

Beggs, Tauren R - DNR

From: Henderson, Dave <Dave.Henderson@aecom.com>
Sent: Monday, September 24, 2018 11:06 AM
To: Beggs, Tauren R - DNR; GravelPit (GravelPit@manitowoc.org)
Subject: Former Town of Newton Pit BRRTS 02-36-000268 - Notice of Release
Attachments: Summary_1801972.pdf; Newton Notice of Release 4400-225.pdf; Summary_1801578.pdf

Tauren,

AECOM, on the behalf of the City of Manitowoc, is submitting the attached Notification for Hazardous Substance Discharge (WDNR form 4400-225) along with two laboratory data reports as supporting documentation.

Please let me know if you have any questions.

Thanks
dsh

David Henderson, P.E.
Senior Project Manager/Director, Environment
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Emergency Discharges / Spills should be reported via the 24-Hour Hotline: 1-800-943-0003

Notice: Hazardous substance discharges must be reported immediately according to s. 292.11 Wis. Stats. Non-emergency hazardous substance discharges may be reported by telefaxing or e-mailing a completed report to the Department, or calling or visiting a Department office in person. If you choose to notify the Department by telefax or by email, you should use this form to be sure that all necessary information is included. However, use of this form is not mandatory. Under s. 292.99, Wis. Stats., the penalty for violating the reporting requirements of ch. 292 Wis. Stats., shall be no less than \$10 nor more than \$5000 for each violation. Each day of continued violation is a separate offense. It is not the Department's intention to use any personally identifiable information from this form for any purpose other than program administration. However, information submitted on this form may also be made available to requesters under Wisconsin's Open Records Law (ss. 19.31 – 19.39, Wis. Stats.).

Confirmatory laboratory data should be included with this form, to assist the DNR in processing this Hazardous Substance Release Notification.

Complete this form. **TYPE or PRINT LEGIBLY.** NOTIFY appropriate DNR region (see next page) **IMMEDIATELY** upon discovery of a potential release from (**check one**):

- Underground Petroleum Storage Tank System (additional information may be required for Item 6 below)
- Aboveground Petroleum Storage Tank System
- Dry Cleaner Facility
- Other - Describe: Groundwater impacts

ATTN DNR: **R & R Program Associate**

Date DNR Notified: 09/24/2018

1. Discharge Reported By

Name David Henderson	Firm AECOM	Phone Number (include area code) (414) 944-6190
Mailing Address 1555 N RiverCenter Dr, Milwaukee, WI 53212	Email Dave.henderson@aecom.com	

2. Site Information

Name of site at which discharge occurred. Include local name of site/business, not responsible party name, unless a residence/vacant property.

Former Town of Newton Gravel Pit, Existing BRRTS No. 02-36-000268

Location: Include street address, not PO Box. If no street address, describe as precisely as possible, i.e., 1/4 mile NW of CTHs 60 & 123 on E side of CTH 60.

3130 Hecker Road, Manitowoc, WI

Municipality: (City, Village, Township) Specify municipality in which the site is located, not mailing address/city.

City of Manitowoc

County Manitowoc	Legal Description: SW ¼ of NW ¼ Section 2, Town 18 N, Range 23 <input checked="" type="radio"/> E <input type="radio"/> W	WTM: X Y
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3. Responsible Party (RP) and/or RP Representative

Responsible Party Name: Business or owner name that is responsible for cleanup. If more than one, list all. Attach additional pages as necessary.

City of Manitowoc

A local governmental unit claiming an exemption from state Spill Law and Solid Waste Management responsibilities for the discharge being reported, per Wis. Stat. §§ 292.11(9)(e) and 292.23, should: 1) check this box; 2) review [DNR publication RR-055](#); and 3) provide documentation to DNR that demonstrates compliance with the statutory requirements of the liability exemptions. Local governmental units may also request a fee-based liability clarification letter from DNR by using [DNR Form 4400-237](#).

Contact Person Name (if different) Kathleen McDaniel, City Attorney	Phone Number (920) 686-6991	Email kmcDaniel@manitowoc.org	
Mailing Address 900 Quay Street	City Manitowoc	State WI	ZIP Code 54220

Responsible Party Name: Business or owner name that is responsible for cleanup. If more than one, list all. Attach additional pages as necessary.

Contact Person Name (if different)	Phone Number	Email	
Mailing Address	City	State	ZIP Code

(continued)

Notification For Hazardous Substance Discharge (Non-Emergency Only)

4. Hazardous Substance Information

Identify hazardous substance discharged (check all that apply):

- | | | |
|---|--|---|
| <input type="checkbox"/> VOCs
<input type="checkbox"/> PCE
<input type="checkbox"/> TCE
<input type="checkbox"/> Other Chlorinated
<input type="checkbox"/> Diesel
<input type="checkbox"/> Fuel Oil
<input type="checkbox"/> Gasoline
<input type="checkbox"/> Hydraulic Oil
<input type="checkbox"/> Jet Fuel | <i>(VOCs continued)</i>
<input type="checkbox"/> Mineral Oil
<input type="checkbox"/> Waste Oil
<input type="checkbox"/> Petroleum-Unknown Type
<input type="checkbox"/> PAHs
<input type="checkbox"/> PCBs
<input type="checkbox"/> Cyanide
<input type="checkbox"/> Leachate
<input type="checkbox"/> Manure | <input type="checkbox"/> Metals
<input type="checkbox"/> Arsenic
<input type="checkbox"/> Chromium
<input type="checkbox"/> Lead
<input type="checkbox"/> Other: _____
<input type="checkbox"/> Pesticides: _____
<input type="checkbox"/> Fertilizer: _____
<input type="checkbox"/> RCRA Hazardous Waste: _____
<input checked="" type="checkbox"/> Other: PFAS
<input type="checkbox"/> Unknown |
|---|--|---|

5. Impacts to the Environment Information

Enter "K" for known/confirmed or "P" for potential for all that apply.

- | | | |
|--|---|--|
| <input type="checkbox"/> Air Contamination | <input type="checkbox"/> Fire Explosion Threat | <input type="checkbox"/> Soil Contamination |
| <input type="checkbox"/> Co-mingled (Petroleum & Non-Petroleum) | <input type="checkbox"/> Free Product | <input type="checkbox"/> Soil Gas Contamination |
| <input type="checkbox"/> Contamination in Fractured Bedrock | <input checked="" type="checkbox"/> Groundwater Contamination | <input type="checkbox"/> Sub-slab Vapor Contamination |
| <input type="checkbox"/> Contamination Within 1 Meter of Bedrock | <input type="checkbox"/> Off-Site Contamination | <input type="checkbox"/> Surface Water Contamination |
| <input type="checkbox"/> Contaminated Private Well | <input type="checkbox"/> Sanitary Sewer Contamination | <input type="checkbox"/> Within 100 ft of Private Well |
| <input type="checkbox"/> Contaminated Public Well | <input type="checkbox"/> Storm Sewer Contamination | <input type="checkbox"/> Within 1000 ft of Public Well |
| <input type="checkbox"/> Contamination in Right of Way | <input type="checkbox"/> Sediment Contamination | |
| | Other (specify): _____ | |

Contamination was discovered as a result of:

- | | | |
|--|--|---|
| <input type="checkbox"/> Tank closure assessment | <input type="checkbox"/> Site assessment | <input checked="" type="checkbox"/> Other - Describe: <u>limited groundwater assessment</u> |
| Date <input type="text"/> | Date <input type="text"/> | Date <input type="text" value="08/20/2018"/> |

Lab results: Lab results will be faxed upon receipt Lab results are attached

Additional Comments: Include a brief description of immediate actions taken to halt the release and contain or cleanup hazardous substances that have been discharged.

6. Federal Energy Act Requirements (Section 9002(d) of the Solid Waste Disposal Act (SWDA))

	Source	Cause
For all confirmed releases from USTs occurring after 9/30/2007 please provide the following information: <input checked="" type="checkbox"/> Does not apply.	<input type="checkbox"/> Tank <input type="checkbox"/> Piping <input type="checkbox"/> Dispenser <input type="checkbox"/> Submersible Turbine Pump <input type="checkbox"/> Delivery Problem <input type="checkbox"/> Other (specify): _____	<input type="checkbox"/> Spill <input type="checkbox"/> Overfill <input type="checkbox"/> Corrosion <input type="checkbox"/> Physical or Mechanical Damage <input type="checkbox"/> Installation Problem <input type="checkbox"/> Other (does not fit any of above) <input type="checkbox"/> Unknown

Contact information to report non-emergency releases in DNR's five regions are as follows:

- Northeast Region (FAX: 920-662-5413); Attention -- R&R Program Associate:** DNRRRNER@wisconsin.gov
 Brown, Calumet, Door, Fond du Lac (**except City of Waupun - see South Central Region**), Green Lake, Kewaunee, Manitowoc, Marinette, Marquette, Menominee, Oconto, Outagamie, Shawano, Sheboygan, Waupaca, Waushara, Winnebago counties
- Northern Region (FAX: 715-623-6773); Attention -- R&R Program Associate:** DNRRRNOR@wisconsin.gov
 Ashland, Barron, Bayfield, Burnett, Douglas, Forest, Florence, Iron, Langlade, Lincoln, Oneida, Polk, Price, Rusk, Sawyer, Taylor, Vilas, Washburn counties
- South Central Region (FAX: 608-273-5610); Attention -- R&R Program Associate:** DNRRRSCR@wisconsin.gov
 Columbia, Dane, Dodge, Fond du Lac (**City of Waupun only**), Grant, Green, Iowa, Jefferson, Lafayette, Richland, Rock, Sauk, Walworth counties
- Southeast Region (FAX: 414-263-8550); Attention -- R&R Program Associate:** DNRRRSER@wisconsin.gov
 Kenosha, Milwaukee, Ozaukee, Racine, Washington, Waukesha counties

Notification For Hazardous Substance Discharge (Non-Emergency Only)

David Henderson AECOM

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West Central Region (FAX: 715-839-6076); Attention -- R&R Program Associate: DNRRRWCR@wisconsin.gov

Adams, Buffalo, Chippewa, Clark, Crawford, Dunn, Eau Claire, Jackson, Juneau, LaCrosse, Marathon, Monroe, Pepin, Pierce, Portage, St. Croix, Trempealeau, Vernon, Wood counties

August 18, 2018

Vista Work Order No. 1801578

Ms. Lanette Altenbach
AECOM
1555 N. River Center Drive
Milwaukee, WI 53212

Dear Ms. Altenbach,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on July 03, 2018 under your Project Name '60581251'.

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 mmaier@vista-analytical.com.

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

Sincerely,



Martha Maier
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. 1801578

Case Narrative

Sample Condition on Receipt:

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

Analytical Notes:

PFAS Isotope Dilution Method

Samples "WT-26" and "WT-31" contained particulate and were centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of PFAS using the PFAS Isotope Dilution Method (Modified EPA Method 537). 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 method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method 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 1/2 the LOQ. The OPR recoveries were within the method acceptance criteria.

As requested, an MS/MSD was performed on sample "WP-06R". The MS/MSD recoveries and/or RPDs were out of the acceptance criteria for 6:2 FTS and PFDS.

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1801578-06	DUP	PFAS Isotope Dilution Method	13C8-PFOA	H	46.6
1801578-07	Field Blank	PFAS Isotope Dilution Method	13C8-PFOA	H	46.8
B8G0073-BLK1	B8G0073-BLK1	PFAS Isotope Dilution Method	13C8-PFOA	H	44.0
B8G0073-BS1	B8G0073-BS1	PFAS Isotope Dilution Method	13C8-PFOA	H	36.6
B8G0073-MS1	B8G0073-MS1	PFAS Isotope Dilution Method	13C8-PFOA	H	48.9

H = Recovery was outside laboratory acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1801578-01	WT-26	02-Jul-18 09:27	03-Jul-18 09:20	HDPE Bottle, 250 mL
1801578-02	PZ-26A	02-Jul-18 09:27	03-Jul-18 09:20	HDPE Bottle, 250 mL
1801578-03	WP-06R	MS/MSD02-Jul-18 11:10	03-Jul-18 09:20	HDPE Bottle, 250 mL HDPE Bottle, 250 mL HDPE Bottle, 250 mL HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1801578-04	WT-31	02-Jul-18 12:25	03-Jul-18 09:20	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1801578-05	PZ-31A	02-Jul-18 12:35	03-Jul-18 09:20	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1801578-06	DUP	02-Jul-18 00:00	03-Jul-18 09:20	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1801578-07	FIELD BLANK	02-Jul-18 11:00	03-Jul-18 09:20	HDPE Bottle, 250 mL
1801578-08	EQUIPMENT BLANK	02-Jul-18 11:10	03-Jul-18 09:20	HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank						PFAS Isotope Dilution Method					
Client Data					Laboratory Data						
Name:	AECOM	Matrix:	Aqueous		Lab Sample:	B8G0073-BLK1	Column:	BEH C18			
Project:	60581251										
Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFPeA	2706-90-3	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFBS	375-73-5	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
4:2 FTS	757124-72-4	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFHxA	307-24-4	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFPeS	2706-91-4	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFHpA	375-85-9	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFHxS	355-46-4	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
6:2 FTS	27619-97-2	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFOA	335-67-1	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFHpS	375-92-8	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFNA	375-95-1	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFOSA	754-91-6	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFOS	1763-23-1	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFDA	335-76-2	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
8:2 FTS	39108-34-4	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFNS	68259-12-1	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
MeFOSAA	2355-31-9	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
EtFOSAA	2991-50-6	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFUnA	2058-94-8	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFDS	335-77-3	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFDoA	307-55-1	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFTrDA	72629-94-8	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
PFTeDA	376-06-7	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C3-PFBA	IS	99.6	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
13C3-PFPeA	IS	99.2	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
13C3-PFBS	IS	109	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
13C2-4:2 FTS	IS	111	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
13C2-PFHxA	IS	99.3	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
13C4-PFHpA	IS	102	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
18O2-PFHxS	IS	98.6	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
13C2-PFOA	IS	89.9	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
13C5-PFNA	IS	84.4	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
13C8-PFOSA	IS	44.0	50 - 150		H	B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
13C8-PFOS	IS	111	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
13C2-PFDA	IS	79.2	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	
d3-MeFOSAA	IS	82.8	50 - 150			B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1	

Sample ID: Method Blank **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	B8G0073-BLK1	Column:	BEH C18
Project:	60581251						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	74.5	50 - 150		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
13C2-PFUnA	IS	71.0	50 - 150		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
13C2-PFDoA	IS	64.1	50 - 150		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1
13C2-PFTeDA	IS	90.9	50 - 150		B8G0073	10-Jul-18	0.250 L	27-Jul-18 06:26	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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:	AECOM	Matrix:	Aqueous		Lab Sample:	B8G0073-BS1	Column:	BEH C18			
Project:	60581251										

Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	35.9	40.0	89.7	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFPeA	2706-90-3	39.1	40.0	97.7	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFBS	375-73-5	39.6	40.0	98.9	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
4:2 FTS	757124-72-4	41.1	40.0	103	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFHxA	307-24-4	37.0	40.0	92.4	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFPeS	2706-91-4	39.1	40.0	97.8	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFHpA	375-85-9	38.8	40.0	97.0	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFHxS	355-46-4	37.5	40.0	93.8	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
6:2 FTS	27619-97-2	40.4	40.0	101	60 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFOA	335-67-1	41.0	40.0	103	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFHpS	375-92-8	42.7	40.0	107	60 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFNA	375-95-1	38.1	40.0	95.3	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFOSA	754-91-6	41.4	40.0	104	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFOS	1763-23-1	40.3	40.0	101	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFDA	335-76-2	37.0	40.0	92.5	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
8:2 FTS	39108-34-4	37.2	40.0	93.0	60 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFNS	68259-12-1	40.0	40.0	99.9	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
MeFOSAA	2355-31-9	39.3	40.0	98.3	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
EiFOSAA	2991-50-6	37.6	40.0	93.9	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFUnA	2058-94-8	41.2	40.0	103	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFDS	335-77-3	38.5	40.0	96.2	60 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFDoA	307-55-1	41.0	40.0	103	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFTrDA	72629-94-8	41.5	40.0	104	60 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
PFTeDA	376-06-7	42.9	40.0	107	70 - 130		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	101	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C3-PFPeA	IS	95.2	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C3-PFBS	IS	118	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C2-4:2 FTS	IS	108	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C2-PFHxA	IS	103	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C4-PFHpA	IS	105	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
18O2-PFHxS	IS	105	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C2-PFOA	IS	96.7	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C5-PFNA	IS	88.6	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C8-PFOSA	IS	36.6	50- 150	H	B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1

Sample ID: OPR

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: 60581251

Matrix: Aqueous

Laboratory Data

Lab Sample: B8G0073-BS1 Column: BEH C18

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C8-PFOS	IS	91.9	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C2-PFDA	IS	78.6	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
d3-MeFOSAA	IS	69.5	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
d5-EtFOSAA	IS	69.6	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C2-PFUnA	IS	68.3	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C2-PFDoA	IS	67.9	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1
13C2-PFTeDA	IS	78.1	50- 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:35	1

Sample ID: WT-26

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-01	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 09:27	Date Received:	03-Jul-18 09:20		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	1.48	1.34	1.96	3.91	J	B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFPeA	2706-90-3	3.83	1.34	1.96	3.91	J	B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFBS	375-73-5	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
4:2 FTS	757124-72-4	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFHxA	307-24-4	2.26	1.34	1.96	3.91	J	B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFPeS	2706-91-4	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFHpA	375-85-9	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFHxS	355-46-4	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
6:2 FTS	27619-97-2	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFOA	335-67-1	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFHpS	375-92-8	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFNA	375-95-1	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFOSA	754-91-6	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFOS	1763-23-1	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFDA	335-76-2	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
8:2 FTS	39108-34-4	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFNS	68259-12-1	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
MeFOSAA	2355-31-9	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
EtFOSAA	2991-50-6	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFUnA	2058-94-8	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFDS	335-77-3	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFDoA	307-55-1	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFTrDA	72629-94-8	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
PFTeDA	376-06-7	ND	1.34	1.96	3.91		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	102	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C3-PFPeA	IS	99.4	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C3-PFBS	IS	121	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C2-4:2 FTS	IS	92.9	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C2-PFHxA	IS	102	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C4-PFHpA	IS	103	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
18O2-PFHxS	IS	102	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C2-PFOA	IS	92.4	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C5-PFNA	IS	94.8	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C8-PFOSA	IS	62.5	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C8-PFOS	IS	95.0	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C2-PFDA	IS	83.2	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
d3-MeFOSAA	IS	74.6	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1

Sample ID: WT-26 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-01	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 09:27	Date Received:	03-Jul-18 09:20		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	78.9	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C2-PFUnA	IS	90.3	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C2-PFDoA	IS	81.6	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1
13C2-PFTeDA	IS	101	50 - 150		B8G0073	10-Jul-18	0.255 L	27-Jul-18 06:36	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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: PZ-26A

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-02	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 09:27	Date Received:	03-Jul-18 09:20		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFPeA	2706-90-3	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFBS	375-73-5	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
4:2 FTS	757124-72-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFHxA	307-24-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFPeS	2706-91-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFHpA	375-85-9	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFHxS	355-46-4	1.46	1.36	1.98	3.96	J	B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
6:2 FTS	27619-97-2	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFOA	335-67-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFHpS	375-92-8	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFNA	375-95-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFOSA	754-91-6	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFOS	1763-23-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFDA	335-76-2	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
8:2 FTS	39108-34-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFNS	68259-12-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
MeFOSAA	2355-31-9	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
EtFOSAA	2991-50-6	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFUnA	2058-94-8	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFDS	335-77-3	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFDoA	307-55-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFTrDA	72629-94-8	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
PFTeDA	376-06-7	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	97.0	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C3-PFPeA	IS	93.9	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C3-PFBS	IS	105	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C2-4:2 FTS	IS	83.3	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C2-PFHxA	IS	98.2	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C4-PFHpA	IS	89.3	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
18O2-PFHxS	IS	112	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C2-PFOA	IS	98.1	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C5-PFNA	IS	89.5	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C8-PFOSA	IS	63.1	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C8-PFOS	IS	104	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C2-PFDA	IS	79.3	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
d3-MeFOSAA	IS	91.2	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1

Sample ID: PZ-26A **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-02	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 09:27	Date Received:	03-Jul-18 09:20		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	86.4	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C2-PFUnA	IS	83.0	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C2-PFDoA	IS	74.3	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1
13C2-PFTeDA	IS	89.4	50 - 150		B8G0073	10-Jul-18	0.252 L	27-Jul-18 06:47	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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: WP-06R

PFAS Isotope Dilution Method

Client Data					Laboratory Data						
Name:	AECOM	Matrix:	Aqueous		Lab Sample:	1801578-03	Column:	BEH C18			
Project:	60581251	Date Collected:	02-Jul-18 11:10		Date Received:	03-Jul-18 09:20					

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	3.20	1.34	1.95	3.90	J	B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFPeA	2706-90-3	2.02	1.34	1.95	3.90	J	B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFBS	375-73-5	2.06	1.34	1.95	3.90	J	B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
4:2 FTS	757124-72-4	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFHxA	307-24-4	2.44	1.34	1.95	3.90	J	B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFPeS	2706-91-4	1.62	1.34	1.95	3.90	J	B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFHpA	375-85-9	1.36	1.34	1.95	3.90	J	B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFHxS	355-46-4	7.71	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
6:2 FTS	27619-97-2	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFOA	335-67-1	19.7	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFHpS	375-92-8	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFNA	375-95-1	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFOSA	754-91-6	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFOS	1763-23-1	1.97	1.34	1.95	3.90	J	B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFDA	335-76-2	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
8:2 FTS	39108-34-4	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFNS	68259-12-1	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
MeFOSAA	2355-31-9	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
EtFOSAA	2991-50-6	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFUnA	2058-94-8	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFDS	335-77-3	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFDoA	307-55-1	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFTriDA	72629-94-8	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
PFTeDA	376-06-7	ND	1.34	1.95	3.90		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	99.5	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C3-PFPeA	IS	90.7	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C3-PFBS	IS	114	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C2-4:2 FTS	IS	92.5	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C2-PFHxA	IS	95.2	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C4-PFHpA	IS	101	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
18O2-PFHxS	IS	102	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C2-PFOA	IS	95.4	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C5-PFNA	IS	88.4	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C8-PFOSA	IS	51.4	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C8-PFOS	IS	99.1	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C2-PFDA	IS	77.5	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
d3-MeFOSAA	IS	82.5	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1

Sample ID: WP-06R **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-03	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 11:10	Date Received:	03-Jul-18 09:20		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	76.5	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C2-PFUnA	IS	76.6	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C2-PFDoA	IS	78.4	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1
13C2-PFTeDA	IS	72.7	50 - 150		B8G0073	10-Jul-18	0.256 L	18-Aug-18 07:46	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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: WP-06R

PFAS Isotope Dilution Method

Name: AECOM	Lab Sample: B8G0073-MS1/B8G0073-MSD1	Source Lab Sample: 1801578-03
Project: 60581251	QC Batch: B8G0073	Date Extracted: 10-Jul-18
Matrix: Aqueous	Samp Size: 0.252/0.249 L	Column: BEH C18

Analyte	CAS Number	Sample (ng/L)	MS (ng/L)	MS Spike Amt	MS % Rec	MS Quals	MSD (ng/L)	MSD Spike Amt	MSD % Rec	MSD RPD	MSD Quals	%Rec Limits	RPD Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
PFBA	375-22-4	3.20	41.9	39.7	97.6		42.7	40.2	98.3	0.715		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFPeA	2706-90-3	2.02	40.5	39.7	96.9		39.0	40.2	92.0	5.19		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFBS	375-73-5	2.06	37.3	39.7	88.9		37.2	40.2	87.3	1.82		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
4:2 FTS	757124-72-4	ND	37.5	39.7	94.4		43.6	40.2	109	14.4		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFHxA	307-24-4	2.44	42.8	39.7	102		41.4	40.2	97.0	5.03		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFPeS	2706-91-4	1.62	38.8	39.7	93.7		36.0	40.2	85.6	9.04		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFHpA	375-85-9	1.36	40.2	39.7	97.8		38.4	40.2	92.2	5.89		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFHxS	355-46-4	7.71	57.2	39.7	125		45.7	40.2	94.6	27.7		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
6:2 FTS	27619-97-2	ND	39.5	39.7	98.1		29.0	40.2	70.9	32.2	H	60-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFOA	335-67-1	19.7	64.4	39.7	113		59.2	40.2	98.2	14.0		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFHpS	375-92-8	ND	39.2	39.7	97.5		37.6	40.2	92.4	5.37		60-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFNA	375-95-1	ND	36.3	39.7	90.3		37.1	40.2	91.3	1.10		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFOSA	754-91-6	ND	36.3	39.7	91.3		41.1	40.2	102	11.1		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFOS	1763-23-1	1.97	35.0	39.7	83.1		38.4	40.2	90.6	8.64		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFDA	335-76-2	ND	37.7	39.7	95.0		38.5	40.2	95.8	0.839		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
8:2 FTS	39108-34-4	ND	41.7	39.7	105		45.7	40.2	114	8.22		60-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFNS	68259-12-1	ND	32.7	39.7	82.4		34.2	40.2	85.0	3.11		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
MeFOSAA	2355-31-9	ND	33.3	39.7	83.9		32.3	40.2	80.4	4.26		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
EtFOSAA	2991-50-6	ND	40.9	39.7	103		36.4	40.2	90.6	12.8		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFUnA	2058-94-8	ND	35.8	39.7	90.3		38.6	40.2	96.0	6.12		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFDS	335-77-3	ND	52.7	39.7	133	H	52.1	40.2	130	2.28		60-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFDoA	307-55-1	ND	36.1	39.7	91.0		44.4	40.2	111	19.8		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFTrDA	72629-94-8	ND	39.7	39.7	100		43.6	40.2	109	8.61		60-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1
PFTeDA	376-06-7	ND	34.7	39.7	87.4		37.8	40.2	93.9	7.17		70-130	30	27-Jul-18 06:05	1	27-Jul-18 06:15	1

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
13C3-PFBA	IS	95.4		95.5		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C3-PFPeA	IS	96.0		100		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C3-PFBS	IS	119		119		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C2-4:2 FTS	IS	108		99.3		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C2-PFHxA	IS	97.0		100		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C4-PFHpA	IS	95.6		102		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
18O2-PFHxS	IS	79.4		86.6		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C2-PFOA	IS	91.2		87.7		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C5-PFNA	IS	87.2		90.6		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1

Sample ID: WP-06R **PFAS Isotope Dilution Method**

Name: AECOM	Lab Sample: B8G0073-MS1/B8G0073-MSD1	Source Lab Sample: 1801578-03
Project: 60581251	QC Batch: B8G0073	Date Extracted: 10-Jul-18
Matrix: Aqueous	Samp Size: 0.252/0.249 L	Column: BEH C18

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
13C8-PFOSA	IS	48.9	H	56.4		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C8-PFOS	IS	107		88.9		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C2-PFDA	IS	79.7		85.3		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
d3-MeFOSAA	IS	77.3		80.0		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
d5-EtFOSAA	IS	76.3		82.5		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C2-PFUnA	IS	74.2		76.0		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C2-PFDoA	IS	87.6		82.6		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1
13C2-PFTeDA	IS	90.9		88.8		50-150	27-Jul-18 06:05	1	27-Jul-18 06:15	1

Sample ID: WT-31

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-04	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 12:25	Date Received:	03-Jul-18 09:20		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	10.4	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFPeA	2706-90-3	2.73	1.37	2.00	4.00	J	B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFBS	375-73-5	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
4:2 FTS	757124-72-4	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFHxA	307-24-4	2.68	1.37	2.00	4.00	J	B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFPeS	2706-91-4	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFHpA	375-85-9	1.71	1.37	2.00	4.00	J	B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFHxS	355-46-4	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
6:2 FTS	27619-97-2	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFOA	335-67-1	45.3	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFHpS	375-92-8	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFNA	375-95-1	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFOSA	754-91-6	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFOS	1763-23-1	1.45	1.37	2.00	4.00	J	B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFDA	335-76-2	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
8:2 FTS	39108-34-4	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFNS	68259-12-1	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
MeFOSAA	2355-31-9	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
EtFOSAA	2991-50-6	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFUnA	2058-94-8	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFDS	335-77-3	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFDoA	307-55-1	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFTrDA	72629-94-8	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
PFTeDA	376-06-7	ND	1.37	2.00	4.00		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	99.2	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C3-PFPeA	IS	92.8	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C3-PFBS	IS	116	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C2-4:2 FTS	IS	89.4	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C2-PFHxA	IS	100	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C4-PFHpA	IS	103	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
18O2-PFHxS	IS	105	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C2-PFOA	IS	95.6	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C5-PFNA	IS	93.4	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C8-PFOSA	IS	57.4	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C8-PFOS	IS	98.9	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C2-PFDA	IS	82.9	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
d3-MeFOSAA	IS	85.0	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1

Sample ID: WT-31 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-04	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 12:25	Date Received:	03-Jul-18 09:20		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	86.1	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C2-PFUnA	IS	82.1	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C2-PFDoA	IS	81.6	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1
13C2-PFTeDA	IS	79.2	50 - 150		B8G0073	10-Jul-18	0.250 L	18-Aug-18 07:57	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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: PZ-31A

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-05	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 12:35	Date Received:	03-Jul-18 09:20		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFPeA	2706-90-3	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFBS	375-73-5	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
4:2 FTS	757124-72-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFHxA	307-24-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFPeS	2706-91-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFHpA	375-85-9	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFHxS	355-46-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
6:2 FTS	27619-97-2	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFOA	335-67-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFHpS	375-92-8	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFNA	375-95-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFOSA	754-91-6	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFOS	1763-23-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFDA	335-76-2	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
8:2 FTS	39108-34-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFNS	68259-12-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
MeFOSAA	2355-31-9	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
EtFOSAA	2991-50-6	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFUnA	2058-94-8	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFDS	335-77-3	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFDoA	307-55-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFTTrDA	72629-94-8	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
PFTeDA	376-06-7	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	99.4	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C3-PFPeA	IS	95.5	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C3-PFBS	IS	117	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C2-4:2 FTS	IS	99.1	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C2-PFHxA	IS	97.4	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C4-PFHpA	IS	107	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
18O2-PFHxS	IS	99.6	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C2-PFOA	IS	100	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C5-PFNA	IS	84.9	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C8-PFOSA	IS	52.6	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C8-PFOS	IS	97.2	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C2-PFDA	IS	79.8	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
d3-MeFOSAA	IS	86.1	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1

Sample ID: PZ-31A **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-05	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 12:35	Date Received:	03-Jul-18 09:20		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	83.8	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C2-PFUnA	IS	79.5	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C2-PFDoA	IS	83.7	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1
13C2-PFTeDA	IS	82.5	50 - 150		B8G0073	10-Jul-18	0.252 L	18-Aug-18 08:08	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

PFAS Isotope Dilution Method

Client Data					Laboratory Data						
Name:	AECOM	Matrix:	Aqueous		Lab Sample:	1801578-06		Column:	BEH C18		
Project:	60581251	Date Collected:	02-Jul-18 00:00		Date Received:	03-Jul-18 09:20					

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	1.58	1.36	1.98	3.96	J	B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFPeA	2706-90-3	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFBS	375-73-5	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
4:2 FTS	757124-72-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFHxA	307-24-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFPeS	2706-91-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFHpA	375-85-9	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFHxS	355-46-4	1.62	1.36	1.98	3.96	J	B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
6:2 FTS	27619-97-2	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFOA	335-67-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFHpS	375-92-8	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFNA	375-95-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFOSA	754-91-6	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFOS	1763-23-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFDA	335-76-2	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
8:2 FTS	39108-34-4	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFNS	68259-12-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
MeFOSAA	2355-31-9	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
EtFOSAA	2991-50-6	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFUnA	2058-94-8	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFDS	335-77-3	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFDoA	307-55-1	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFTTrDA	72629-94-8	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
PFTeDA	376-06-7	ND	1.36	1.98	3.96		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	96.4	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C3-PFPeA	IS	94.9	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C3-PFBS	IS	119	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C2-4:2 FTS	IS	107	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C2-PFHxA	IS	96.3	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C4-PFHpA	IS	103	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
18O2-PFHxS	IS	99.0	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C2-PFOA	IS	89.4	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C5-PFNA	IS	86.1	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C8-PFOSA	IS	46.6	50 - 150	H	B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C8-PFOS	IS	95.6	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C2-PFDA	IS	78.2	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
d3-MeFOSAA	IS	76.3	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1

Sample ID: DUP	PFAS Isotope Dilution Method
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Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-06	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 00:00	Date Received:	03-Jul-18 09:20		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	87.6	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C2-PFUnA	IS	72.6	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C2-PFDoA	IS	69.2	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1
13C2-PFTeDA	IS	81.1	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:18	1

DL - Detection Limit

LOD - Limit of Detection
 LOQ - Limit of quantitation

Results reported to the DL.

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: Field Blank

PFAS Isotope Dilution Method

Client Data					Laboratory Data						
Name:	AECOM	Matrix:	Aqueous		Lab Sample:	1801578-07		Column:	BEH C18		
Project:	60581251	Date Collected:	02-Jul-18 11:00		Date Received:	03-Jul-18 09:20					

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFPeA	2706-90-3	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFBS	375-73-5	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
4:2 FTS	757124-72-4	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFHxA	307-24-4	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFPeS	2706-91-4	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFHpA	375-85-9	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFHxS	355-46-4	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
6:2 FTS	27619-97-2	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFOA	335-67-1	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFHpS	375-92-8	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFNA	375-95-1	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFOSA	754-91-6	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFOS	1763-23-1	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFDA	335-76-2	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
8:2 FTS	39108-34-4	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFNS	68259-12-1	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
MeFOSAA	2355-31-9	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
EtFOSAA	2991-50-6	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFUnA	2058-94-8	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFDS	335-77-3	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFDoA	307-55-1	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFTTrDA	72629-94-8	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
PFTeDA	376-06-7	ND	1.35	1.98	3.95		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	98.9	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C3-PFPeA	IS	109	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C3-PFBS	IS	130	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C2-4:2 FTS	IS	107	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C2-PFHxA	IS	106	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C4-PFHpA	IS	113	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
18O2-PFHxS	IS	103	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C2-PFOA	IS	97.2	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C5-PFNA	IS	88.7	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C8-PFOSA	IS	46.8	50 - 150	H	B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C8-PFOS	IS	95.1	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C2-PFDA	IS	81.5	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
d3-MeFOSAA	IS	71.0	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1

Sample ID: Field Blank **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-07	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 11:00	Date Received:	03-Jul-18 09:20		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	65.8	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C2-PFUnA	IS	72.3	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C2-PFDoA	IS	69.6	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1
13C2-PFTeDA	IS	67.7	50 - 150		B8G0073	10-Jul-18	0.253 L	18-Aug-18 08:29	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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: Equipment Blank						PFAS Isotope Dilution Method					
Client Data					Laboratory Data						
Name:	AECOM	Matrix:	Aqueous		Lab Sample:	1801578-08	Column:	BEH C18			
Project:	60581251	Date Collected:	02-Jul-18 11:10		Date Received:	03-Jul-18 09:20					
Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFPeA	2706-90-3	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFBS	375-73-5	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
4:2 FTS	757124-72-4	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFHxA	307-24-4	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFPeS	2706-91-4	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFHpA	375-85-9	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFHxS	355-46-4	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
6:2 FTS	27619-97-2	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFOA	335-67-1	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFHpS	375-92-8	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFNA	375-95-1	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFOSA	754-91-6	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFOS	1763-23-1	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFDA	335-76-2	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
8:2 FTS	39108-34-4	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFNS	68259-12-1	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
MeFOSAA	2355-31-9	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
EtFOSAA	2991-50-6	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFUnA	2058-94-8	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFDS	335-77-3	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFDoA	307-55-1	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFTrDA	72629-94-8	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
PFTeDA	376-06-7	ND	1.34	1.96	3.92		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C3-PFBA	IS	101	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
13C3-PFPeA	IS	101	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
13C3-PFBS	IS	119	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
13C2-4:2 FTS	IS	99.6	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
13C2-PFHxA	IS	103	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
13C4-PFHpA	IS	105	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
18O2-PFHxS	IS	104	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
13C2-PFOA	IS	95.9	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
13C5-PFNA	IS	89.8	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
13C8-PFOSA	IS	50.9	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
13C8-PFOS	IS	95.8	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
13C2-PFDA	IS	88.9	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	
d3-MeFOSAA	IS	80.5	50 - 150			B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1	

Sample ID: Equipment Blank **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801578-08	Column:	BEH C18
Project:	60581251	Date Collected:	02-Jul-18 11:10	Date Received:	03-Jul-18 09:20		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	76.9	50 - 150		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
13C2-PFUnA	IS	80.6	50 - 150		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
13C2-PFDoA	IS	73.8	50 - 150		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1
13C2-PFTeDA	IS	81.2	50 - 150		B8G0073	10-Jul-18	0.255 L	18-Aug-18 08:40	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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
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
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
Q	Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)
TEQ	Toxic Equivalency
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.

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	17-015-0
	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207717
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	9077
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.



CHAIN OF CUSTODY

EMERGING CONTAMINANT ASSESSMENT

For Laboratory Use Only
 Work Order #: 1801578 Temp: 0.7 °C
 Storage ID: WR-2 Storage Secured: Yes No

Project ID: 60581251 PO#: _____ Sampler: Tory Schultz (TAS)
Lauren McNeely (LEM)
 (name)

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

Invoice to: Name Lanette Altenbach Company AECOM Address 1555 N RiverCenter Dr., Suite 214 City MILWAUKEE, WI State _____ Ph# _____ Fax# 5312

Relinquished by (printed name and signature) Tory A. Schultz Date 7/2/18 Time 1330 Received by (printed name and signature) Marissa Sparks Date 07/03/18 Time 0942

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

Sample ID	Date	Time	Location/Sample Description	Add Analysis(es) Requested										Comments									
				Quantity	Type	Matrix	PFOA/PFOS	UCMR3 PFAS List 16	537 List 14	Full List of 266	Other, Please List Below	PFOA/PFOS	UCMR3 PFAS List 16		PFAS List 14	EPA Method 537(DW only)							
WT-26	7/2/18	0927		2	P	AQ																	
PZ-26A	7/2/18	0927		2	P	AQ																	
WP-06R	7/2/18	1110		6	P	AQ																	ms/msd
WT-31	7/2/18	1235		2	P	AQ																	
PZ-31A	7/2/18	1235		2	P	AQ																	
DUP	7/2/18	-		2	P	AQ																	
Field Blank	7/2/18	1100		1	P	AQ																	
Equipment Blank	7/2/18	1100		1	P	AQ																	
_____				_____				_____				_____				_____				_____			

Special Instructions/Comments: Analysis Per Contract (List of 24)
Temp. Blank included

SEND DOCUMENTATION AND RESULTS TO:
 Name: Lanette.Altenbach@AECOM.COM
 Company: AECOM
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Fax: _____
 Email: _____

Container Types: P= HDPE, PJ= HDPE Jar Bottle Preservation Type: T = Thiosulfate, O = Other: _____ 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: _____

Sample Log-in Checklist

Vista Work Order #: 1801578 TAT std

Samples Arrival:	Date/Time 07/03/18 0920	Initials: WWS	Location: WR-2
			Shelf/Rack: N/A
Logged In:	Date/Time 07/03/18 2032	Initials: BB	Location: WR-2
			Shelf/Rack: F7
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> On Trac
		<input type="checkbox"/> GSO	<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"/> Dry Ice
	<input type="checkbox"/> None		
Temp °C: 0.8 (uncorrected)	Time: 0941	Thermometer ID: IR-4	
Temp °C: 0.7 (corrected)	Probe used: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

		YES	NO	NA
Adequate Sample Volume Received?		WWS		
Holding Time Acceptable?		WWS		
Shipping Container(s) Intact?		WWS		
Shipping Custody Seals Intact?				WWS
Shipping Documentation Present?		WWS		
Airbill	Trk # 7816 8097 2651	WWS		
Sample Container Intact?		WWS		
Sample Custody Seals Intact?				WWS
Chain of Custody / Sample Documentation Present?		WWS		
COC Anomaly/Sample Acceptance Form completed?			WWS	WWS
If Chlorinated or Drinking Water Samples, Acceptable Preservation?				WWS
Preservation Documented:	Na ₂ S ₂ O ₃ Trizma <input checked="" type="radio"/> None	Yes	<input checked="" type="radio"/> No	NA
Shipping Container	<input checked="" type="radio"/> Vista Client <input checked="" type="radio"/> Retain	Return	Dispose	

Comments:

August 18, 2018

Vista Work Order No. 1801972

Mr. Tory Schultz
AECOM
1555 N. River Center Drive
Milwaukee, WI 53212

Dear Mr. Schultz,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on July 24, 2018 under your Project Name '60581251'.

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 mmaier@vista-analytical.com.

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

Sincerely,



Martha Maier
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. 1801972

Case Narrative

Sample Condition on Receipt:

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

Analytical Notes:

PFAS Isotope Dilution Method

Sample "WT-34" contained particulate and were centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of PFAS using the PFAS Isotope Dilution Method (Modified EPA Method 537). 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 method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD) were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 of the LOQ concentrations. The LCS/LCSD recoveries were within the acceptance criteria.

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1801972-01	WT-34	PFAS Isotope Dilution Method	13C8-PFOA	H	44.0
1801972-02	WT-01	PFAS Isotope Dilution Method	13C8-PFOA	H	34.4

H = Recovery was outside laboratory acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1801972-01	WT-34	23-Jul-18 08:42	24-Jul-18 09:50	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1801972-02	WT-01	23-Jul-18 10:06	24-Jul-18 09:50	HDPE Bottle, 250 mL HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank **PFAS Isotope Dilution Method**

Client Data					Laboratory Data						
Name:	AECOM	Matrix:	Aqueous		Lab Sample:	B8G0233-BLK1	Column:	BEH C18			
Project:	60581251										

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFPeA	2706-90-3	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFBS	375-73-5	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
4:2 FTS	757124-72-4	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFHxA	307-24-4	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFPeS	2706-91-4	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFHpA	375-85-9	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFHxS	355-46-4	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
6:2 FTS	27619-97-2	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFOA	335-67-1	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFHpS	375-92-8	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFNA	375-95-1	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFOSA	754-91-6	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFOS	1763-23-1	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFDA	335-76-2	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
8:2 FTS	39108-34-4	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFNS	68259-12-1	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
MeFOSAA	2355-31-9	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
EtFOSAA	2991-50-6	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFUnA	2058-94-8	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFDS	335-77-3	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFDoA	307-55-1	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFTTrDA	72629-94-8	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
PFTeDA	376-06-7	ND	1.37	2.00	4.00		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	91.5	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C3-PFPeA	IS	90.0	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C3-PFBS	IS	107	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C2-4:2 FTS	IS	94.9	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C2-PFHxA	IS	93.3	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C4-PFHpA	IS	88.3	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
18O2-PFHxS	IS	97.6	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C2-PFOA	IS	88.2	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C5-PFNA	IS	83.6	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C8-PFOSA	IS	53.3	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C8-PFOS	IS	94.4	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C2-PFDA	IS	69.0	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
d3-MeFOSAA	IS	52.3	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1

Sample ID: Method Blank **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	B8G0233-BLK1	Column:	BEH C18
Project:	60581251						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	58.4	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C2-PFUnA	IS	67.3	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C2-PFDoA	IS	65.2	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1
13C2-PFTeDA	IS	67.9	50 - 150		B8G0233	02-Aug-18	0.250 L	18-Aug-18 12:01	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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: LCSD

PFAS Isotope Dilution Method

Name:	AECOM	Lab Sample:	B8G0233-BS1/B8G0233-BSD1	Date Extracted:	02-Aug-18
Project:	60581251	QC Batch:	B8G0233	Column:	BEH C18
Matrix:	Aqueous	Samp Size:	0.250/0.250 L		

Analyte	CAS Number	LCS (ng/L)	LCS Spike Amt	LCS % Rec	LCS Quals	LCSD (ng/L)	LCSD Spike Amt	LCSD % Rec	RPD	LCSD Quals	%Rec Limits	RPD Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
PFBA	375-22-4	39.6	40.0	98.9		39.6	40.0	99.1	0.196		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFPeA	2706-90-3	41.1	40.0	103		40.4	40.0	101	1.79		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFBS	375-73-5	42.0	40.0	105		42.4	40.0	106	0.880		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
4:2 FTS	757124-72-4	41.7	40.0	104		41.3	40.0	103	0.928		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFHxA	307-24-4	42.1	40.0	105		39.8	40.0	99.6	5.55		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFPeS	2706-91-4	39.0	40.0	97.4		39.6	40.0	98.9	1.52		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFHpA	375-85-9	40.1	40.0	100		41.1	40.0	103	2.65		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFHxS	355-46-4	43.3	40.0	108		41.4	40.0	104	4.33		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
6:2 FTS	27619-97-2	45.7	40.0	114		46.3	40.0	116	1.26		60-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFOA	335-67-1	40.8	40.0	102		39.8	40.0	99.5	2.39		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFHpS	375-92-8	40.2	40.0	101		38.8	40.0	97.1	3.53		60-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFNA	375-95-1	41.2	40.0	103		42.3	40.0	106	2.77		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFOSA	754-91-6	39.3	40.0	98.3		42.2	40.0	105	6.94		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFOS	1763-23-1	40.7	40.0	102		39.5	40.0	98.8	3.03		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFDA	335-76-2	41.4	40.0	104		41.4	40.0	104	0.00879		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
8:2 FTS	39108-34-4	42.9	40.0	107		43.8	40.0	109	1.94		60-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFNS	68259-12-1	39.9	40.0	99.9		38.2	40.0	95.5	4.49		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
MeFOSAA	2355-31-9	43.0	40.0	107		42.4	40.0	106	1.43		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
EtFOSAA	2991-50-6	42.8	40.0	107		41.8	40.0	105	2.44		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFUnA	2058-94-8	45.4	40.0	114		42.6	40.0	107	6.33		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFDS	335-77-3	39.0	40.0	97.4		37.0	40.0	92.6	5.08		60-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFDoA	307-55-1	42.2	40.0	106		41.0	40.0	102	2.99		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFTrDA	72629-94-8	43.1	40.0	108		44.2	40.0	111	2.45		60-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1
PFTeDA	376-06-7	45.6	40.0	114		44.6	40.0	111	2.31		70-130		18-Aug-18 11:39	1	18-Aug-18 11:50	1

Labeled Standards	Type	LCS % Rec	LCS Quals	LCSD % Rec	LCSD Quals	Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C3-PFBA	IS	92.8		95.9		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C3-PFPeA	IS	94.9		88.0		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C3-PFBS	IS	134		116		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C2-4:2 FTS	IS	121		104		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C2-PFHxA	IS	93.6		93.1		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C4-PFHpA	IS	102		93.2		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
18O2-PFHxS	IS	105		100		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C2-PFOA	IS	89.6		91.2		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C5-PFNA	IS	84.4		79.8		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1

Sample ID: LCSD **PFAS Isotope Dilution Method**

Name: AECOM	Lab Sample: B8G0233-BS1/B8G0233-BSD1	Date Extracted: 02-Aug-18	02-Aug-18
Project: 60581251	QC Batch: B8G0233	Column: BEH C18	
Matrix: Aqueous	Samp Size: 0.250/0.250 L		

Labeled Standards	Type	LCS % Rec	LCS Quals	LCSD % Rec	LCSD Quals	Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C8-PFOSA	IS	57.5		51.5		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C8-PFOS	IS	94.0		92.0		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C2-PFDA	IS	70.6		70.1		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
d3-MeFOSAA	IS	60.0		63.6		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
d5-EtFOSAA	IS	64.6		64.4		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C2-PFUnA	IS	64.5		65.6		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C2-PFDoA	IS	73.3		66.7		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1
13C2-PFTeDA	IS	71.0		70.5		50-150	18-Aug-18 11:39	1	18-Aug-18 11:50	1

Sample ID: WT-34

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801972-01	Column:	BEH C18
Project:	60581251	Date Collected:	23-Jul-18 08:42	Date Received:	24-Jul-18 09:50		
Location:	WT-34						

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	2.82	1.40	2.05	4.10	J	B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFPeA	2706-90-3	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFBS	375-73-5	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
4:2 FTS	757124-72-4	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFHxA	307-24-4	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFPeS	2706-91-4	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFHpA	375-85-9	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFHxS	355-46-4	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
6:2 FTS	27619-97-2	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFOA	335-67-1	5.43	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFHpS	375-92-8	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFNA	375-95-1	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFOSA	754-91-6	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFOS	1763-23-1	1.73	1.40	2.05	4.10	J	B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFDA	335-76-2	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
8:2 FTS	39108-34-4	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFNS	68259-12-1	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
MeFOSAA	2355-31-9	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
EtFOSAA	2991-50-6	1.79	1.40	2.05	4.10	J	B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFUnA	2058-94-8	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFDS	335-77-3	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFDoA	307-55-1	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFTrDA	72629-94-8	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
PFTeDA	376-06-7	ND	1.40	2.05	4.10		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	92.7	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C3-PFPeA	IS	91.0	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C3-PFBS	IS	121	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C2-4:2 FTS	IS	107	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C2-PFHxA	IS	91.9	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C4-PFHpA	IS	99.5	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
18O2-PFHxS	IS	99.9	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C2-PFOA	IS	88.9	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C5-PFNA	IS	86.6	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C8-PFOSA	IS	44.0	50 - 150	H	B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C8-PFOS	IS	96.0	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C2-PFDA	IS	76.7	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
d3-MeFOSAA	IS	77.7	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1

Sample ID: WT-34 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801972-01	Column:	BEH C18
Project:	60581251	Date Collected:	23-Jul-18 08:42	Date Received:	24-Jul-18 09:50		
Location:	WT-34						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	79.1	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C2-PFUnA	IS	74.6	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C2-PFDoA	IS	79.8	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1
13C2-PFTeDA	IS	86.6	50 - 150		B8G0233	02-Aug-18	0.244 L	18-Aug-18 01:09	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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: WT-01

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801972-02	Column:	BEH C18
Project:	60581251	Date Collected:	23-Jul-18 10:06	Date Received:	24-Jul-18 09:50		
Location:	WT-01						

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	5.28	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFPeA	2706-90-3	3.92	1.39	2.02	4.05	J	B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFBS	375-73-5	3.71	1.39	2.02	4.05	J	B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
4:2 FTS	757124-72-4	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFHxA	307-24-4	8.11	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFPeS	2706-91-4	10.2	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFHpA	375-85-9	2.49	1.39	2.02	4.05	J	B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFHxS	355-46-4	53.7	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
6:2 FTS	27619-97-2	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFOA	335-67-1	105	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFHpS	375-92-8	2.18	1.39	2.02	4.05	J	B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFNA	375-95-1	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFOSA	754-91-6	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFOS	1763-23-1	39.1	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFDA	335-76-2	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
8:2 FTS	39108-34-4	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFNS	68259-12-1	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
MeFOSAA	2355-31-9	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
EtFOSAA	2991-50-6	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFUnA	2058-94-8	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFDS	335-77-3	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFDoA	307-55-1	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFTTrDA	72629-94-8	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
PFTeDA	376-06-7	ND	1.39	2.02	4.05		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	93.6	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C3-PFPeA	IS	88.7	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C3-PFBS	IS	120	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C2-4:2 FTS	IS	106	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C2-PFHxA	IS	90.9	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C4-PFHpA	IS	97.5	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
18O2-PFHxS	IS	101	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C2-PFOA	IS	89.4	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C5-PFNA	IS	75.6	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C8-PFOSA	IS	34.4	50 - 150	H	B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C8-PFOS	IS	96.1	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C2-PFDA	IS	77.8	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
d3-MeFOSAA	IS	85.3	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1

Sample ID: WT-01 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	AECOM	Matrix:	Aqueous	Lab Sample:	1801972-02	Column:	BEH C18
Project:	60581251	Date Collected:	23-Jul-18 10:06	Date Received:	24-Jul-18 09:50		
Location:	WT-01						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	83.6	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C2-PFUnA	IS	75.3	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C2-PFDoA	IS	83.1	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1
13C2-PFTeDA	IS	85.8	50 - 150		B8G0233	02-Aug-18	0.247 L	18-Aug-18 01:20	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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
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
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
Q	Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)
TEQ	Toxic Equivalency
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.

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	17-015-0
	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207717
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	9077
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.



CHAIN OF CUSTODY

KE 07/26/18

For Laboratory Use Only
 Work Order #: 18019712 Temp: 0.7 °C
 Storage ID: WR-2 Storage Secured: Yes No

Project ID: 6058/251 PO#: _____ Sampler: JOEL S. Mackinney (JSM)
TORY A. SCHULTZ (TAS)
 (name)

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

Invoice to: Name Dave Henderson Company AECOM Address 1555 N. RiverCenter Dr. STE 214 City MKE State WI Ph# _____ Fax# _____

Relinquished by (printed name and signature) Tory A. Schultz Date 7/23/18 Time 1750 Received by (printed name and signature) Marissa Sparks Date 07/24/18 Time 1025

Sample ID	Date	Time	Location/Sample Description	Add Analysis(es) Requested							Comments								
				Quantity	Type	Matrix	PFOA/PFOS	UCMR3 PFAS List:6	537 List: 14	Full List of 26		Other: Please List Below							
WT-34	7/23/18	0842	WT-34	2	P	AQ													
WT-01	7/23/18	1006	WT-01	2	P	AQ													
<i>0 TAS 7/23/18</i>																			

Special Instructions/Comments: Analysis Per Contract

SEND DOCUMENTATION AND RESULTS TO:

Name: Dave Henderson
 Company: AECOM
 Address: 1555 N. RiverCenter DR, STE 214
 City: MKE State: WI Zip: 53212
 Phone: _____ Fax: _____
 Email: Dave.Henderson@AECOM.COM

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

pg 1 of 2

Sample Log-in Checklist

 Vista Work Order #: 1801972 TAT std

Samples Arrival:	Date/Time 07/24/18 0950	Initials: WMS	Location: WR-2
			Shelf/Rack: N/2
Logged In:	Date/Time 7/26/18 0823	Initials: WMS	Location: WR-2
			Shelf/Rack: A3/06
Delivered By:	<input checked="" type="radio"/> FedEx	<input type="radio"/> UPS	<input type="radio"/> On Trac
		<input type="radio"/> GSO	<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"/> Dry Ice
	<input type="radio"/> None		
Temp °C: 0.8 (uncorrected)	Time: 1023	Thermometer ID: IR-4	
Temp °C: 0.7 (corrected)	Probe used: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

	YES	NO	NA
Adequate Sample Volume Received?	<input checked="" type="checkbox"/>		
Holding Time Acceptable?	<input checked="" type="checkbox"/>		
Shipping Container(s) Intact?	<input checked="" type="checkbox"/>		
Shipping Custody Seals Intact?	<input checked="" type="checkbox"/>		
Shipping Documentation Present?	<input checked="" type="checkbox"/>		
Airbill	Trk # 7819 6461 9069	<input checked="" type="checkbox"/>	
Sample Container Intact?	<input checked="" type="checkbox"/>		
Sample Custody Seals Intact?			<input checked="" type="checkbox"/>
Chain of Custody / Sample Documentation Present?	<input checked="" type="checkbox"/>		
COC Anomaly/Sample Acceptance Form completed?			<input checked="" type="checkbox"/>
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			<input checked="" type="checkbox"/>
Preservation Documented:	<input type="checkbox"/> Na ₂ S ₂ O ₃	<input checked="" type="checkbox"/> Trizma	<input type="checkbox"/> None
	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> NA
Shipping Container	<input checked="" type="checkbox"/> Vista	<input type="checkbox"/> Client	<input checked="" type="checkbox"/> Retain
	<input type="checkbox"/> Return	<input type="checkbox"/> Dispose	

Comments: