

Lauridsen, Keld B - DNR

From: Savale, Michael <Michael.Savale@tetrattech.com>
Sent: Monday, December 6, 2021 4:08 PM
To: Lauridsen, Keld B - DNR
Cc: Christopher, Michael L; Hassett, Mike; Council, Greg; Manthey, Mark
Subject: PFAS Groundwater Confirmation Sampling Report - Ashview Terrace Apartments, BRRTS #: 02-05-564043
Attachments: 2021_12_03_Ashview Terrace Apartments PFAS Confirmation Sampling Report_Tetra Tech.pdf

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Hi Keld,

Please see the attached PFAS Groundwater Confirmation Sampling Report for the Ashview Terrace Apartments (BRRTS #: 02-05-564043), as prepared by Tetra Tech Inc for Georgia-Pacific LLC. This report will also be uploaded to the BRRTS site. Please advise if a hard copy is required.

Thank you,
Mike Savale

Mike Savale | Senior Project Geologist
Mobile (810) 923-8076 | Fax (734) 213-5008 | michael.savale@tetrattech.com

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LETTER OF TRANSMITTAL

710 Avis Drive
Suite 100
Ann Arbor, Michigan 48108
Telephone (734) 665-6000 Fax: (734) 213-5008

TO: Mr. Keld Lauridsen
Hydrogeologist
Wisconsin Department of Natural Resources
2984 Shawano Avenue
Green Bay, Wisconsin 54313-6727

December 6, 2021

We are sending you the following:

No of Copies	Description
1	PFAS Groundwater Confirmation Sampling Summary Report, Ashview Terrace Apartments, Ashwaubenon, Wisconsin BRRTS #02-05-564043

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Signed: Michael Savale, Tetra Tech

cc: Michael Christopher, Georgia-Pacific
Michael Hassett, Georgia-Pacific
Gregory Council, Tetra Tech
Mark Manthey, Tetra Tech



December 3, 2021

Mr. Michael Christopher
Senior Remediation Project Manager
Global Remediation & Environmental Services LLC
1560 Bay Area Boulevard, Suite 200
Friendswood, Texas 77546
(281) 947-0083

**RE: PFAS Groundwater Confirmation Sampling Summary Report
Ashview Terrace Apartments
Ashwaubenon, Wisconsin
BRRTS # 02-05-564043**

Dear Mr. Christopher,

On September 20, 2021, Tetra Tech conducted groundwater sampling for polyfluoroalkyl and perfluoroalkyl substances (PFAS) at the Ashview Terrace Apartments in Ashwaubenon, Wisconsin (**Figure 1**). The sampling was performed in response to a request from the Wisconsin Department of Natural Resources (WDNR) for additional groundwater sampling to confirm the PFAS groundwater analytical results obtained as part of the May 2021 PFAS investigation at the Ashview Terrace Apartments (Site) and documented in the *PFAS Investigation Summary Report, Ashview Terrace Apartments, Ashwaubenon, WI*, dated July 22, 2021.

The September 2021 PFAS sampling was conducted in accordance with the WDNR-approved work plan, *PFAS Site Investigation Work Plan, Ashview Terrace Apartments, Ashwaubenon, WI*, dated November 16, 2020, and in adherence to the Tetra Tech Standard Operating Procedure for PFAS sample acquisition, Appendix A of the work plan. This report summarizes the Ashview Terrace Apartments (Site) PFAS groundwater sampling and includes a discussion of the Wisconsin PFAS regulatory background, the sampling and analytical methods used, and groundwater sample analytical results.

REGULATORY BACKGROUND

In June 2019, the Wisconsin Department of Health Services (WDHS) developed recommended groundwater standards for two PFAS, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). The WDHS recommended an Enforcement Standard of 20 ng/L and a Preventive Action Limit of 2 nanograms per liter (ng/L) for both PFOA and PFOS, individually and combined. In November 2020, the WDHS developed recommended groundwater standards for 16 additional PFAS. However, on March 1, 2021, the WDNR removed perfluorooctadecanoic acid (PFODA) from the list of PFAS with WDHS recommended standards. The current WDHS recommended standards for PFAS are summarized in the following table.

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PFAS with Assigned WDHS Standards	WDHS Recommended Enforcement Standard	WDHS Recommended Preventative Action Limit
Perfluorooctane sulfonamide (PFOSA)	20 ng/L	2 ng/L
Hexafluoropropylene oxide dimer acid (HPFO-DA)	300 ng/L	30 ng/L
N-Ethyl perfluorooctane sulfonamidoethanol (NEtFOSE)	20 ng/L	2 ng/L
Perfluorobutanoic acid (PFBA)	10,000 ng/L	2,000 ng/L
Perfluorobutanesulfonic acid (PFBS)	450,000 ng/L	90,000 ng/L
Perfluorododecanoic acid (PFDoA)	500 ng/L	100 ng/L
Perfluorohexanoic acid (PFHxA)	150,000 ng/L	30,000 ng/L
Perfluorooctane sulfonic acid (PFOS)	20 ng/L	2 ng/L
Perfluorooctanoic acid (PFOA)	20 ng/L	2 ng/L
Perfluorotetradecanoic acid (PFTeA)	10,000 ng/L	2,000 ng/L
Perfluoroundecanoic acid (PFUnA)	3,000 ng/L	600 ng/L
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	3,000 ng/L	600 ng/L
Perfluorohexanesulfonic acid (PFHxS)	40 ng/L	4 ng/L
Perfluorononanoic acid (PFNA)	30 ng/L	3 ng/L
Perfluorodecanoic acid (PFDA)	300 ng/L	60 ng/L
N-Ethyl perfluorooctane sulfonamide (NEtFOSA)	20 ng/L	2 ng/L
N-Ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	20 ng/L	2 ng/L

For PFOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFOS, and PFOA (collectively these will be called the “select six PFAS”), the WDHS has recommended an Enforcement Standard of 20 ng/L and Preventive Action Limit of 2 ng/L for individual and combined concentrations of these select six PFAS. At this time, the WDNR has not amended *Table 1 - Drinking Water & Groundwater Quality Health Standards/Advisory Levels* to include enforceable standards for any PFAS. The current list of 33 PFAS compounds the WDNR expects to be included in PFAS sample analysis is presented on the Wisconsin DNR PFAS List 1.1.21 found in the Wisconsin DNR PFAS Updates, dated March 1, 2021.

GROUNDWATER SAMPLING AND ANALYTICAL METHODS

Prior to groundwater sampling, the static water level was measured at each well. Field personnel gauged depth-to-water from the top of the well casings with a water-level interface probe accurate to 0.01 foot. Measurements were subtracted from top-of-casing elevations to obtain groundwater elevations, provided in **Table 1**.

Groundwater samples were collected from the monitoring wells using low-flow techniques. Groundwater was purged using a peristaltic pump until a stabilized water level and stabilized field parameters were achieved. Field parameters including pH, specific conductance, temperature, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity were measured using a YSI ProDSS multi-parameter water quality meter. The instrument was calibrated according to the manufacturer’s specifications prior to sampling. To avoid cross-contamination between wells, new HDPE and silicone tubing was used for each monitoring well. The water quality parameters were collected at three-minute intervals until all parameters had stabilized for three consecutive readings

and were within the following limits:

- pH (0.1 unit)
- Specific conductance (3%)
- Temperature (3%)
- ORP (10 millivolts)
- Turbidity (10%)
- DO (10%)

Drawdown was maintained at 0.3 foot or less during purging and sampling. Groundwater monitoring field data are included in **Table 2**.

Following stabilization, groundwater samples were collected directly into clean, pre-labeled, laboratory-provided HDPE containers and placed into an ice-packed cooler. Samples were shipped to Vista and analyzed for the 33 PFAS included on the Wisconsin DNR PFAS List 1.1.21 via a modified EPA Method 537 utilizing isotope dilution. The laboratory analytical report for the groundwater samples is included in **Attachment 1**

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) SAMPLES

QA/QC samples were collected to assure PFAS contamination was not introduced to the samples from the sample collection equipment and to assess the accuracy and reliability of concentration results. QA/QC sample collection methodology is provided below:

- One equipment rinsate blank sample was collected during groundwater sampling. Reusable sampling equipment was decontaminated, before and after each use, using a Liquinox solution and rinsed with laboratory provided reagent-free water. Following decontamination, laboratory provided reagent-free water was poured over non-disposable equipment (water level meter) and was run through and over disposable equipment (tubing and nitrile gloves). The rinsate was collected into laboratory supplied containers.
- One field duplicate sample was collected concurrently with the MW-21-03 groundwater sample.

QA/QC samples were collected into laboratory-provided HDPE containers and placed into an ice-packed cooler. Samples were shipped to Vista and analyzed for the 33 PFAS included on the Wisconsin DNR PFAS List 1.1.21 via a modified EPA Method 537 utilizing isotope dilution. The laboratory analytical report for the QA/QC samples is included in **Attachment 1**.

GROUNDWATER ELEVATION MEASUREMENTS

Prior to the May 2021 Site PFAS investigation, which included the installation of three monitoring wells, groundwater flow was expected to be toward the southeast. This was based on local topography and the presence of the Fox River (a major groundwater sink) located 1.4 miles to the southeast of the Site. The groundwater elevation measurements from the May PFAS investigation did not exhibit the expected pattern and indicated a general groundwater flow direction towards the southwest. Further review of the lithology observed during the May 2021 investigation suggested the northeastern well, MW-21-01, was screened in an interval of perched groundwater and that the groundwater flow direction could not be determined using groundwater elevations obtained from the Site monitoring well network. However, a review of groundwater elevation contours associated with the WDNR site immediately south of Ashview Terrace Apartments (BRRTS # 02-05-559562) confirm that a

groundwater flow to the southeast is prevalent in the area. Soil boring logs from the May 2021 Site investigation were included as Attachment 3 of the PFAS Investigation Summary Report.

Groundwater elevation measurements obtained as part of the September 2021 sampling event indicated conditions that were consistent with the May 2021 results. Monitoring well construction details and the September 2021 groundwater elevations are summarized on **Table 1**.

GROUNDWATER ANALYTICAL RESULTS

The PFAS analytical results associated with the groundwater samples collected from the monitoring wells indicate the following:

- PFAS were detected in all 3 monitoring wells.
- The total concentration of the select six PFAS was above the WDHS recommended Preventive Action Limit but below the recommended Enforcement Standard in MW-21-01 and MW-21-02.
- The total concentration of the select six PFAS was detected above the WDHS recommended Preventive Action Limit and the WDHS recommended Enforcement Standard in monitoring well MW-21-03.
- The duplicate sample collected at MW-21-03 indicated maximum percent difference of 21.1 percent in PFAS detections.
- No PFAS were detected in the equipment rinsate blank sample collected during groundwater sampling.
- The September 2021 PFAS groundwater analytical results are consistent with the May 2021 results except for a decrease in the concentration of PFOA from 23.4 ng/L to 5.24 ng/L and an increase in PFOSA from 3.70 ng/L to 19.40 ng/L in monitoring well MW-21-03.

A table summarizing the May 2021 and September 2021 the PFAS groundwater sampling results is presented as **Table 3**. The laboratory analytical report for groundwater samples is provided in **Attachment 1**. PFAS detections exceeding the WDHS recommended Preventive Action Limits for groundwater are presented on **Figure 2**.

SUMMARY

Consistent with the May 2021 groundwater analytical results, low concentrations of PFAS were measured in groundwater at all three wells on the Site. The only significant difference between the two sampling events is a decline in PFOA concentration from 23.4 ng/L in May 2021 to 5.24 ng/L in September 2021 and an increase in PFOSA concentration from 3.70 ng/L in May 2021 to 19.40 ng/L in September 2021 in monitoring well MW-21-03. No concentrations for individual PFAS were detected above the WDHS recommended Enforcement Standards in September 2021. The combined total concentration of the six select PFAS in the groundwater sample collected from monitoring well MW-21-03 was 26.95 ng/L, which slightly exceeds the WDHS recommended Enforcement Standard of 20 ng/L. The combined concentration of the six select PFAS in the groundwater samples collected from the other monitoring wells (MW-21-01 and MW-21-02) were below the WDHS recommended Enforcement Standard.

Tetra Tech appreciates the opportunity to provide our services to Global Remediation & Environmental Services LLC. If you have any questions regarding the information herein, please contact Michael Savale at 810.923.8076 or michael.savale@tetrattech.com.

Sincerely,



Michael Savale
Senior Project Geologist



Mark A. Manthey, P.G
Associate Hydrogeologist

Table 1 - Well Construction and Water Levels

Table 2 - Groundwater Monitoring Field Data

Table 3 - Groundwater Analytical Results

Figure 1 - Site Location Map

Figure 2 - Groundwater Analytical Results for September 2021 Sampling

Attachment 1 - Groundwater Analytical Reports

TABLES

Table 1
Well Construction and Water Levels
 PFAS Confirmation Summary Sampling Report
 Ashview Terrace Apartments
 Ashwaubenon, Wisconsin

Well Name	Soil Boring Name	Date Installed	Northing	Easting	TOC Elevation (feet amsl)	Surface Elevation (feet amsl)	Screen Length (feet)	Screen Slot Size	Screen Interval (bgs feet)		Screen Elevation (feet amsl)		Well Casing Diameter (inches)	Well Casing Material	Stickup or Flush Mount (S/F)
									Top	Bottom	Top	Bottom			
MW-21-01	SB-21-01	5/3/2021	558055.22	85188.41	643.38	643.79	5	10	13	18	630.79	625.79	2	PVC	F
MW-21-02	SB-21-02	5/5/2021	557836.76	85071.85	638.34	638.72	3	10	23	26	615.72	612.72	2	PVC	F
MW-21-03	SB-21-03	5/4/2021	558266.87	84719.66	642.51	642.96	5	10	23	28	619.96	614.96	2	PVC	F

Well Name	Depth to Water 5/6/21 (feet below TOC)	Groundwater Elevation 5/6/21 (feet amsl)	Depth to Water 9/20/21 (feet below TOC)	Groundwater Elevation 9/20/21 (feet amsl)
MW-21-01	11.54	631.84	11.32	632.06
MW-21-02	19.33	619.01	18.03	620.31
MW-21-03	24.52	617.99	23.61	618.90

Notes:
 Coordinates are based on WisCRS-Brown County, NAD83 (2011)
 Elevations are based on NAVD88 vertical Datum
 TOC = Top of Casing
 amsl = Above Mean Sea Level
 bgs = Below Ground Surface
 PVC = Polyvinyl chloride

Table 2
Groundwater Monitoring Field Data
 PFAS Confirmation Sampling Summary Report
 Ashview Terrace Apartments
 Ashwaubenon, Wisconsin

Well Name	Groundwater Sample Name	Sample Date	Temp (°C)	Specific Conductance (mS/cm)	DO (mg/L)	pH (S.U.)	ORP (mV)	Turb (NTU)	Approximate Pump Rate (mL/min)
			Parameter Stabilization Criteria						
			3%	3%	10%	0.1	10 mV	10%	
MW-21-01	MW-21-01-210920	9/20/2021	17.1	5.939	2.96	7.03	90.8	14.86	100
MW-21-02	MW-21-02-210920	9/20/2021	19.0	1.694	3.19	7.13	96.1	2.65	100
MW-21-03	MW-21-03-210920	9/20/2021	16.3	1.201	3.17	6.91	20.1	4.81	100

Notes:

Temp (°C) = Temperature in degrees Celsius

pH (S.U.) = pH represented in pH units

Specific Conductance (mS/cm) = Conductivity represented in microsiemens per centimeter

ORP (mV) = Oxidation reduction potential represented in millivolts

DO (mg/L) = Dissolved oxygen represented in milligrams per liter

Turb (NTU) = Turbidity represented in nephelometric turbidity units

mL/min = milliliters per minute

ft amsl = feet above mean sea level

ft below TOC = feet below the top of well casing

Table 3
Groundwater Analytical Results
 PFAS Confirmation Sampling Summary Report
 Ashview Terrace Apartments
 Ashwaubenon, Wisconsin

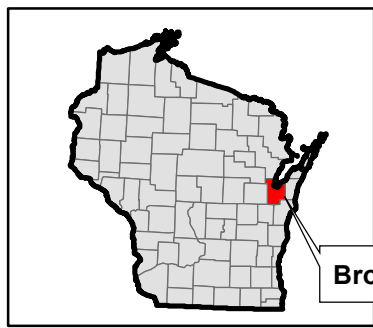
Parameter	CAS Number	Units	Recommended Enforcement Standard	Recommended Preventive Action Limit	Sample Location and Date							
					MW-21-01	MW-21-01	MW-21-02	MW-21-02	MW-21-03	MW-21-03	DUP01 (MW-21-03)	
					5/6/21	9/20/21	5/6/21	9/20/21	5/5/21	9/20/21	9/20/21	
Perfluoroalkyl Carboxylates/Carboxylic Acids (PFCA)												
Perfluorobutanoic acid (PFBA)	375-22-4	ng/L	10,000	2,000	18.8	20.60	3.69	3.59	15.2	15.6	16.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/L	--	--	25.2	36.8	2.92	2.27	5.48	2.73	2.65	
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/L	150,000	30,000	15.7	21.5	1.89 (J)	1.90 (J)	3.97	1.50 (J)	1.60 (J)	
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/L	--	--	8.43	10.6	1.20 (J)	1.03 (J)	3.37	<0.892	<0.873	
Perfluorooctanoic acid (PFOA)	335-67-1	ng/L	20	2	12.1	14.1	<1.15	1.88 (J)	23.4	5.24	4.58	
Perfluorononanoic acid (PFNA)	375-95-1	ng/L	30	3	<0.577	<0.573	<0.596	<0.553	0.687 (J)	<0.570	<0.577	
Perfluorodecanoic acid (PFDA)	335-76-2	ng/L	300	60	<0.920	<0.913	<0.949	<0.881	<0.979	<0.907	<0.888	
Perfluoroundecanoic acid (PFUnDA/PFUdA)	2058-94-8	ng/L	3,000	600	<1.37	<1.36	<1.42	<1.32	<1.46	<1.36	<1.33	
Perfluorododecanoic acid (PFDoA)	307-55-1	ng/L	500	100	<0.802	<0.796	<0.828	<0.769	<0.854	<0.791	<0.775	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/L	--	--	<1.13	<1.12	<1.17	<1.08	<1.20	<1.11	<1.09	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	ng/L	10,000	2,000	<0.833	<0.827	<0.859	<0.798	<0.886	<0.822	<0.804	
Perfluoroalkyl Sulfonates/Sulfonic Acids (PFSA)												
Perfluorobutane sulfonic acid (PFBS)	375-73-5	ng/L	450,000	90,000	169	110	3.64	10.6	122	237	198	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	ng/L	--	--	<0.925	<0.918	<0.954	<0.886	<0.984	<0.912	<0.893	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	ng/L	40	4	1.44 (J,Q)	<1.09	<1.13	<1.05	<1.17	<1.08	<1.06	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	ng/L	--	--	<2.52	<2.51	<2.60	<2.42	<2.69	<2.49	<2.44	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	ng/L	20	2	1.39 (J,Q)	<1.08	<1.12	<1.04	3.12	2.31	1.98 (Q)	
Perfluoronone sulfonic acid (PFNS)	68259-12-1	ng/L	--	--	<1.44	<1.43	<1.49	<1.38	<1.53	<1.42	<1.39	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	ng/L	--	--	<2.76	<2.74	<2.85	<2.65	<2.94	<2.73	<2.67	
Perfluorododecanesulfonic acid (PFDoS)	79780-39-5	ng/L	--	--	<1.63	<1.61	<1.68	<1.56	<1.73	<1.60	<1.57	
Perfluoroalkane Sulfonamides/Sulfonamidoacetic Acids, Sulfonamidoethanols (FASA)												
Perfluorooctane sulfonamide (PFOSA)	754-91-6	ng/L	20	2	3.91	5.20	2.22 (Q)	2.79	3.70	19.4	15.7	
N-methyl perfluorooctane sulfonamide (NMeFOSA)	31506-32-8	ng/L	--	--	<7.00	<6.95	<7.22	<6.71	<7.45	<6.91	<6.76	
N-ethyl perfluorooctane sulfonamide (NEFOSA)	4151-50-2	ng/L	20	2	<7.46	<7.40	<7.70	<7.15	<7.94	<7.36	<7.20	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	2355-31-9	ng/L	--	--	<0.966	<0.958	<0.996	<0.925	<1.03	<0.953	<0.932	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEFOSAA)	2991-50-6	ng/L	20	2	<2.59	<2.57	<2.67	<2.48	<2.76	<2.56	<2.50	
N-methyl perfluorooctane sulfonamidoethanol (NMeFOSE)	24448-09-7	ng/L	--	--	<8.18	<8.11	<8.44	<7.83	<8.70	<8.06	<7.89	
N-ethyl perfluorooctane sulfonamidoethanol (NEFOSE)	1691-99-2	ng/L	20	2	<5.67	<5.63	<5.85	<5.43	<6.04	<5.59	<5.48	
Fluorotelomer Substances (FTS)												
4:2 Fluorotelomer sulfonic acid (4:2FTS)	757124-72-4	ng/L	--	--	<1.10	<1.10	<1.14	<1.06	<1.17	<1.09	<1.07	
6:2 Fluorotelomer sulfonic acid (6:2FTS)	27619-97-2	ng/L	--	--	1.81	<0.979	<1.02	<0.945	5.63	46.9	39.6	
8:2 Fluorotelomer sulfonic acid (8:2FTS)	39108-34-4	ng/L	--	--	<2.29	<2.27	<2.36	<2.19	<2.44	<2.26	<2.21	
Replacement Chemicals												
Hexafluoropropylene oxide dimer acid (HFPO-DA)	13252-13-6	ng/L	300	30	<0.634	<0.629	<0.654	<0.607	<0.674	<0.625	<0.612	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	ng/L	3,000	600	<0.869	<0.862	<0.896	<0.832	<0.925	<0.857	<0.839	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CI-PF3ONS)	756426-58-1	ng/L	--	--	<0.848	<0.842	<0.875	<0.813	<0.903	<0.837	<0.819	
11-chloroicosadecafluoro-3-oxaundecane-1-sulfonic acid (11CI-PF3OUdS)	763051-92-9	ng/L	--	--	<0.436	<0.433	<0.450	<0.418	<0.464	<0.430	<0.421	
*Select Six PFAS (PFOSA, NEFOSE, NEFOSA, NEFOSAA, PFOA and PFOS)		ng/L	20	2	17.40	19.30	2.22	4.67	30.22	26.95	22.26	

Notes:
 PFAS laboratory analysis was completed using Modified USEPA Method 537.
 ng/L = nanogram per liter
 J = The amount detected is greater than the Method Detection Limit, but less than the Reporting Limit.
 Q = The ion transition ratio is outside of the acceptance criteria.
 * The Wisconsin Department of Health Services (WDHS) recommends a combined Enforcement Standard of 20 ng/L and combined Preventive Action Limit of 2 ng/L for PFOSA, NEFOSE, NEFOSA, NEFOSAA, PFOS, and PFOA.
Bold = value exceeds the Method Detection Limit
 Blue highlighted values exceed the WDHS Recommended Preventive Action Limit for groundwater.
 Yellow highlighted values exceed both the WDHS Recommended Preventive Action Limit and the WDHS Recommended Enforcement Standard for groundwater.

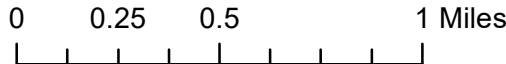
FIGURES



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 Project Area



ORIGINAL BY: ARR
 DATE: 11/5/2020
 REVISED BY: ARR
 DATE: 11/5/2020

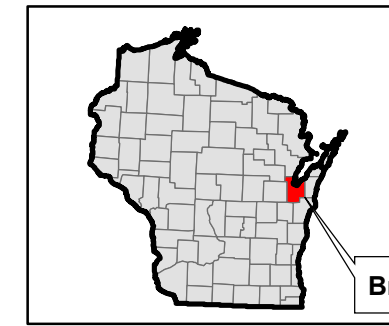
ASHVIEW TERRACE APARTMENTS SITE
 ASHWAUBENON, WISCONSIN

SITE LOCATION

FIGURE
1



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Brown County, Wisconsin

Project Area



Monitoring Well Locations

Note:

1. Results are in nanograms per liter (ng/L)
2. Posted analytical results only include detections for PFAS which exceed the Wisconsin Department of Health Services recommended Preventative Action Limits.
3. "Select Six PFAS" refers to total combined values of PFOSA, NETFOSE, NETFOSA, NETFOSAA, PFOA and PFOS for groundwater.



0 50 100 Feet



ORIGINAL BY: ARR

DATE: 11/5/2020

REVISED BY: ARR

DATE: 10/20/2021

PFAS CONFIRMATION SAMPLING SUMMARY REPORT
 ASHVIEW TERRACE APARTMENTS
 ASHWAUBENON, WISCONSIN
GROUNDWATER ANALYTICAL RESULTS FOR SEPTEMBER 2021

Attachment 1
Groundwater Analytical Reports

October 18, 2021

Vista Work Order No. 2109262

Mr. Michael Savale
Tetra Tech
710 Avis Drive, Suite 100
Ann Arbor, MI 48108

Dear Mr. Savale,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on September 25, 2021 under your Project Name 'Ashview Terrace PFAS'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at jfox@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Jamie Fox
Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 2109262

Case Narrative

Sample Condition on Receipt:

Three aqueous samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. The samples were received in good condition and within the recommended temperature requirements.

Analytical Notes:

PFAS Isotope Dilution Method

The samples were extracted and analyzed for a selected list of PFAS using Vista's PFAS Isotope Dilution Method. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the hold times.

Quality Control

The Initial Calibration met the method acceptance criteria. The recovery for HFPO-DA was greater than 130% in one of the continuing calibration standards. This analyte was not detected in the associated samples. The recoveries of all other analytes were within the acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the Reporting Limit. The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries for all QC and field samples were within the acceptance criteria.

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Sample Inventory Report



Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2109262-01	MW-21-01-210920	20-Sep-21 11:30	25-Sep-21 09:28	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
2109262-02	MW-21-02-210920	20-Sep-21 12:10	25-Sep-21 09:28	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
2109262-03	MW-21-03-210920	20-Sep-21 10:10	25-Sep-21 09:28	HDPE Bottle, 250 mL HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	B1I0176-BLK1	Column:	BEH C18
Project:	Ashview Terrace PFAS						

Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	<0.715	0.715	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFPeA	2706-90-3	<0.980	0.980	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFBS	375-73-5	<0.770	0.770	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
4:2 FTS	757124-72-4	<1.08	1.08	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFHxA	307-24-4	<1.13	1.13	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFPeS	2706-91-4	<0.905	0.905	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
HFPO-DA	13252-13-6	<0.620	0.620	2.00		B1I0176	01-Oct-21	0.250 L	14-Oct-21 18:29	1
PFHpA	375-85-9	<0.885	0.885	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
ADONA	919005-14-4	<0.850	0.850	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFHxS	355-46-4	<1.08	1.08	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
6:2 FTS	27619-97-2	<0.965	0.965	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFOA	335-67-1	<1.09	1.09	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFHpS	375-92-8	<2.47	2.47	2.50		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFNA	375-95-1	<0.565	0.565	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFOSA	754-91-6	<1.35	1.35	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFOS	1763-23-1	<1.07	1.07	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
9Cl-PF3ONS	756426-58-1	<0.830	0.830	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFDA	335-76-2	<0.900	0.900	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
8:2 FTS	39108-34-4	<2.24	2.24	2.25		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFNS	68259-12-1	<1.41	1.41	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
MeFOSAA	2355-31-9	<0.945	0.945	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
EtFOSAA	2991-50-6	<2.54	2.54	2.63		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFUnA	2058-94-8	<1.35	1.35	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFDS	335-77-3	<2.71	2.71	2.75		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
11Cl-PF3OUdS	763051-92-9	<0.427	0.427	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFDoA	307-55-1	<0.785	0.785	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
MeFOSA	31506-32-8	<6.85	6.85	8.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFTTrDA	72629-94-8	<1.11	1.11	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFDoS	79780-39-5	<1.59	1.59	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFTeDA	376-06-7	<0.815	0.815	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
EtFOSA	4151-50-2	<7.30	7.30	8.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
MeFOSE	24448-09-7	<8.00	8.00	8.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
EtFOSE	1691-99-2	<5.55	5.55	8.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	103	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C3-PFPeA	IS	101	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C3-PFBS	IS	85.9	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C3-HFPO-DA	IS	141	25 - 150		B1I0176	01-Oct-21	0.250 L	14-Oct-21 18:29	1

Sample ID: Method Blank
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	B1I0176-BLK1	Column:	BEH C18
Project:	Ashview Terrace PFAS						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-4:2 FTS	IS	112	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFHxA	IS	102	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C4-PFHpA	IS	93.5	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C3-PFHxS	IS	94.9	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-6:2 FTS	IS	100	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C5-PFNA	IS	92.6	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C8-PFOA	IS	77.7	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFOA	IS	95.1	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C8-PFOS	IS	97.3	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFDA	IS	93.8	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-8:2 FTS	IS	106	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d3-MeFOSAA	IS	112	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFUnA	IS	88.3	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d5-EtFOSAA	IS	98.6	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFDoA	IS	87.1	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d3-MeFOSA	IS	30.1	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFTeDA	IS	85.7	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d5-EtFOSA	IS	27.4	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d7-MeFOSE	IS	37.2	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d9-EtFOSE	IS	39.0	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1

MDL - Method Detection Limit

RL - Reporting limit

Results reported to MDL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: OPR

PFAS Isotope Dilution Method

Client Data					Laboratory Data				
Name:	Tetra Tech	Matrix:	Aqueous		Lab Sample:	B1I0176-BS1	Column:	BEH C18	
Project:	Ashview Terrace PFAS								

Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	7.78	8.00	97.3	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFPeA	2706-90-3	7.45	8.00	93.1	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFBS	375-73-5	8.04	8.00	100	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
4:2 FTS	757124-72-4	8.40	8.00	105	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFHxA	307-24-4	7.21	8.00	90.2	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFPeS	2706-91-4	8.87	8.00	111	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
HFPO-DA	13252-13-6	5.30	8.00	66.3	60 - 135		B1I0176	01-Oct-21	0.250 L	14-Oct-21 18:40	1
PFHpA	375-85-9	7.96	8.00	99.5	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
ADONA	919005-14-4	9.22	8.00	115	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFHxS	355-46-4	7.46	8.00	93.3	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
6:2 FTS	27619-97-2	7.48	8.00	93.5	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFOA	335-67-1	7.68	8.00	96.0	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFHpS	375-92-8	8.40	8.00	105	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFNA	375-95-1	7.67	8.00	95.8	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFOSA	754-91-6	7.18	8.00	89.8	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFOS	1763-23-1	7.06	8.00	88.3	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
9Cl-PF3ONS	756426-58-1	7.35	8.00	91.9	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFDA	335-76-2	8.24	8.00	103	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
8:2 FTS	39108-34-4	7.95	8.00	99.4	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFNS	68259-12-1	7.55	8.00	94.4	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
MeFOSAA	2355-31-9	8.65	8.00	108	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
EtFOSAA	2991-50-6	7.61	8.00	95.2	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFUnA	2058-94-8	7.39	8.00	92.4	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFDS	335-77-3	7.22	8.00	90.2	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
11Cl-PF3OUdS	763051-92-9	7.53	8.00	94.1	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFDaA	307-55-1	7.95	8.00	99.4	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
MeFOSA	31506-32-8	6.92	8.00	86.5	60 - 135	J, Q	B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFTTrDA	72629-94-8	7.47	8.00	93.4	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFDoS	79780-39-5	8.17	8.00	102	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFTeDA	376-06-7	7.97	8.00	99.6	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
EtFOSA	4151-50-2	8.26	8.00	103	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1

Sample ID: OPR
PFAS Isotope Dilution Method

Client Data					Laboratory Data							
Name:	Tetra Tech	Matrix:	Aqueous		Lab Sample:	B1I0176-BS1	Column:	BEH C18				
Project:	Ashview Terrace PFAS											
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
MeFOSE	24448-09-7	8.17	8.00	102	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
EtFOSE	1691-99-2	6.84	8.00	85.5	60 - 135	J	B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
Labeled Standards		Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C3-PFBA		IS		106	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C3-PFPeA		IS		103	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C3-PFBS		IS		90.5	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C3-HFPO-DA		IS		119	25 - 150		B1I0176	01-Oct-21	0.250 L	14-Oct-21 18:40	1	
13C2-4:2 FTS		IS		111	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C2-PFHxA		IS		106	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C4-PFHpA		IS		96.6	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C3-PFHxS		IS		101	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C2-6:2 FTS		IS		110	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C5-PFNA		IS		97.1	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C8-PFOA		IS		74.4	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C2-PFOA		IS		98.8	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C8-PFOS		IS		97.0	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C2-PFDA		IS		90.9	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C2-8:2 FTS		IS		113	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
d3-MeFOSAA		IS		104	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C2-PFUnA		IS		88.3	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
d5-EtFOSAA		IS		97.7	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C2-PFDoA		IS		87.0	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
d3-MeFOSA		IS		29.7	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
13C2-PFTeDA		IS		81.9	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
d5-EtFOSA		IS		27.0	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
d7-MeFOSE		IS		35.8	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	
d9-EtFOSE		IS		37.5	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1	

Sample ID: MW-21-01-210920
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	2109262-01	Column:	BEH C18
Project:	Ashview Terrace PFAS	Date Collected:	20-Sep-21 11:30	Date Received:	25-Sep-21 09:28		

Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	20.6	0.725	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFPeA	2706-90-3	36.8	0.994	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFBS	375-73-5	110	0.781	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
4:2 FTS	757124-72-4	<1.10	1.10	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFHxA	307-24-4	21.5	1.15	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFPeS	2706-91-4	<0.918	0.918	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
HFPO-DA	13252-13-6	<0.629	0.629	2.03		B1I0176	01-Oct-21	0.246 L	14-Oct-21 21:17	1
PFHpA	375-85-9	10.6	0.898	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
ADONA	919005-14-4	<0.862	0.862	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFHxS	355-46-4	<1.09	1.09	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
6:2 FTS	27619-97-2	<0.979	0.979	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFOA	335-67-1	14.1	1.11	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFHpS	375-92-8	<2.51	2.51	2.54		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFNA	375-95-1	<0.573	0.573	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFOSA	754-91-6	5.20	1.37	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFOS	1763-23-1	<1.08	1.08	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
9Cl-PF3ONS	756426-58-1	<0.842	0.842	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFDA	335-76-2	<0.913	0.913	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
8:2 FTS	39108-34-4	<2.27	2.27	2.28		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFNS	68259-12-1	<1.43	1.43	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
MeFOSAA	2355-31-9	<0.958	0.958	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
EtFOSAA	2991-50-6	<2.57	2.57	2.66		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFUnA	2058-94-8	<1.36	1.36	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFDS	335-77-3	<2.74	2.74	2.79		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
11Cl-PF3OUdS	763051-92-9	<0.433	0.433	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFDoA	307-55-1	<0.796	0.796	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
MeFOSA	31506-32-8	<6.95	6.95	8.11		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFTrDA	72629-94-8	<1.12	1.12	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFDoS	79780-39-5	<1.61	1.61	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
PFTeDA	376-06-7	<0.827	0.827	2.03		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
EtFOSA	4151-50-2	<7.40	7.40	8.11		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
MeFOSE	24448-09-7	<8.11	8.11	8.11		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
EtFOSE	1691-99-2	<5.63	5.63	8.11		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	102	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C3-PFPeA	IS	101	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C3-PFBS	IS	93.2	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1

Sample ID: MW-21-01-210920
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	2109262-01	Column:	BEH C18
Project:	Ashview Terrace PFAS	Date Collected:	20-Sep-21 11:30	Date Received:	25-Sep-21 09:28		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-HFPO-DA	IS	103	25 - 150		B1I0176	01-Oct-21	0.246 L	14-Oct-21 21:17	1
13C2-4:2 FTS	IS	109	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C2-PFHxA	IS	98.9	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C4-PFHpA	IS	90.2	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C3-PFHxS	IS	93.5	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C2-6:2 FTS	IS	103	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C5-PFNA	IS	92.9	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C8-PFOA	IS	78.7	10 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C2-PFOA	IS	91.8	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C8-PFOS	IS	95.8	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C2-PFDA	IS	90.1	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C2-8:2 FTS	IS	103	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
d3-MeFOSAA	IS	116	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C2-PFUnA	IS	90.0	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
d5-EtFOSAA	IS	108	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C2-PFDoA	IS	88.8	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
d3-MeFOSA	IS	43.8	10 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
13C2-PFTeDA	IS	85.9	25 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
d5-EtFOSA	IS	40.9	10 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
d7-MeFOSE	IS	71.0	10 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1
d9-EtFOSE	IS	75.6	10 - 150		B1I0176	01-Oct-21	0.246 L	08-Oct-21 08:29	1

MDL - Method Detection Limit

RL - Reporting limit

Results reported to MDL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: MW-21-02-210920
PFAS Isotope Dilution Method

Client Data					Laboratory Data					
Name:	Tetra Tech	Matrix:	Aqueous		Lab Sample:	2109262-02	Column:	BEH C18		
Project:	Ashview Terrace PFAS	Date Collected:	20-Sep-21 12:10		Date Received:	25-Sep-21 09:28				

Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	3.59	0.700	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFPeA	2706-90-3	2.27	0.960	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFBS	375-73-5	10.6	0.754	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
4:2 FTS	757124-72-4	<1.06	1.06	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFHxA	307-24-4	1.90	1.11	1.96	J	B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFPeS	2706-91-4	<0.886	0.886	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
HFPO-DA	13252-13-6	<0.607	0.607	1.96		B1I0176	01-Oct-21	0.255 L	14-Oct-21 21:28	1
PFHpA	375-85-9	1.03	0.867	1.96	J	B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
ADONA	919005-14-4	<0.832	0.832	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFHxS	355-46-4	<1.05	1.05	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
6:2 FTS	27619-97-2	<0.945	0.945	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFOA	335-67-1	1.88	1.07	1.96	J	B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFHpS	375-92-8	<2.42	2.42	2.45		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFNA	375-95-1	<0.553	0.553	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFOSA	754-91-6	2.79	1.32	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFOS	1763-23-1	<1.04	1.04	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
9Cl-PF3ONS	756426-58-1	<0.813	0.813	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFDA	335-76-2	<0.881	0.881	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
8:2 FTS	39108-34-4	<2.19	2.19	2.20		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFNS	68259-12-1	<1.38	1.38	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
MeFOSAA	2355-31-9	<0.925	0.925	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
EtFOSAA	2991-50-6	<2.48	2.48	2.57		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFUnA	2058-94-8	<1.32	1.32	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFDS	335-77-3	<2.65	2.65	2.69		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
11Cl-PF3OUdS	763051-92-9	<0.418	0.418	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFDoA	307-55-1	<0.769	0.769	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
MeFOSA	31506-32-8	<6.71	6.71	7.83		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFTTrDA	72629-94-8	<1.08	1.08	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFDoS	79780-39-5	<1.56	1.56	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
PFTeDA	376-06-7	<0.798	0.798	1.96		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
EtFOSA	4151-50-2	<7.15	7.15	7.83		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
MeFOSE	24448-09-7	<7.83	7.83	7.83		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
EtFOSE	1691-99-2	<5.43	5.43	7.83		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	113	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C3-PFPeA	IS	109	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C3-PFBS	IS	93.8	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1

Sample ID: MW-21-02-210920
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	2109262-02	Column:	BEH C18
Project:	Ashview Terrace PFAS	Date Collected:	20-Sep-21 12:10	Date Received:	25-Sep-21 09:28		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-HFPO-DA	IS	111	25 - 150		B1I0176	01-Oct-21	0.255 L	14-Oct-21 21:28	1
13C2-4:2 FTS	IS	125	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C2-PFHxA	IS	108	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C4-PFHpA	IS	98.9	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C3-PFHxS	IS	101	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C2-6:2 FTS	IS	105	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C5-PFNA	IS	99.6	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C8-PFOA	IS	85.3	10 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C2-PFOA	IS	98.9	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C8-PFOS	IS	94.7	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C2-PFDA	IS	94.4	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C2-8:2 FTS	IS	107	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
d3-MeFOSAA	IS	118	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C2-PFUnA	IS	95.3	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
d5-EtFOSAA	IS	108	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C2-PFDoA	IS	93.3	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
d3-MeFOSA	IS	40.2	10 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
13C2-PFTeDA	IS	89.8	25 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
d5-EtFOSA	IS	38.2	10 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
d7-MeFOSE	IS	64.4	10 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1
d9-EtFOSE	IS	68.8	10 - 150		B1I0176	01-Oct-21	0.255 L	08-Oct-21 08:39	1

MDL - Method Detection Limit

RL - Reporting limit

Results reported to MDL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: MW-21-03-210920
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	2109262-03	Column:	BEH C18
Project:	Ashview Terrace PFAS	Date Collected:	20-Sep-21 10:10	Date Received:	25-Sep-21 09:28		

Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	15.6	0.721	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFPeA	2706-90-3	2.73	0.988	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFBS	375-73-5	237	0.776	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
4:2 FTS	757124-72-4	<1.09	1.09	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFHxA	307-24-4	1.50	1.14	2.02	J	B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFPeS	2706-91-4	<0.912	0.912	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
HFPO-DA	13252-13-6	<0.625	0.625	2.02		B1I0176	01-Oct-21	0.248 L	14-Oct-21 21:38	1
PFHpA	375-85-9	<0.892	0.892	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
ADONA	919005-14-4	<0.857	0.857	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFHxS	355-46-4	<1.08	1.08	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
6:2 FTS	27619-97-2	46.9	0.973	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFOA	335-67-1	5.24	1.10	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFHpS	375-92-8	<2.49	2.49	2.52		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFNA	375-95-1	<0.570	0.570	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFOSA	754-91-6	19.4	1.36	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFOS	1763-23-1	2.31	1.07	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
9Cl-PF3ONS	756426-58-1	<0.837	0.837	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFDA	335-76-2	<0.907	0.907	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
8:2 FTS	39108-34-4	<2.26	2.26	2.27		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFNS	68259-12-1	<1.42	1.42	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
MeFOSAA	2355-31-9	<0.953	0.953	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
EtFOSAA	2991-50-6	<2.56	2.56	2.65		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFUnA	2058-94-8	<1.36	1.36	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFDS	335-77-3	<2.73	2.73	2.77		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
11Cl-PF3OUdS	763051-92-9	<0.430	0.430	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFDoA	307-55-1	<0.791	0.791	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
MeFOSA	31506-32-8	<6.91	6.91	8.06		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFTrDA	72629-94-8	<1.11	1.11	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFDoS	79780-39-5	<1.60	1.60	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
PFTeDA	376-06-7	<0.822	0.822	2.02		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
EtFOSA	4151-50-2	<7.36	7.36	8.06		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
MeFOSE	24448-09-7	<8.06	8.06	8.06		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
EtFOSE	1691-99-2	<5.59	5.59	8.06		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	120	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C3-PFPeA	IS	116	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C3-PFBS	IS	98.5	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1

Sample ID: MW-21-03-210920
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	2109262-03	Column:	BEH C18
Project:	Ashview Terrace PFAS	Date Collected:	20-Sep-21 10:10	Date Received:	25-Sep-21 09:28		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-HFPO-DA	IS	107	25 - 150		B1I0176	01-Oct-21	0.248 L	14-Oct-21 21:38	1
13C2-4:2 FTS	IS	134	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C2-PFHxA	IS	113	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C4-PFHpA	IS	105	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C3-PFHxS	IS	108	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C2-6:2 FTS	IS	118	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C5-PFNA	IS	110	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C8-PFOA	IS	93.3	10 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C2-PFOA	IS	107	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C8-PFOS	IS	109	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C2-PFDA	IS	102	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C2-8:2 FTS	IS	120	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
d3-MeFOSAA	IS	129	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C2-PFUnA	IS	106	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
d5-EtFOSAA	IS	119	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C2-PFDoA	IS	99.3	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
d3-MeFOSA	IS	44.7	10 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
13C2-PFTeDA	IS	94.5	25 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
d5-EtFOSA	IS	42.6	10 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
d7-MeFOSE	IS	72.7	10 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1
d9-EtFOSE	IS	78.6	10 - 150		B1I0176	01-Oct-21	0.248 L	08-Oct-21 08:50	1

MDL - Method Detection Limit

RL - Reporting limit

Results reported to MDL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
CRS	Cleanup Recovery Standard
D	Dilution
DL	Detection Limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
IS	Internal Standard
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limit of Detection
LOQ	Limit of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
MDL	Method Detection Limit
NA	Not applicable
ND	Not Detected
OPR	Ongoing Precision and Recovery sample
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
RL	Reporting Limit
RL	For 537.1, the reported RLs are the MRLs.
TEQ	Toxic Equivalency, sum of the toxic equivalency factors (TEF) multiplied by the sample concentrations.
TEQMax	TEQ calculation that uses the detection limit as the concentration for non-detects
TEQMin	TEQ calculation that uses zero as the concentration for non-detects
TEQRisk	TEQ calculation that uses ½ the detection limit as the concentration for non-detects
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	21-023-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-26
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2020018
Massachusetts Department of Environmental Protection	M-CA413
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1980678
New Hampshire Environmental Accreditation Program	207720
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Ohio Environmental Protection Agency	87778
Oregon Laboratory Accreditation Program	4042-016
Pennsylvania Department of Environmental Protection	017
Texas Commission on Environmental Quality	T104704189-21-12
Vermont Department of Health	VT-4042
Virginia Department of General Services	10769
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p- Dioxins & Polychlorinated Dibenzofurans	EPA 23
Polychlorinated Dibenzodioxins in Ambient Air by GC/HRMS	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613/1613B
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537.1
Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry	EPA 533
Perfluorooctanesulfonate (PFOS) and Perfluorooctanoate (PFOA) - Method for Unfiltered Samples Using Solid Phase Extraction and Liquid Chromatography/Mass Spectrometry	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A



CHAIN OF CUSTODY

For Laboratory Use Only
 Work Order #: 2109268 Temp: 2.2 °C
 Storage ID: R-13, WR-2 Storage Secured: Yes No

Project ID: Ashier Terrace PFAs PO#: 117-4124210 Sampler: A. Gordon
 (name)

TAT Standard: 21 days
 (check one): Rush (surcharge may apply)
 14 days 7 days Specify: _____

Andre Gordon 9-24-21 1700 FedEx 9-24-21 1700
 Relinquished by (printed name and signature) Date Time Received by (printed name and signature) Date Time
FedEx 09/25/21 0928 Justin Briseno 09/25/21 0928
 Relinquished by (printed name and signature) Date Time Received by (printed name and signature) Date Time

SHIP TO: Vista Analytical Laboratory
 1104 Windfield Way
 El Dorado Hills, CA 95762
 (916) 673-1520 * Fax (916) 673-0106
 ATTN: Sample Custodian
 Method of Shipment: FedEx
 Tracking No.: _____

Quantity	Type	Matrix	PFAS by Isotope Dilution	EPA Method 537 (DW only)	Comments
2	P	AQ			
2	P	AQ			
2	P	AQ			

Sample ID	Date	Time	Location/ Sample Description
MW-21-01-210920	9-20-21	1130	
MW-21-02-210920	9-20-21	1210	
MW-21-03-210920	9-20-21	1010	

Special Instructions/Comment
Level II data package
and a summary report for samples

SEND DOCUMENTATION AND RESULTS TO:

Name: Mike Savate
 Company: Tetra Tech
 Address: 710 Aris Dr. Suite 100
 City: Ann Arbor State: MI Zip: 49108
 Phone: 310-423-8076
 Email: michael.savate@tetratech.com

Container Types: P = HDPE, PJ = HDPE Jar
 PY = Polypropylene, O = Other _____
 Bottle Preservation Type: _____
 TZ = Trizma: _____
 Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment,
 SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other _____

1 of 2

Sample Log-In Checklist

Page # 1 of 1

Vista Work Order #: 2109262 TAT 57d

Samples Arrival:	Date/Time		Initials:		Location: <u>WY-2</u>		
	<u>09/25/21 09:28</u>		<u>[Signature]</u>		Shelf/Rack: <u>N/A</u>		
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> On Trac	<input type="checkbox"/> GLS	<input type="checkbox"/> DHL	<input type="checkbox"/> Hand Delivered	<input type="checkbox"/> Other
Preservation:	<input checked="" type="checkbox"/> Ice		<input type="checkbox"/> Blue Ice	<input type="checkbox"/> Techni Ice	<input type="checkbox"/> Dry Ice	<input type="checkbox"/> None	
Temp °C: <u>2.3</u> (uncorrected)	Probe used: Y <input checked="" type="checkbox"/> N			Thermometer ID: <u>IR-3</u>			
Temp °C: <u>2.2</u> (corrected)							

	YES	NO	NA
Shipping Container(s) Intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shipping Custody Seals Intact?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Airbill <u> </u> Trk # <u>284157590024</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shipping Documentation Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shipping Container	<input checked="" type="checkbox"/> Vista	<input type="checkbox"/> Client	<input checked="" type="checkbox"/> Retain
Chain of Custody / Sample Documentation Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chain of Custody / Sample Documentation Complete?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Holding Time Acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Logged In:	Date/Time		Initials:		Location: <u>R-13, WR-2</u>		
	<u>09/27/21 13:41</u>		<u>[Signature]</u>		Shelf/Rack: <u>A-2, F-5</u>		
COC Anomaly/Sample Acceptance Form completed?				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Comments:

CoC/Label Reconciliation Report WO# 2109262

LabNumber	CoC Sample ID	SampleAlias	Sample Date/Time	Container	BaseMatrix	Sample Comments
2109262-01	A MW-21-01-210920		20-Sep-21 11:30	HDPE Bottle, 250 mL	Aqueous	
2109262-01	B MW-21-01-210920		20-Sep-21 11:30	HDPE Bottle, 250 mL	Aqueous	
2109262-02	A MW-21-02-210920		20-Sep-21 12:10	HDPE Bottle, 250 mL	Aqueous	
2109262-02	B MW-21-02-210920		20-Sep-21 12:10	HDPE Bottle, 250 mL	Aqueous	
2109262-03	A MW-21-03-210920		20-Sep-21 10:10	HDPE Bottle, 250 mL	Aqueous	
2109262-03	B MW-21-03-210920		20-Sep-21 10:10	HDPE Bottle, 250 mL	Aqueous	

Checkmarks indicate that information on the COC reconciled with the sample label.

Any discrepancies are noted in the following columns.

	Yes	No	NA	Comments:
Sample Container Intact?	✓			
Sample Custody Seals Intact?			✓	
Adequate Sample Volume?	✓			
Container Type Appropriate for Analysis(es)	✓			

Preservation Documented: Na2S2O3 Trizma NH4CH3CO2 None Other

Verified by/Date: YJ 09/29/21

October 18, 2021

Vista Work Order No. 2109265

Mr. Michael Savale
Tetra Tech
710 Avis Drive, Suite 100
Ann Arbor, MI 48108

Dear Mr. Savale,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on September 25, 2021 under your Project Name 'Ashview Terrace PFAS'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at jfox@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Jamie Fox
Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 2109265

Case Narrative

Sample Condition on Receipt:

Two aqueous samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. The samples were received in good condition and within the recommended temperature requirements.

Analytical Notes:

PFAS Isotope Dilution Method

The samples were extracted and analyzed for a selected list of PFAS using Vista's PFAS Isotope Dilution Method. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the hold times.

Quality Control

The Initial Calibration met the method acceptance criteria. The recovery for HFPO-DA was greater than 130% in one of the continuing calibration standards. This analyte was not detected in the associated samples. The recoveries of all other analytes were within the acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the Reporting Limit. The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries for all QC and field samples were within the acceptance criteria.

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Sample Inventory Report



Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2109265-01	EB-01	20-Sep-21 09:00	25-Sep-21 09:28	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
2109265-02	DUP-01	20-Sep-21 00:00	25-Sep-21 09:28	HDPE Bottle, 250 mL HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	B1I0176-BLK1	Column:	BEH C18
Project:	Ashview Terrace PFAS						

Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	<0.715	0.715	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFPeA	2706-90-3	<0.980	0.980	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFBS	375-73-5	<0.770	0.770	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
4:2 FTS	757124-72-4	<1.08	1.08	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFHxA	307-24-4	<1.13	1.13	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFPeS	2706-91-4	<0.905	0.905	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
HFPO-DA	13252-13-6	<0.620	0.620	2.00		B1I0176	01-Oct-21	0.250 L	14-Oct-21 18:29	1
PFHpA	375-85-9	<0.885	0.885	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
ADONA	919005-14-4	<0.850	0.850	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFHxS	355-46-4	<1.08	1.08	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
6:2 FTS	27619-97-2	<0.965	0.965	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFOA	335-67-1	<1.09	1.09	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFHpS	375-92-8	<2.47	2.47	2.50		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFNA	375-95-1	<0.565	0.565	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFOSA	754-91-6	<1.35	1.35	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFOS	1763-23-1	<1.07	1.07	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
9Cl-PF3ONS	756426-58-1	<0.830	0.830	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFDA	335-76-2	<0.900	0.900	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
8:2 FTS	39108-34-4	<2.24	2.24	2.25		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFNS	68259-12-1	<1.41	1.41	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
MeFOSAA	2355-31-9	<0.945	0.945	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
EtFOSAA	2991-50-6	<2.54	2.54	2.63		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFUnA	2058-94-8	<1.35	1.35	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFDS	335-77-3	<2.71	2.71	2.75		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
11Cl-PF3OUdS	763051-92-9	<0.427	0.427	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFDoA	307-55-1	<0.785	0.785	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
MeFOSA	31506-32-8	<6.85	6.85	8.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFTTrDA	72629-94-8	<1.11	1.11	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFDoS	79780-39-5	<1.59	1.59	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
PFTeDA	376-06-7	<0.815	0.815	2.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
EtFOSA	4151-50-2	<7.30	7.30	8.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
MeFOSE	24448-09-7	<8.00	8.00	8.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
EtFOSE	1691-99-2	<5.55	5.55	8.00		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	103	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C3-PFPeA	IS	101	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C3-PFBS	IS	85.9	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C3-HFPO-DA	IS	141	25 - 150		B1I0176	01-Oct-21	0.250 L	14-Oct-21 18:29	1

Sample ID: Method Blank
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	B1I0176-BLK1	Column:	BEH C18
Project:	Ashview Terrace PFAS						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-4:2 FTS	IS	112	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFHxA	IS	102	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C4-PFHpA	IS	93.5	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C3-PFHxS	IS	94.9	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-6:2 FTS	IS	100	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C5-PFNA	IS	92.6	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C8-PFOA	IS	77.7	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFOA	IS	95.1	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C8-PFOS	IS	97.3	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFDA	IS	93.8	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-8:2 FTS	IS	106	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d3-MeFOSAA	IS	112	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFUnA	IS	88.3	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d5-EtFOSAA	IS	98.6	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFDoA	IS	87.1	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d3-MeFOSA	IS	30.1	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
13C2-PFTeDA	IS	85.7	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d5-EtFOSA	IS	27.4	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d7-MeFOSE	IS	37.2	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1
d9-EtFOSE	IS	39.0	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:40	1

MDL - Method Detection Limit

RL - Reporting limit

Results reported to MDL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: OPR
PFAS Isotope Dilution Method

Client Data					Laboratory Data							
Name:	Tetra Tech	Matrix:	Aqueous		Lab Sample:	B1I0176-BS1	Column:	BEH C18				
Project:	Ashview Terrace PFAS											

Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	7.78	8.00	97.3	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFPeA	2706-90-3	7.45	8.00	93.1	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFBS	375-73-5	8.04	8.00	100	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
4:2 FTS	757124-72-4	8.40	8.00	105	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFHxA	307-24-4	7.21	8.00	90.2	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFPeS	2706-91-4	8.87	8.00	111	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
HFPO-DA	13252-13-6	5.30	8.00	66.3	60 - 135		B1I0176	01-Oct-21	0.250 L	14-Oct-21 18:40	1
PFHpA	375-85-9	7.96	8.00	99.5	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
ADONA	919005-14-4	9.22	8.00	115	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFHxS	355-46-4	7.46	8.00	93.3	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
6:2 FTS	27619-97-2	7.48	8.00	93.5	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFOA	335-67-1	7.68	8.00	96.0	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFHpS	375-92-8	8.40	8.00	105	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFNA	375-95-1	7.67	8.00	95.8	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFOSA	754-91-6	7.18	8.00	89.8	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFOS	1763-23-1	7.06	8.00	88.3	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
9Cl-PF3ONS	756426-58-1	7.35	8.00	91.9	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFDA	335-76-2	8.24	8.00	103	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
8:2 FTS	39108-34-4	7.95	8.00	99.4	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFNS	68259-12-1	7.55	8.00	94.4	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
MeFOSAA	2355-31-9	8.65	8.00	108	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
EtFOSAA	2991-50-6	7.61	8.00	95.2	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFUnA	2058-94-8	7.39	8.00	92.4	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFDS	335-77-3	7.22	8.00	90.2	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
11Cl-PF3OUdS	763051-92-9	7.53	8.00	94.1	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFDaA	307-55-1	7.95	8.00	99.4	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
MeFOSA	31506-32-8	6.92	8.00	86.5	60 - 135	J, Q	B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFTTrDA	72629-94-8	7.47	8.00	93.4	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFDoS	79780-39-5	8.17	8.00	102	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
PFTeDA	376-06-7	7.97	8.00	99.6	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
EtFOSA	4151-50-2	8.26	8.00	103	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1

Sample ID: OPR
PFAS Isotope Dilution Method

Client Data					Laboratory Data						
Name:	Tetra Tech	Matrix:	Aqueous		Lab Sample:	B1I0176-BS1	Column:	BEH C18			
Project:	Ashview Terrace PFAS										
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
MeFOSE	24448-09-7	8.17	8.00	102	60 - 135		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
EtFOSE	1691-99-2	6.84	8.00	85.5	60 - 135	J	B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
Labeled Standards		Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS		106	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C3-PFPeA		IS		103	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C3-PFBS		IS		90.5	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C3-HFPO-DA		IS		119	25 - 150		B1I0176	01-Oct-21	0.250 L	14-Oct-21 18:40	1
13C2-4:2 FTS		IS		111	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C2-PFHxA		IS		106	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C4-PFHpA		IS		96.6	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C3-PFHxS		IS		101	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C2-6:2 FTS		IS		110	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C5-PFNA		IS		97.1	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C8-PFOA		IS		74.4	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C2-PFOA		IS		98.8	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C8-PFOS		IS		97.0	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C2-PFDA		IS		90.9	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C2-8:2 FTS		IS		113	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
d3-MeFOSAA		IS		104	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C2-PFUnA		IS		88.3	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
d5-EtFOSAA		IS		97.7	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C2-PFDoA		IS		87.0	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
d3-MeFOSA		IS		29.7	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
13C2-PFTeDA		IS		81.9	25 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
d5-EtFOSA		IS		27.0	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
d7-MeFOSE		IS		35.8	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1
d9-EtFOSE		IS		37.5	10 - 150		B1I0176	01-Oct-21	0.250 L	08-Oct-21 05:51	1

Sample ID: EB-01
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	2109265-01	Column:	BEH C18
Project:	Ashview Terrace PFAS	Date Collected:	20-Sep-21 09:00	Date Received:	25-Sep-21 09:28		

Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	<0.724	0.724	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFPeA	2706-90-3	<0.993	0.993	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFBS	375-73-5	<0.780	0.780	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
4:2 FTS	757124-72-4	<1.09	1.09	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFHxA	307-24-4	<1.14	1.14	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFPeS	2706-91-4	<0.917	0.917	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
HFPO-DA	13252-13-6	<0.628	0.628	2.03		B1I0176	01-Oct-21	0.247 L	14-Oct-21 21:49	1
PFHpA	375-85-9	<0.896	0.896	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
ADONA	919005-14-4	<0.861	0.861	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFHxS	355-46-4	<1.09	1.09	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
6:2 FTS	27619-97-2	<0.977	0.977	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFOA	335-67-1	<1.10	1.10	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFHpS	375-92-8	<2.50	2.50	2.53		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFNA	375-95-1	<0.572	0.572	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFOSA	754-91-6	<1.37	1.37	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFOS	1763-23-1	<1.08	1.08	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
9Cl-PF3ONS	756426-58-1	<0.841	0.841	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFDA	335-76-2	<0.912	0.912	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
8:2 FTS	39108-34-4	<2.27	2.27	2.28		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFNS	68259-12-1	<1.43	1.43	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
MeFOSAA	2355-31-9	<0.957	0.957	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
EtFOSAA	2991-50-6	<2.57	2.57	2.66		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFUnA	2058-94-8	<1.36	1.36	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFDS	335-77-3	<2.74	2.74	2.79		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
11Cl-PF3OUdS	763051-92-9	<0.432	0.432	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFDoA	307-55-1	<0.795	0.795	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
MeFOSA	31506-32-8	<6.94	6.94	8.10		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFTTrDA	72629-94-8	<1.12	1.12	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFDoS	79780-39-5	<1.61	1.61	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
PFTeDA	376-06-7	<0.826	0.826	2.03		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
EtFOSA	4151-50-2	<7.39	7.39	8.10		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
MeFOSE	24448-09-7	<8.10	8.10	8.10		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
EtFOSE	1691-99-2	<5.62	5.62	8.10		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	110	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C3-PFPeA	IS	108	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C3-PFBS	IS	95.4	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1

Sample ID: EB-01
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	2109265-01	Column:	BEH C18
Project:	Ashview Terrace PFAS	Date Collected:	20-Sep-21 09:00	Date Received:	25-Sep-21 09:28		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-HFPO-DA	IS	111	25 - 150		B1I0176	01-Oct-21	0.247 L	14-Oct-21 21:49	1
13C2-4:2 FTS	IS	129	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C2-PFHxA	IS	106	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C4-PFHpA	IS	102	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C3-PFHxS	IS	101	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C2-6:2 FTS	IS	115	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C5-PFNA	IS	96.0	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C8-PFOA	IS	54.4	10 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C2-PFOA	IS	101	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C8-PFOS	IS	104	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C2-PFDA	IS	97.3	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C2-8:2 FTS	IS	110	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
d3-MeFOSAA	IS	113	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C2-PFUnA	IS	96.9	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
d5-EtFOSAA	IS	95.2	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C2-PFDoA	IS	87.8	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
d3-MeFOSA	IS	35.5	10 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
13C2-PFTeDA	IS	85.0	25 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
d5-EtFOSA	IS	32.8	10 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
d7-MeFOSE	IS	44.5	10 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1
d9-EtFOSE	IS	46.8	10 - 150		B1I0176	01-Oct-21	0.247 L	08-Oct-21 09:00	1

MDL - Method Detection Limit

RL - Reporting limit

Results reported to MDL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: DUP-01
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	2109265-02	Column:	BEH C18
Project:	Ashview Terrace PFAS	Date Collected:	20-Sep-21 00:00	Date Received:	25-Sep-21 09:28		

Analyte	CAS Number	Conc. (ng/L)	MDL	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	16.1	0.705	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFPeA	2706-90-3	2.65	0.967	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFBS	375-73-5	198	0.760	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
4:2 FTS	757124-72-4	<1.07	1.07	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFHxA	307-24-4	1.60	1.11	1.97	J	B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFPeS	2706-91-4	<0.893	0.893	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
HFPO-DA	13252-13-6	<0.612	0.612	1.97		B1I0176	01-Oct-21	0.253 L	14-Oct-21 21:59	1
PFHpA	375-85-9	<0.873	0.873	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
ADONA	919005-14-4	<0.839	0.839	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFHxS	355-46-4	<1.06	1.06	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
6:2 FTS	27619-97-2	39.6	0.952	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFOA	335-67-1	4.58	1.08	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFHpS	375-92-8	<2.44	2.44	2.47		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFNA	375-95-1	<0.557	0.557	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFOSA	754-91-6	15.7	1.33	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFOS	1763-23-1	1.98	1.05	1.97	Q	B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
9Cl-PF3ONS	756426-58-1	<0.819	0.819	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFDA	335-76-2	<0.888	0.888	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
8:2 FTS	39108-34-4	<2.21	2.21	2.22		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFNS	68259-12-1	<1.39	1.39	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
MeFOSAA	2355-31-9	<0.932	0.932	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
EtFOSAA	2991-50-6	<2.50	2.50	2.59		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFUnA	2058-94-8	<1.33	1.33	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFDS	335-77-3	<2.67	2.67	2.71		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
11Cl-PF3OUdS	763051-92-9	<0.421	0.421	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFDoA	307-55-1	<0.775	0.775	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
MeFOSA	31506-32-8	<6.76	6.76	7.89		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFTTrDA	72629-94-8	<1.09	1.09	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFDoS	79780-39-5	<1.57	1.57	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
PFTeDA	376-06-7	<0.804	0.804	1.97		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
EtFOSA	4151-50-2	<7.20	7.20	7.89		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
MeFOSE	24448-09-7	<7.89	7.89	7.89		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
EtFOSE	1691-99-2	<5.48	5.48	7.89		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	104	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C3-PFPeA	IS	105	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C3-PFBS	IS	94.6	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1

Sample ID: DUP-01
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	2109265-02	Column:	BEH C18
Project:	Ashview Terrace PFAS	Date Collected:	20-Sep-21 00:00	Date Received:	25-Sep-21 09:28		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-HFPO-DA	IS	114	25 - 150		B1I0176	01-Oct-21	0.253 L	14-Oct-21 21:59	1
13C2-4:2 FTS	IS	120	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C2-PFHxA	IS	106	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C4-PFHpA	IS	97.4	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C3-PFHxS	IS	92.6	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C2-6:2 FTS	IS	108	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C5-PFNA	IS	92.3	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C8-PFOA	IS	77.4	10 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C2-PFOA	IS	97.5	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C8-PFOS	IS	113	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C2-PFDA	IS	92.2	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C2-8:2 FTS	IS	110	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
d3-MeFOSAA	IS	119	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C2-PFUnA	IS	89.1	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
d5-EtFOSAA	IS	107	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C2-PFDoA	IS	91.2	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
d3-MeFOSA	IS	43.9	10 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
13C2-PFTeDA	IS	85.4	25 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
d5-EtFOSA	IS	41.8	10 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
d7-MeFOSE	IS	72.8	10 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1
d9-EtFOSE	IS	73.1	10 - 150		B1I0176	01-Oct-21	0.253 L	08-Oct-21 09:11	1

MDL - Method Detection Limit

RL - Reporting limit

Results reported to MDL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
CRS	Cleanup Recovery Standard
D	Dilution
DL	Detection Limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
IS	Internal Standard
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limit of Detection
LOQ	Limit of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
MDL	Method Detection Limit
NA	Not applicable
ND	Not Detected
OPR	Ongoing Precision and Recovery sample
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
RL	Reporting Limit
RL	For 537.1, the reported RLs are the MRLs.
TEQ	Toxic Equivalency, sum of the toxic equivalency factors (TEF) multiplied by the sample concentrations.
TEQMax	TEQ calculation that uses the detection limit as the concentration for non-detects
TEQMin	TEQ calculation that uses zero as the concentration for non-detects
TEQRisk	TEQ calculation that uses ½ the detection limit as the concentration for non-detects
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	21-023-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-26
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2020018
Massachusetts Department of Environmental Protection	M-CA413
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1980678
New Hampshire Environmental Accreditation Program	207720
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Ohio Environmental Protection Agency	87778
Oregon Laboratory Accreditation Program	4042-016
Pennsylvania Department of Environmental Protection	017
Texas Commission on Environmental Quality	T104704189-21-12
Vermont Department of Health	VT-4042
Virginia Department of General Services	10769
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p- Dioxins & Polychlorinated Dibenzofurans	EPA 23
Polychlorinated Dibenzodioxins in Ambient Air by GC/HRMS	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613/1613B
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537.1
Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry	EPA 533
Perfluorooctanesulfonate (PFOS) and Perfluorooctanoate (PFOA) - Method for Unfiltered Samples Using Solid Phase Extraction and Liquid Chromatography/Mass Spectrometry	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A



CHAIN OF CUSTODY

For Laboratory Use Only 2109265
 Work Order #: 2109262 Temp: 2.2 °C
 Storage ID: 2-13, WR-2 Storage Secured: Yes No

Project ID: Ashvie Terrace PFAS PO#: 117-9124210 Sampler: A. Gordon
 (name)

TAT Standard: 21 days
 (check one): Rush (surcharge may apply)
 14 days 7 days Specify: _____

Andrew Gordon 9-24-21 1700 FedEx 9-24-21 1700
 Relinquished by (printed name and signature) Date Time Received by (printed name and signature) Date Time
FedEx 09/25/21 0928 Justin Briseno 09/25/21 0928
 Relinquished by (printed name and signature) Date Time Received by (printed name and signature) Date Time

SHIP TO: Vista Analytical Laboratory
 1104 Windfield Way
 El Dorado Hills, CA 95762
 (916) 673-1520 * Fax (916) 673-0106
 ATTN: Sample Custodian
 Method of Shipment: FedEx
 Tracking No.: _____

Quantity	Type	Matrix	PFOA/PFOs	UCMR3 PFAS List:6	537.1 List: 1A or 1B (Circle One)	EPA Draft List of 24	OTHER: <u>33 PFAS</u>	PFOA/PFOs	UCMR3 PFAS List:6	537.1 List of 14	537.1 List of 18	Comments
2	P	10				✓						
2	P	10				✓						

Special Instructions/Comment

SEND DOCUMENTATION AND RESULTS TO:

Name: Mike Savale
 Company: Tetra Tech
 Address: 710 Avis Dr. Suite 100
 City: Ann Arbor State: MI Zip: 48106
 Phone: 810-923-8076
 Email: michael.savale@tetra.tech.com

Container Types: P = HDPE, PJ = HDPE Jar Bottle Preservation Type: Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment,
 PY = Polypropylene, O = Other TZ = Trizma: SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other

Sample Log-In Checklist

Page # 1 of 1

Vista Work Order #: 2109265 TAT Std

Samples Arrival:	Date/Time <u>09/25/21 0928</u>		Initials: <u>(Signature)</u>		Location: <u>WR-2</u>		
	Shelf/Rack: <u>N/A</u>						
Delivered By:	<input checked="" type="radio"/> FedEx	<input type="radio"/> UPS	<input type="radio"/> On Trac	<input type="radio"/> GLS	<input type="radio"/> DHL	<input type="radio"/> Hand Delivered	<input type="radio"/> Other
Preservation:	<input checked="" type="radio"/> Ice		<input type="radio"/> Blue Ice	<input type="radio"/> Techni Ice	<input type="radio"/> Dry Ice	<input type="radio"/> None	
Temp °C: <u>2.3</u> (uncorrected)	Probe used: Y <input checked="" type="radio"/> N <input type="radio"/>			Thermometer ID: <u>TR-3</u>			
Temp °C: <u>2.2</u> (corrected)							

	YES	NO	NA
Shipping Container(s) Intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shipping Custody Seals Intact?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Airbill <u>—</u> Trk # <u>784157590024</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shipping Documentation Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shipping Container	<input checked="" type="checkbox"/> Vista	<input type="checkbox"/> Client	<input checked="" type="checkbox"/> Retain
Chain of Custody / Sample Documentation Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chain of Custody / Sample Documentation Complete?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Holding Time Acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Logged In:	Date/Time <u>09/29/21 09:10</u>		Initials: <u>JK</u>
	Location: <u>R-13, WR2</u>		Shelf/Rack: <u>A-2, F-5</u>
COC Anomaly/Sample Acceptance Form completed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Comments:

CoC/Label Reconciliation Report WO# 2109265

LabNumber	CoC Sample ID	SampleAlias	Sample Date/Time	Container	BaseMatrix	Sample Comments
2109265-01	A EB-01		20-Sep-21 09:00	HDPE Bottle, 250 mL	Aqueous	
2109265-01	B EB-01		20-Sep-21 09:00	HDPE Bottle, 250 mL	Aqueous	
2109265-02	A DUP-01		20-Sep-21 00:00	HDPE Bottle, 250 mL	Aqueous	
2109265-02	B DUP-01		20-Sep-21 00:00	HDPE Bottle, 250 mL	Aqueous	

Checkmarks indicate that information on the COC reconciled with the sample label.
Any discrepancies are noted in the following columns.

	Yes	No	NA
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Adequate Sample Volume?	✓		
Container Type Appropriate for Analysis(es)	✓		

Comments: A NO time listed on COC or sample label used 00:00

Preservation Documented: Na2S2O3 Trizma NH4CH3CO2 None Other

Verified by/Date: 162 09 / 29/21