua	ion data:				Well Vo	lumes		
Vell evacua	iion data:	1	2	3	Well Vo	lumes		
Vell evacua		1		3	Well Vo	lumes		
Vell evacua	Start Time	1 1228	12,39	3 1249		lumes		
Vell evacua	Start Time End Time	1228		3		lumes		
Vell evacua	Start Time End Time Gallons Purged	1 1228 1236 1.84	1239	3 1249 1257		lumes		
Vell evacua	Start Time End Time	1 1228 1236 1.84 16.5	1239	3 1249 1257		lumes		
Vell evacua	Start Time End Time Gallons Purged Temp (C)	1 1236 1.84 16.5 7.20	1239 1247 1.84 16.5 7.27	3 1249 1257 1.84 16.4 7.29		lumes		
Vell evacua	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm)	1 12.36 1.84 16.5 7.20 0.79	1239 1247 1.84 16.5 7.27 0.85	3 1249 1257 1.84 16.4 7.29 0.86		lumes		
Vell evacua	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	1 1236 1236 1.84 16.5 7.20 0.79 -0.2	1239 1247 1.84 16.5 7.27 0.85 -44.6	3 1249 1257 1.84 16.4 7.29 0.36 -48-7		lumes		
Vell evacua	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	1 1236 1.84 16.5 7.20 0.79 -0.2	1239 1247 1.84 16.5 7.27 0.85 -44.6	3 1249 1257 1.84 16.4 7.29 0.36 -48.7		lumes		
Vell evacua	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	1 1236 1.84 16.5 7.20 0.79 -0.2	1239 1247 1.84 16.5 7.27 0.85 -44.6	3 1249 1257 1.84 16.4 7.29 0.36 -48-7		lumes		
Vell evacua	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	1 1236 1.84 16.5 7.20 0.79 -0.2	1239 1247 1.84 16.5 7.27 0.85 -44.6	3 1249 1257 1.84 16.4 7.29 0.36 -48.7		lumes		
Jell evacua	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU)	1 1236 1.84 16.5 7.20 0.79 -0.2	1239 1247 1.84 16.5 7.27 0.85 -44.6	3 1249 1257 1.84 16.4 7.29 0.36 -48.7 0.12			y note	
ell evacua	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	1 1236 1.84 16.5 7.20 0.79 -0.2	12.39 12.47 1.84 16.5 7.27 0.85 -44.6 0.15 1.58	3 1249 1257 1.84 16.4 7.29 0.36 -48.7 0.12 1.25		which	y nete	

PFAS (21 Compounds) by Modified USEPA Method 537

1 1 Disserts by USERA Method

NM

1,4-Dioxane by USEPA Method

8270 SIM Sample Time:

ft. (below top of inner casing)

1300

NOTES:

Depth to water before sampling:

Parameters Sampled For:

Develope	nent	tubing i	n well	(HDPE)	Leave	in	well in	place
during	arc	my and	Samo	lina.				
-		0	- "	0				

RAM	BOLL

GROUNDWATER SAMPLING FIELD LOG

	VS EC Sampling	Personnel RDH/SET Evacuation Method Peristaltic Pump			Weather <u>+55°F</u> ,			
	, reality to 20 camping		lethod	Peristaltic Pun	np		Well# MW-10	
e Location	West Milton, NY	Sampling Me	ethod	Peristaltic Pun	np		Project # 1940	
ell informat		12	L,000 10/1	5/21				
	Depth of Well *				Measuremer F	nts taken fro		Casina
	Depth to Water *	4.2		_ft.	+	х	Top of Well	ective Casing
	Length of Water Column	7.8	<i>50</i>	_ft.	1		(Other, Spe	-
	1" diameter wells = 0.041 x (L'			gallons				
	2" diameter wells = 0.163 x (L		1.27	_gallons				
	4" diameter wells = 0.653 x (L'	WC) =		gallons				
II evacuati	on data:							
				la I	Well Volu	mes		
	Start Time	1437	1439	1447				
	End Time	1436	1444	1452				
	Gallons Purged	177	1.27	1.27				
	Temp (C)	19.1	19.0	19.0				
	рН	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: Appearance at start: Appearance at end:	Light Urg	+ bro	t Lamos	4	bīdy -	meter	
	Other Observations:	Headspace I	PID reading	: 0.0ppm				
	Amount of water removed: Depth to water before sampling	ng:	3		allons . (below top	of inner cas	ing)	
	Parameters Sampled For:		PFAS (21 US	Compounds) b SEPA Method 5	y Modified 337			
			1,4-Dio	ane by USEPA 8270 SIM		Sample Tim	e:	1500
	NOTES: Bailer	in we	11. Remi	we to p	arge (and :	sample	, then replac

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RAN	

GROUNDWATER SAMPLING FIELD LOG

Date	10-5-21	Personnel		RDH/SET			Weather	±55°F, ove
Site Name	KS EC Sampling	Evacuation N	/lethod	Peristaltic F	Pump		Well #	MW-6
Site Location	West Milton, NY	Sampling Me	ethod	Peristaltic F	Pump		Project #	1940101245
Well informa	tion:	14	1.0					
	Depth of Well *	13.		ft,	* Measureme		1	
	Depth to Water *	0.0		_ft.		X	Top of Wel	
	Length of Water Column	13.	64	_ft.	-		(Other, Spe	ective Casing
					1		I(Other, Ope	sony)
	1" diameter wells = 0.041 x (L	WC) =		gallons				
	2" diameter wells = 0.163 x (L		2.22	gallons				
	4" diameter wells = 0.653 x (L			gallons				
Well evacuat	ion data:				Mall Valu			
		1	2	3	Well Volu	imes		T
	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	4.40	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: Appearance at start: Appearance at end:	6ro Cle			off Tu	rbidit	meter meter	
	Other Observations:	Headspace	PID reading	0.000	α			
	Amount of water removed: Depth to water before sampling	ng:	NM	66	_gallons _ft. (below top	of inner cas	sing)	
	Parameters Sampled For:		ÙUS	SEPA Metho				
			1,4-Diox	ane by USE 8270 SIM		Sample Tim		1610

KA	MBGLL		GROU	NDWATE	R SAMI	PLING F	IELD LO	
Date	10-7-21	Personnel		RDH/SET			Weather	+55°F, 0V
Site Name	KS EC Sampling	Evacuation I	Method	Peristaltic P	ump		Well#	MW-17
Site Location	West Milton, NY	Sampling Me	ethod	Peristaltic P	ump		Project#	1940101245
Well informa	ation:	15	5.50 IO	121				
	Depth of Well *			ft.	* Measurem	ents taken fr	1	
	Depth to Water *		.31	ft.		х	Top of Wel	
	Length of Water Column	3	. 19	ft.			Top of Prot (Other, Spe	ective Casing ecify)
Well evacua	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L tion data:		0.52	gallons gallons				
	11				Well Vol	umes		
		1	2	3			(E-1-	
	Start Time		0940	0944				
	End Time	0937	0943	6946				
	Gallons Purged		0.52	1			-	
	Temp (C)		16.4	10/7	21	-		
	pH		7.39	(38)				
	Spec. Conduc. (mS/cm)		109.2	100				
	ORP (mV)	4.23		1			-	
	DO (mg/L)		6.49	+				
	Turbidity (NTU)	4.60	0.77				1	
	Probe type:		YSI Quatro	+ Lame	othe Tur	bidity	meter	
	Appearance at start:	()		o ode				
	Appearance at end:		ear,	no od	100			
	Other Observations:	Headspace	PID reading	0.0pp	M			
	Amount of water removed:		1.	17	gallons			
	Depth to water before sampli	ng:	NM	7	-	p of inner ca	sing)	
	Parameters Sampled For:		ÜS	Compounds SEPA Method	d 537	i		
			1,4-Diox	ane by USEI 8270 SIM		Sample Tir	me:	1015

NOTES:

Allas well to recover prior to sampling.

Tubing in well removed prior to purging Kampling and I then placed back in well.

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 * Depth to Water * Length of Water Column 18.08 ft. 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	Date	10-7-21	Personnel		RDH/SET			Weather	755°F, H
Sampling Method Peristattic Pump Project # 1940101245	Site Name		Evacuation I	Method	Peristaltic P	ump		Well#	MW-16
Depth of Well Depth to Water IIII3 ft. Length of Water Column Length of Water Column	Site Location		Sampling Me	ethod	Peristaltic P	'ump		Project #	1940101245
Depth to Water * Length of Water Column	Well informa	tion:	i 8	5.10 B	10/7/21				
Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Column Length of Water Calling		•			_	* Measurem		_	Casina
1" diameter wells = 0.041 x (LWC) =				115	_		X	—	_
1" diameter wells = 0.041 x (LWC) = 2" diameter wells = 0.163 x (LWC) = 1.14 gallons 4" diameter wells = 0.653 x (LWC) =		Length of Water Column	\(\theta \)	97	_π,			_	_
2" diameter wells = 0.163 x (LWC) = 4" diameter wells = 0.653 x (LWC) = 9 allons Well evacuation data: Vell Volumes 1 2 3									**
## diameter wells = 0.653 x (LWC) =		1" diameter wells = 0.041 x (l	_WC) =		_gallons				
Well evacuation data: Vell Volumes 1		2" diameter wells = 0.163 x (l	_WC) =	1.14	_gallons				
Start Time 1 2 3		4" diameter wells = 0.653 x (_WC) =		_gallons				
Start Time 1 2 3 Start Time	Nell evacuat	ion data:							
Start Time III/H II23 End Time II2-1 III31 Gallons Purged IIH II-H Temp (C) 17-5 IL-7 III31 PH 7-31 7-35 Spec. Conduc. (mS/cm) 3. H1 3. I77 ORP (mV) III-7 i09-4 DO (mg/L) 1.80 5.12 Turbidity (NTU) 4.86 I. H9 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O.O.P.P.M Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method	rren evacual	ion data.				Well Vo	lumes		
End Time 1121 1131 Gallons Purged 114 1.14 Temp (C) 17.5 16.7 pH 7.31 7.35 Spec. Conduc. (mS/cm) 3.41 3.17 (S) ORP (mV) 111.7 109.4 DO (mg/L) 1.80 5.12 Turbidity (NTU) 4.86 1.47 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O.O.O.O.O.O.O.O.O.O.O.O.O.O.O.O.O.O.O.			1						
Gallons Purged I 14 I 14 Temp (C) 17.5 I 6.7 pH 7.31 7.35 Spec. Conduc. (mS/cm) 3. 41 3. 17 ORP (mV) III.7 i 09.4 DO (mg/L) 1.80 5.12 Turbidity (NTU) 4.86 I . 49 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O.Offer Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method					1				
Temp (C) 17-5 16-7 17-2				110	1			-	
Spec. Conduc. (mS/cm) 3.41 3.17 (8) ORP (mV) 111.7 109.4 DO (mg/L) 1.80 5.12 Turbidity (NTU) 4.86 1.49 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O.O.C.C. Amount of water removed: Depth to water before sampling: Parameters Sampled For: Spec. Conduc. (mS/cm) 3.41 3.17 (8) YSI Quatro + ugmothe Turbidity Meter Clear, no odors Amount of water removed: Depth to water before sampling: NM gallons ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method					1	<u> </u>			
Spec. Conduc. (mS/cm) 3.41 3.17 (8) ORP (mV) 111.7 109.4 DO (mg/L) 1.80 5.12 Turbidity (NTU) 4.86 1.49 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O.O.C.C. Amount of water removed: Depth to water before sampling: Parameters Sampled For: Spec. Conduc. (mS/cm) 3.41 3.17 (8) YSI Quatro + ugmothe Turbidity Meter Clear, no odors Amount of water removed: Depth to water before sampling: NM gallons ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method			- 0		10/1/2				
ORP (mV) III-7 i09.4 DO (mg/L) 1.80 5.12 Turbidity (NTU) 4.86 1.49 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O.Open Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method					(0)	1			
Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O.Opp Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method			0-11	_	1			-	
Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O.Opp Amount of water removed: Depth to water before sampling: Probe type: YSI Quatro + Lignoffe Turbicatty Meter Lieur, Ao odors Appearance at end: UEOU, AO odors Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method				100000000000000000000000000000000000000					
Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: Oppo Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method			1 11 02		1				
Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O.O.C.C. Amount of water removed: Depth to water before sampling: Parameters Sampled For: Depth 10 Parameters Sampled For: PEAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method		Turbidity (NTO	1.00	1.1.					-
Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O.O.C.C. Amount of water removed: Depth to water before sampling: Parameters Sampled For: Depth 10 Parameters Sampled For: PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method		Proho type:		YSI Oust	n + (nm	offe T	urbidi	ti, mol	-
Appearance at end: Other Observations: Headspace PID reading: O.Open Amount of water removed: Depth to water before sampling: Parameters Sampled For: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method				1274-1. V	1			Y METE	
Amount of water removed: Depth to water before sampling: Parameters Sampled For: Amount of water removed: 3,14 gallons ft. (below top of inner casing)			-	CLEGO	3 N. F. S. CO. OF	1			
Amount of water removed: Depth to water before sampling: Parameters Sampled For: 3, 14 gallons ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method		, ppodianos at ona.		M.U.	LIC OF	~ _			
Depth to water before sampling: NM ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method		Other Observations:	Headspace	PID reading	9: O.OPP	M			
Depth to water before sampling: NM ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method					,				
Depth to water before sampling: NM ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537 1,4-Dioxane by USEPA Method				2	2 1/1				
PFAS (21 Compounds) by Modified Parameters Sampled For: USEPA Method 537 1,4-Dioxane by USEPA Method			na.), 14		n of inner c	asina)	
Parameters Sampled For: USEPA Method 537 1,4-Dioxane by USEPA Method		Depth to water before sample	ng:	INIVI		ir (neiow r	, por miner c	aəniy)	
Parameters Sampled For: USEPA Method 537 1,4-Dioxane by USEPA Method				PEAS (2)	1 Compounds) by Modified	i		
1,4-Dioxane by USEPA Method		Parameters Sampled For:					•		
									0.00
							Sample T	ime:	_1155
NOTES: Well arged any after removing 2 well volumes.	and the second s								

and then replaced.

Date	10-7-21	Personnel		RDH/SET			Weather	±60°F, Sun
Site Name	KS EC Sampling	Evacuation M	Method	Peristaltic I	Pump	3	Well#	MVV-1
Site Location		Sampling Me	thod	Peristaltic	⊃ump	-	Project#	1940101245
Well informa	ntion: Depth of Well *	19.		ft.	* Measurem	nents taken fr	om	
	Depth to Water *		65	ft.		x	Top of Wel	l Casing
	Length of Water Column	4	1.35	ft.			Top of Prof	ective Casing
	20,13.10, 1121						(Other, Spe	ecify)
	1" diameter wells = 0.041 x (L	WC) =	4-	gallons				
	2" diameter wells = 0.163 x (L		17.71	gallons				
	4" diameter wells = 0.653 x (L		-	gallons				
Well evacua	tion data:				Well Vo	lumes		
		1	2	3	1			
	Start Time	1312	1319	1326				
	End Time		1324	1331				
	Gallons Purged		0.71	0.71				
	Temp (C)		15.9	16.0				
	pH	7.45	7.22	7.22				
	Spec. Conduc. (mS/cm)	4.89	3.48	3.75				
	ORP (mV)	61116	110.9	111.3				
	DO (mg/L)	6.74	6.44	6.40				
	Turbidity (NTU)	9.48	6.41	4.59				
	Probe type:		YSI Quatro	+ Lan	rotte to	abidit	neter	
	Appearance at start:	1:0	(I) 1	ray, n	a actor			
	Appearance at end:		Jar, 6	ood	00			
			DID reading	0.000				
	Other Observations:	Headspace	PID reading	. O. OPE	2007			
					-/-			
	Amount of water removed:			.13	_gallons		-i\	
	Depth to water before sampli	ng.	NM		_ it. (below to	op of inner ca	sing)	
	Parameters Sampled For:			Compound SEPA Metho	s) by Modifie od 537	d		
			1,4-Dio	xane by USE 8270 SIN	EPA Method	Sample Ti	ne:	1345
	NOTES: Collect	ms/m	SD C	it thi	s locat	tion for	PFAS	and
	Railer			noved	oriar to	o puran	/	ndina

				1	
RA	M	B	0		L

GROUNDWATER SAMPLING FIELD LOG

Site Name KS EC Sampling Evacuation Method Sampling Method Peristattic Pump Well # MW-12 1940101245 Well information: Depth of Well *	Date	10-7-21	Personnel		RDH/SET			Weather	±60°F, Sun
Sampling Method Peristattic Pump Project # 1940101245			Evacuation I	Method	Peristaltic F	ump		Well#	MW-12
Depth to Water	Site Location		Sampling M	ethod	Peristaltic F	ump	-	Project #	1940101245
Depth to Water	Well informa		(=	7.60 10F	HZ1	* 1./		fun en	
2" diameter wells = 0.163 x (LWC) = 4" diameter wells = 0.653 x (LWC) =		Depth to Water *	10).62	ft_	·· ivieasurer		Top of Wel	ective Casing
Start Time 1451 1458 1506		2" diameter wells = 0.163 x (L)	VC) =		gallons				
1	ell evacuat	ion data:				Well V	lumes		
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 7.89 318 3.94 3.92 Spec. Conduc. (ms/cm) 0.84 0.85 0.82 ORP (mv) ID1.8 97.9 97.6 DO (mg/L) 8.53 8.05 8.84 Turbidity (NTU) 4.71 23.4 4.26 Probe type:			1	2	3	Well V	Junes		
End Time 1455 1503 1511 Gallons Purged 1.14 1.14 1.14 Temp (C) (G.O. 15.7 15.2 pH 7.89 38.79 7.92 Spec. Conduc. (mS/cm) 0.84 0.85 0.82 ORP (mV) ID1.8 97.9 97.6 DO (mg/L) 8.53 8.05 8.84 Turbidity (NTU) 4.71 23.4 4.26 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: 0.0000 Amount of water removed: Depth to water before sampling: MM gallons NM ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537					1506				
Temp (c) 16.0 15.7 15.2 pH 7.89 33.7.96 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 8.65 8.84 Turbidity (NTU) 4.71 23.4 4.26 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: 0.000 Amount of water removed: Depth to water before sampling: NM ft. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537									
Spec. Conduc. (mS/cm)		Gallons Purged	1.14	1.14	1.14	K .	1/4		
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: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: 0.0000 Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537		Temp (C)							
ORP (mV) ID1.8 97.9 97.6 DO (mg/L) 8.53 8.05 8.84 Turbidity (NTU) 4.71 23.4 4.26 Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: 0.0000 Amount of water removed: Depth to water before sampling: NM gallons PFAS (21 Compounds) by Modified USEPA Method 537		pH		0328 7.96					
Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O. Oppo Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537		Spec, Conduc. (mS/cm)	0.84	0.85	0.82			1,1	
Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: 0.000 Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537		ORP (mV)	101.8	97.9	97.6				
Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537		DO (mg/L)	8.53	8.05	8-84				1
Probe type: Appearance at start: Appearance at end: Other Observations: Headspace PID reading: O. Oppo Amount of water removed: Depth to water before sampling: PFAS (21 Compounds) by Modified USEPA Method 537			4.71	23.4	4.26				
Amount of water removed: Depth to water before sampling: NM gallons Th. (below top of inner casing) PFAS (21 Compounds) by Modified USEPA Method 537		Appearance at start:		ear, s	10 od	0-	Turbid	ity met	er
Depth to water before sampling: NM ft. (below top of inner casing) PFAS (21 Compounds) by Modified Parameters Sampled For: USEPA Method 537		Other Observations:	Headspace	PID reading:	0.000	`			
Parameters Sampled For: USEPA Method 537			g:		.42		op of inner c	asing)	
1,4-Dioxane by USEPA Method 8270 SIM Sample Time: 157.0		Parameters Sampled For:		US	EPA Method ane by USE	537 A Method		ime:	1520

	10-8-21	Personnel		RDH/SET			Weather	\$60°F,00
Name	KS EC Sampling	Evacuation	Method	Peristaltic P	ump		Well#	MW-4
ocation		Sampling M	ethod	Peristaltic P	ump	_	Project #	1940101245
informa	tion:	Lá	3.30	======================================				
	Depth of Well *	.44	30 (3)	ft.	* Measuren	nents taken	from	
	Depth to Water *	3.	91	ft.		х	Top of Well	-
	Length of Water Column	9	.39	ft			_	ective Casing
	<i>y</i>						Other, Spe	ecify)
	1" diameter wells = 0.041 x (L			gallons				
	2" diameter wells = 0.163 x (L	.WC) =	1.53	gallons				
		.WC) =	1,53					
	2" diameter wells = 0.163 x (L	.WC) =	1.53	gallons				
evacuat	2" diameter wells = 0.163 x (L	.WC) =	1.53	gallons	·			
evacuat	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L	.WC) =	1.53	gallons gallons	Well Vo	lumes		
evacuat	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L ion data:	WC) = .WC) =	2	gallons gallons	Well Vo	lumes		
evacuat	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L ion data:	WC) = .WC) =	0951	gallons gallons	Well Vo	lumes		
evacuat	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L ion data: Start Time End Time	WC) = WC) = 1 0929	0951	gallons gallons	Well Vo	lumes		
evacuat	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L ion data: Start Time End Time Gallons Purged	WC) = .WC) =	0951	gallons gallons 3 [000] i008 J-53	Well Vo	lumes		
evacuat	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L ion data: Start Time End Time Gallons Purged Temp (C)	wc) = wc) = 1 0929 0948 1.53	0951 0958 1.53	gallons gallons 3 [000 i008 J-53 17.0	Well Vo	lumes		
evacuat	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L ion data: Start Time End Time Gallons Purged Temp (C) pH	WC) = WC) = 1 0929 0948 i.53 17.1	0951 0958 1.53 17.1 7.92	gallons gallons 3 [000] i008 J-53 j7.0 7.75	Well Vo	lumes		
evacuat	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L ion data: Start Time End Time Gallons Purged Temp (C)	MC) = MC) = 1 0929 0948 1.53 17.1 7.96 5.89	0951 0958 1.53 17.1 7.92 5.67	3 1000 1008 1-53 17.0 7.75 7.93	Well Vo	lumes		
evacuat	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L ion data: Start Time End Time Gallons Purged Temp (C) pH	MC) = MC) = 1 0929 0948 1.53 17.1 7.96 5.89	0951 0958 1.53 17.1 7.92	3 [000 i008 j.53 j.7.0 7.75 7.93	Well Vo	lumes		
evacuat	2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L ion data: Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm)	MC) = MC) = 1 0929 0948 1.53 17.1 7.96 5.89	0951 0958 1.53 17.1 7.92 5.67	3 1000 1008 1-53 17.0 7.75 7.93	Well Vo	lumes		

Bailer in well. Remove during arging Isampling and then replace well is grate to bell at beginning. Need to pull tubing up to avoid clogging line.

PFAS (21 Compounds) by Modified USEPA Method 537

1,4-Dioxane by USEPA Method

8270 SIM

gallons

ft. (below top of inner casing)

Sample Time:

1015

Amount of water removed:

Parameters Sampled For:

NOTES:

Depth to water before sampling:



Site Name: Kesselring Site EC Sampling	Task: 1940101245
Weather (temp/precip): ±65°F, Rain	Date: 0-4-21
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	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).
Field Equipment:	Alconox®, Liquinox®, Seventh Generation™, and Citranox are being used as decontamination cleaning agents;
Subcontractor (e.g., driller) materials and equipment conform to the requirements of this	Decon 90° is not being used.
checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	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 to commencement of that day's work. Materials present and id checklist should be relocated to the support area or other area below.	entified as potentially containing PFAS through use of this
Saul Yeull	0907
Field Team Leader Name and Signature	Time



Site Name: Kesselring Site EC Sampling	_{Task:} 1940101245
Weather (temp/precip): ±55°F , overcast	Date: 10-5-21
Pre-Mobilization: light (ain)	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Paps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	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 Jaboratory detection limits).
Field Equipment:	Alconox®, Liquinox®, Seventh Generation™, and Citranox are being used as decontamination cleaning agents;
Subcontractor (e.g., driller) materials and	Decon 90° is not being used.
equipment conform to the requirements of this checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	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 deviation to commencement of that day's work. Materials present and checklist should be relocated to the support area or other are below.	ns below and work with field personnel to address issues prior identified as potentially containing PFAS through use of this a of the site away from the sampling locations and noted
South Hearly	0853
Field Team Leader Name and Signature	Time



Site Name: Kesselring Site EC Sampling	Task: 1940101245
Weather (temp/precip): ±55°F, overcast	Date: 10-7-21
Pre-Mobilization: foggy	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Sottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	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).
Field Equipment:	Alconox®, Liquinox®, Seventh Generation™, and Citranox are being used as decontamination cleaning agents; Decon 90® is not being used.
Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	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 to commencement of that day's work. Materials present and id checklist should be relocated to the support area or other area below.	entified as potentially containing PFAS through use of this
South Yells	0905
Field Team Leader Name and Signature	Time



Site Name: Kesselring Site EC Sampling	_{Task:} 1940101245
Weather (temp/precip): =600F arer cast	Date: 10/8/21
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	aps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	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 aboratory detection limits).
Field Equipment: Subcontractor (e.g., driller) materials and	Alconox®, Liquinox®, Seventh Generation™, and Citrano are being used as decontamination cleaning agents; Decon 90® is not being used.
equipment conform to the requirements of this checklist (as applicable)	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	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 deviatio to commencement of that day's work. Materials present and checklist should be relocated to the support area or other are below.	ons below and work with field personnel to address issues prior didentified as potentially containing PFAS through use of this ea of the site away from the sampling locations and noted
south young	0858
Field Team Leader Name and Signature	Time

Date /	2-4-21	Personnel	AJU /WOF		Weather	+40° overcas
Site Name	KS EC Sampling	Evacuation Method	Peristaltic Pump		Well #	HR BA
Site Location	West Milton, NY	Sampling Method	Peristaltic Pump		Project #	1940101245
Well informa	tion:					
	Depth of Well *	11. 33		urements taken f		_
	Depth to Water *	<u>v. + +</u>	ft	х	Top of We	_
	Length of Water Column	4.5 ap	ft.			tective Casing
					(Other, Sp	ecity)
	1" diameter wells = 0.041 x (L	WC) =	gallons			
	2" diameter wells = 0.163 x (L		gallons > 3 = 2	2.22001		
	4" diameter wells = 0.653 x (L		gallons	22941		
	(-					
Well evacuat	ion data:					
Well evacuat	ion data:		Well	l Volumes		
Well evacuat	ion data:	1 2	Well	l Volumes		
Well evacuat	ion data: Start Time	1 2 1345 /351		l Volumes		
Well evacuat		1 2 1345 /351 1351 1350	3	Volumes		
Well evacuat	Start Time	1351 1350	3	l Volumes		
Well evacuat	Start Time End Time	1351 1350	3	l Volumes		
Well evacuat	Start Time End Time Gallons Purged	1351 1350	3	Volumes		
Well evacuat	Start Time End Time Gallons Purged Temp (C)	1351 1350 0 74 0 70 911 9:0 7:96 7:32	3 1356 1402 1402 10-74 8-9	l Volumes		
Well evacuat	Start Time End Time Gallons Purged Temp (C)	1351 1350 0 74 0 70 911 910 7.96 7.32 914,2 415.5	3 1356 1402 1402 10-74 8-9	l Volumes		
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm)	1351 1350 0 74 0 70 911 910 7.96 7.32 914,2 415.5	3 1356 1402 1402 10-74 8-9	l Volumes		
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L)	1351 1350 0 74 0 70 911 910 7.96 7.32 914,2 415.5	3 1356 1402 1402 10-74 8-9	I Volumes		
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV)	1351 1350 0 74 0 70 911 910 7.96 7.32 914,2 415.5	3 1356 1402 1402 10-74 8-9	l Volumes		
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU)	1351 1350 1351 1350	3 1356 1402 1402 16.74 8.9 7.32 5 414.4 0 3427 2 9.46			
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU)	1351 1350 0 74 0 74 9,1 9,0 7,96 7,32 914,2 415,5 328,7 342,6 10,91 8,47 3,88 1,70	3 1356 1402 1402 1674 8.9 7.32 5 414.4 9 342.7 2 9.40 0.76			
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU) Probe type: Appearance at start:	1351 1350 0 74 0 74 9,1 9,0 7,96 7,32 914,2 415,5 328,7 342,6 10,91 8,47 3,88 1,70	3 1356 1402 1402 16.74 8.9 7.32 5 414.4 0 3427 2 9.46			
Well evacuat	Start Time End Time Gallons Purged Temp (C) pH Spec. Conduc. (mS/cm) ORP (mV) DO (mg/L) Turbidity (NTU)	1351 1350 0 74 0 74 9,1 9,0 7,96 7,32 914,2 415,5 328,7 342,6 10,91 8,47 3,88 1,70	3 1356 1402 1402 1674 8.9 7.32 5 414.4 9 342.7 2 9.40 0.76			

Depth to water before sampling:

PFAS (21 Compounds) by Modified USEPA Method 537

Sample Time:

ft. (below top of inner casing)

1410

NOTES:

Parameters Sampled For:

Data	12-10-21	Danasasi	GRUC	AT-	ER SAMI	PLING F		typo overco
Date Site Name	12-4-21	Personnel	Mathad	Posieteltie	/W6P	-	Well#	18-0A
	ne KS EC Sampling Evacuation Method ation West Milton, NY Sampling Method			Peristaltic Pump Peristaltic Pump		-	Project # 1940101245	
		Cumping ivi		1 Criotaria	Тапр			1010101210
Well informa		02.0	~					
	Depth of Well *	73.8	5	ft.	* Measurem	ents taken fro	1	1.000
	Depth to Water *	13.40		-ft.		X	Top of Wel	-
	Length of Water Column	0.43		— ^{ft.}			1	ective Casing
							Other, Spe	
	1" diameter wells = 0.041 x (L	WC) =		gallons			1.	38
	(2" diameter wells = 0.163 x (L	•	7.38	gallons			Y	3
	4" diameter wells = 0.653 x (L	•	7.00	gallons			ч	. 14 - 3WVS
Well evacuat	ion data:							
		Well Volumes						
		1	2	3				
	Start Time	1411	1230	1248	5			
	End Time	1230	1248	1303	4			
	Gallons Purged	1.38	1.30	1.33				
	Temp (C)	90.1	10:1	10.0				-
	pH	0.09	7.99	7.68	2	-		
	Spec. Conduc. (mS/cm)	941.7	347	344,1	4			_
	ORP (mV)	308 +	319.1	340	4			-
	DO (mg/L)	17.01	12.9	1 12.4-	1			
	Turbidity (NTU)	1.19	3.20	10.45	1			
	Probe type:		VSI Quatr	n + I amotte	Turbidimeter			
		CLOCK	Casal			DC 145	lak o	in odor
	Appearance at start: Appearance at end:	Ciecu	5000	SAM	punc	IES VIZ	DKI	TO OCIO
	Appearance at one.	Cien	1 110	OCIC	4			
	Other Observations:	Headspace F	PID reading	0.0	000			
					1/1/11/1			

PFAS (21 Compounds) by Modified USEPA Method 537

XUS USD taken here

Sample Time:

Scimple 1D KS-EC-H3-9A-12062

Parameters Sampled For:

NOTES:

RAMBO	Ш	WGI	GROUNI	MATER	wat DEVELOPA	AENT-FIE	LD LOG	
Date	12-6-21 Q3 Yard (AOC-	Personnel		WW	1A56		Weather -	50'f, clove East Dit
Site Name Site Location	005) RFI Fieldwork Groundwater Investigation Niskayuna, NY	Evacuation Methodology		Grab		- -	Project #	East Dit 1940101245
Well informa	tion: Initial Depth of Well * Final Depth of Well * Depth to Water * Length of Water Column		A IA IA	_ft. _ft. _ft. _ft.	* Measuremer	ats taken from	Top of Well Top of Prote (Other, Spe	ective Casing
	1" diameter wells = 0.041 x (L 2" diameter wells = 0.163 x (L 4" diameter wells = 0.653 x (L	-WC) =		gallons gallons gallons				
Vell evacuati	ion data:							
		1		Well Volumes				
		1027						
	Start Time							
	End Time							
	Gallons Purged					<u> </u>		
	Temperature (C)					<u> </u>		
	pH	7.76		11				
	Spec. Conduc. (mS/cm)	3142						
	Turbidity (NTU)	0.18						
	OF?	211.6		1			•	
	Probe type: Appearance at start: Appearance at end:	Class	YSI Quatro	Jew				
	Other Observations:	Headspace PII	reading:					
	Amount of water removed: Depth to water before sampling	ng:	NA - G	Brab sample	gallons ft. (below top o	f inner casing)		
			1 Compounds			O- vala Tara		70 ³⁶
	Parameters Sampled For:		JSEPA Metho	u 557		Sample Time		70



Field Team Leader Name and Signature

ENVIRONMENT & HEALTH

Time

(3) Yesse (M PFAS Pre-Sample	ing Checklist
Site Name Knoths Laboratory EC Sampling	Task: 1940101245
Weather (temp/precip): 50 % Cloudy	Date: 12-6-2/
Pre-Mobilization:	Sample Containers:
The QAPP or other site-specific field guidance has been consulted for sample locations, QC sampling requirements, and sample nomenclature	Water ice is in use only, not chemical (blue) ice packs
Field Clothing and PPE:	Sample containers have been received and are made of HDPE or polypropylene
Using white Tyvek®; not using yellow Tyvek®	Bottleware for non-drinking water samples do not contain preservative
Clothing has not been most recently washed with fabric softeners or other treatments	Caps are unlined and made of HDPE or polypropylene
Clothing has not been permanently chemically treated for insect resistance or UV protection	Wet Weather (as applicable):
Clothing has not been treated with materials or formulations potentially containing PTFE or other PFAS products listed named in this checklist	Wet weather gear made of polyurethane and PVC only, or is being worn under white Tyvek® covering
Any personal care products, if used, have been applied outside sampling zone, hands have been washed, and new nitrile gloves are being used	Equipment Decontamination (as applicable):
Any use of sunscreens or insect repellants is consistent with the commercial products named in this checklist	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).
Field Equipment:	Alconox®, Liquinox®, Seventh Generation™, and Citranox are being used as decontamination cleaning agents;
Subcontractor (e.g., driller) materials and equipment conform to the requirements of this checklist (as applicable)	Decon 90° is not being used.
	Food Considerations:
Sampling equipment is free of PTFE and other potentially PFAS-containing components listed in this checklist	Any pre-wrapped food or snacks, carry-out food, fast food, or other food items will remain in the staging area
Sampling equipment is made from stainless steel, HDPE, acetate, silicon, HDPE, or nylon	Any food items, will be consumed outside the sampling zone, hands will be washed, and new PPE and nitrile gloves will be used
Waterproof field books, waterproof paper, and Post-It Notes® are not used	Work Area and Vehicle Considerations:
Markers (e.g., Sharpies®) are used only in the staging area or are not used	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 be to commencement of that day's work. Materials present and idea checklist should be relocated to the support area or other area of below.	ntified as potentially containing PFAS through use of this