



UNIVERSAL ENGINEERING SCIENCES

Consultants In: Geotechnical Engineering • Environmental Sciences
Geophysical Services • Construction Materials Testing • Threshold Inspection
Building Inspection • Plan Review • Building Code Administration

LOCATIONS:

- Atlanta
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- Panama City
- Pensacola
- Rockledge
- Sarasota
- Tampa
- Tifton, GA
- West Palm Beach

August 3, 2018

Brevard County School Board
2700 Judge Fran Jamieson Way
Melbourne, Florida 32940

Attention: Mr. Dane Theodore
Director, Planning & Project Management

**Reference: Results of Limited Drinking Water PFAS Testing
Select Brevard County Public Schools**
Various Locations in Brevard County, Florida
Universal Project No. 0340.1800060.0000
Universal Report No. 1591828

Dear Mr. Theodore:

Universal Engineering Sciences, Inc. (Universal) has completed the requested drinking water sampling and analytical testing at thirteen (13) schools as designated by the Brevard County School Board.

The work scope of this limited testing program consisted of the collection of tap samples from three (3) locations within each of the designated potable water supply systems (total of 39 samples collected). The water samples were properly preserved, handled under full chain of custody protocols, and submitted to an accredited analytical laboratory for testing of their concentrations of twenty-one (21) types of perfluoroalkyl and polyfluoroalkyl substances (PFAS), including perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), by using a modified version of United States Environmental Protection Agency USEPA Method 537.

The following Brevard County Public Schools were sampled as part of this limited testing program:

- Gemini Elementary (GE)
- Hoover Middle (HM)
- Surfside Elementary (SE)
- Satellite High (SH)
- Sea Park Elementary (SP)
- Roosevelt Elementary (RE)
- Cape View Elementary (CV)
- Indialantic Elementary (IE)
- Ocean Breeze Elementary (OB)
- DeLaura Middle (DM)
- Holland Elementary (HE)
- Freedom 7 Elementary (F7)
- Cocoa Beach JR/SR High (CB)

The results of the limited testing program are presented in this letter and its attached analytical report.

Potable Water Testing

On July 10 and 11, 2018 a representative of Universal collected water samples from three (3) locations within each of the designated water supply systems. As directed by the Brevard County School Board, the sample locations at each school were limited to the following:

- The drinking water fountain situated closest to the main entrance to the building.
- A drinking water fountain situated “furthest” from the main entrance of the building.
- A kitchen/cafeteria sink tap.

QA/QC “blanks” were included in the sampling process to assist in data validation; one field blank which was prepared at Satellite Beach High School and one trip blank prepared by the analytical laboratory and accompanied the sample containers and coolers throughout the sampling process (total of 2 blank samples).

The samples were preserved on ice in portable coolers until their transfer to the testing laboratory for the required analyses. Sample handling and transfer were conducted under proper chain-of-custody protocols. *Laboratory testing was performed on the water samples collected from the drinking water fountain situated closest to the main entrance of each school. The remaining water samples were placed on hold with the laboratory for future analysis, if needed.* The analyzed samples were tested using a modified version of USEPA Method 537 for twenty-one (21) different perfluorinated compounds, including PFOA and perfluorooctane sulfonate PFOS.

It should be noted that PFAS materials have been used in a wide variety of common materials primarily to make them waterproof, stain-resistant or non-stick, such as the examples on the following list, which is not intended to be all inclusive:

- Teflon/Coating Additives for Non-stick Cookware
- Household Cleaning Products
- Fast Food Containers/Packaged Food Containers
- Candy Wrappers
- Cosmetics (Nail Polish, Eye Makeup)
- Sprays for Leather
- Carpet and Furniture Treatments (stain-resistant)
- Shoes and Clothing (outdoor)
- Shampoo
- Dental Floss
- Floor Wax
- Paints, Varnishes, Polishes
- Pesticides
- Textiles
- Electronics

- Microwave Popcorn Bags

It should be further noted that the items listed in the table below were “prohibited” at the sampling locations during sampling events.

“PROHIBITED” MATERIALS AND EQUIPMENT

Teflon®-containing materials, when possible, should be avoided (e.g., tubing, bailers, tape, and plumbing paste). In cases where Teflon®-containing materials are unavoidable, ensure adequate purging is performed prior to sampling (e.g., in-well pumps) and/or rinse blanks are collected prior to sampling.
LDPE or polypropylene containing material (e.g., bags or containers used to transport samples)
Paper products such as waterproof field books, plastic clipboards, binders, spiral hard cover notebooks, sticky notes or glue materials
Markers
Chemical (blue) ice packs
Decontamination soaps containing fluoro-surfactants such as Decon 90
Water that is not verified to be “PFAS-free” to be used for trip and decontamination blanks and decontamination processes
Water resistant, waterproof, stain-treated clothing or shoes including Gore-Tex™ and Tyvek® materials
Wearing of cosmetics, moisturizers, hand cream, sunblock, insect repellents or other related products
Food and/or drinks

Universal’s sampling crew consisted of two technicians in order to maintain a 30-foot work area around each sampling location so that they were clear of visitors and equipment that might affect sample quality via inadvertent introduction of “prohibited” materials.

As part of Universal’s potable water sampling protocols for this project, the following assumptions have been made:

1. Potable water piping in all buildings is PFAS free.
2. Laboratory analytical services were provided under standard QA/QC protocol and no Superfund CLP (Contract Laboratory Program) or other stringent requirements were necessary.
3. All sample containers provided by the testing laboratory were new, made of proper material and of proper volume.
4. General sampling materials and equipment conformed to those listed by the EPA as tabulated on the following page.

RECOMMENDED SAMPLING MATERIALS AND EQUIPMENT

HDPE and silicon Materials include: tubing, bailers, tape, plumbing paste
Acetate liners for direct push technologies
Nitrile gloves – change often
Loose paper with Masonite or aluminum clipboards
Pens
Bags of ice
Alconox® or Liquinox®
Laboratory supplied and verified “PFAS-free” water to be used for trip and decontamination blanks and decontamination processes
Cotton construction is recommended for field clothing and should be laundered a minimum of 6 times from time of purchase due to possible PFAS related treatments. Fabric softener must be avoided. Rain gear should be made from polyurethane and wax-coated materials.

Laboratory Results

The thirty-nine (39) water samples, and two (2) QA/QC blanks, were transferred to Pace Analytical Services, LLC (Pace Analytical) for the initial testing. As directed, the laboratory only analyzed the samples collected from the drinking water fountain situated closest to the main entrance of each school. The remaining water samples were placed on hold with the laboratory for future analysis, if needed. A copy of the Pace Analytical report is attached and indicates that the samples were received by Pace Analytical from Universal in “acceptable” condition. The laboratory results of the testing are itemized in the table below.

LABORATORY RESULTS

Sample ID (School)	Drinking Water Fountain Location	PFAS Compounds Detected Above MDLs	
		(Yes/No) [‡]	Total PFOS + PFOA Concentration (ng/L)
GE-1 (Gemini Elementary)	Room 804	Yes	ND
IE-3 (Indialantic Elementary)	Room 10-056	Yes	ND
HM-1 (Hoover Middle)	Hallway (across from Room 1-113)	Yes	ND
OB-1 (Ocean Breeze Elementary)	Hallway (between 1-031J & 1-031Y)	Yes	ND

SE-1 (Surfside Elementary)	Room 5-005	Yes	ND
CV-1 (Cape View Elementary)	Room 205	No	ND
RE-1 (Roosevelt Elementary)	Hallway (across from Room 222)	No	ND
CB-1 (Cocoa Beach JR/SR High)	Hallway (between 1-106 & 1-107)	No	ND
F7-2 (Freedom 7 Elementary)	Room 604	No	ND
SP-1 (Sea Park Elementary)	Room 322	Yes	ND
HE-1 (Holland Elementary)	Hallway (between 212 & 214)	Yes	ND
DM-1 (DeLaura Middle)	Room 103	Yes	ND
SH-1* (Satellite High)	Hallway (near main office)	Yes	ND
Field Blank (FB) [‡]	Not applicable	No	ND
Trip Blank (Trip)	Not applicable	No	ND
Lab Blank (Blank-63579)	Not applicable	No	ND

ng/L – Nanograms per Liter = parts per trillion
 MDL – Method Detection Limit

PQL – Practical Quantitation Limit
 ND – Not detected

*The laboratory is rerunning the analysis for SH-1 for quality assurance purposes.
[‡] PFBA was the only compound detected in any of the analyzed samples.
[±] The field blank was prepared in the kitchen at Satellite High.

The analytical results indicate that perfluorobutanoic acid (PFBA) was the only compound detected in any of the initial samples that were tested. PFBA was detected in nine (9) of the analyzed samples at concentrations ranging from 2.5 ng/L to 12 ng/L. PFBA was formerly used for manufacturing photographic film and is also a byproduct of other perfluorochemicals formerly used in paper food packaging and stain-resistant fabrics.

The test results indicated that no PFOA or PFOS compounds were above the MDLs within any of the initial samples that were tested.

Notes on US EPA’s 2016 Lifetime Health Advisories for PFOA and PFOS

“In May 2016, EPA issued drinking water health advisories for two types of drinking water health advisories for two types of PFAS: perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). EPA’s health advisories are non-enforceable and non-regulatory, and provide technical information to state agencies and other public health officials on health effects, analytical methodologies, and treatment technologies

associated with drinking water contamination.” (April 2018 USEPA Technical Brief; EPA/600/F-17/002c)

The USEPA November 2016 Fact Sheet (EPA 800-F-16-003) states that in order “to provide Americans, including the most sensitive populations, with a margin of protection from a lifetime of exposure to PFOA and PFOS from drinking water, EPA established the health advisory levels at 70 parts per trillion. When both PFOA and PFOS are found in drinking water, the combined concentrations of PFOA and PFOS should be compared with the 70 parts per trillion health advisory level. This health advisory level offers a margin of protection for all Americans throughout their life from adverse health effects resulting from exposure to PFOA and PFOS in drinking water.”

Lifetime exposure is defined by the EPA as the “total amount of exposure to a substance that a human would receive in a lifetime (usually assumed to be 70 years).”

Universal appreciates this opportunity to provide you with water sampling and laboratory testing services, and we look forward to being of continued service on this project. Please feel free to call us if you have any questions regarding the information conveyed via this letter.

Respectfully Submitted,
Universal Engineering Sciences, Inc.



Megan deArrigoitia, E.I.
Project Manager

Richard Hoaglin, P.E.
Regional Manager
Florida License No. 48796

Attachments: Pace Analytical Draft Report

Report Prepared for:

Todd Rea
PASI Florida
8 East Tower Circle
Ormond Beach FL 32174

**REPORT OF
LABORATORY
ANALYSIS
FOR PFAAs**

Report Prepared Date:

August 3, 2018

Report Information:

Pace Project #: 10439978
Sample Receipt Date: 07/18/2018
Client Project #: 35404131 Universal Engineering
Client Sub PO #: N/A
State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Kirsten Hogberg, your Pace Project Manager.

This report has been reviewed by:



August 03, 2018

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on fifteen of forty-one samples submitted by a representative of Pace Analytical-Ormund Beach. The samples were analyzed for the presence or absence of twenty-one perfluorinated compounds using a modified version of USEPA Method 537. Reporting limits were set to the quantitation limits. The remaining samples were placed on hold pending review of the first fifteen.

The recoveries of the isotopically-labeled surrogate standards in the sample extracts ranged from 57-108%. With two exceptions, flagged "failed", the labeled surrogate standard recoveries obtained for this project were within the target ranges specified in the method. The labeled EtFOSAA in samples SE-1 and CV-1 extract were below the 70% limit. This could indicate a slight low bias in the results for these two samples. All internal standards in sample SH-1 failed low, which could result in a high bias for the target analytes in this sample. Sample SH-1 will be reanalyzed to verify the results.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank was free of the target perfluorinated compounds at the reporting limits. This indicates that the sample processing procedures did not significantly contribute to the analyte content determined for the sample material.

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The results show that the spiked native compounds in the laboratory spikes were recovered at 78-131%, with relative percent differences of 0-9%. These results were within the method limits.

It should be noted that Pace Analytical has not yet completed the certification process for all analytes in this method. Therefore, the results have been marked "N2" as qualified. Results for the low level spikes that were below the calibration range were flagged "J".

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Minnesota - Pet	1240
Alabama	40770	Mississippi	MN00064
Alaska - DW	MN00064	Montana	CERT0092
Alaska - UST	17-009	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN00064
Arkansas - DW	MN00064	New Hampshire	2081
Arkansas - WW	88-0680	New Jersey (NE)	MN002
CNMI Saipan	MP0003	New York	11647
California	2929	North Carolina	27700
Colorado	MN00064	North Carolina -	27700
Connecticut	PH-0256	North Carolina -	530
EPA Region 8+	via MN 027-053	North Dakota	R-036
Florida (NELAP)	E87605	Ohio - DW	41244
Georgia	959	Ohio - VAP	CL101
Guam	17-001r	Oklahoma	9507
Hawaii	MN00064	Oregon - Primar	MN300001
Idaho	MN00064	Oregon - Secon	MN200001
Illinois	200011	Pennsylvania	68-00563
Indiana	C-MN-01	Puerto Rico	MN00064
Iowa	368	South Carolina	74003
Kansas	E-10167	South Dakota	NA
Kentucky - DW	90062	Tennessee	TN02818
Kentucky - WW	90062	Texas	T104704192
Louisiana - DE	03086	Utah (NELAP)	MN00064
Louisiana - DW	MN00064	Virginia	460163
Maine	MN00064	Washington	C486
Maryland	322	West Virginia -	382
Massachusetts	M-MN064	West Virginia -	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming - UST	2926.01
Minnesota - De	via MN 027-053		

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management



Chain of Custody

 Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: FL

10439978

Workorder: 35404131

Workorder Name: DW Sampling

Owner Received Date: 7/13/2018 Results Requested By: 7/27/2018

Report To		Subcontract To					Requested Analysis																		
Todd Rea Pace Analytical Ormond Beach 8 East Tower Circle Ormond Beach, FL 32174 Phone (904) 903-7948		Pace Analytical Minnesota 1700 Elm Street SE Suite 200 Minneapolis, MN 55414 Phone (612)607-1700																							
				Preserved Containers										LAB USE ONLY											
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	NA35203																			
1	GE-1	PS	7/10/2018 08:01	35404131001	Drinking	1											X								001
2	IE-3	PS	7/10/2018 09:01	35404131006	Drinking	1											X								002
3	HM-1	PS	7/10/2018 09:17	35404131007	Drinking	1											X								003
4	OB-1	PS	7/10/2018 09:55	35404131010	Drinking	1											X								004
5	SE-1	PS	7/10/2018 10:38	35404131013	Drinking	1											X								005
6	CV-1	PS	7/10/2018 12:12	35404131016	Drinking	1											X								006
7	RE-1	PS	7/10/2018 13:03	35404131019	Drinking	1											X								007
8	CB-1	PS	7/10/2018 13:51	35404131022	Drinking	1											X								008
9	F7-2	PS	7/10/2018 14:44	35404131026	Drinking	1											X								009
10	SP-1	PS	7/11/2018 08:02	35404131028	Drinking	1											X								010
11	HE-1	PS	7/11/2018 08:50	35404131031	Drinking	1											X								011
12	DM-1	PS	7/11/2018 09:37	35404131034	Drinking	1											X								012
13	SH-1	PS	7/11/2018 10:10	35404131037	Drinking	1											X								013
14	FB	PS	7/11/2018 10:20	35404131040	Drinking	1											X								014
15	Trip	PS	7/11/2018 00:01	35404131041	Drinking	1											X								015

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					Comments
Transfers	Released By	Date/Time	Received By	Date/Time	
1	Michael L. Pelt	7/17/18 18:00	[Signature]	7/17/18 18:00	
2					
3					
Cooler Temperature on Receipt		7.9°C	Custody Seal Y or <input checked="" type="radio"/> N	Received on Ice <input checked="" type="radio"/> Y or N	Samples Intact <input checked="" type="radio"/> Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

10439978



Chain of Custody

Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: FL

Workorder: 35404131 Workorder Name: DW Sampling Owner Received Date: 7/13/2018 Results Requested By: 7/27/2018

Report To		Subcontract To		Requested Analysis													LAB USE ONLY		
Todd Rea Pace Analytical Ormond Beach 8 East Tower Circle Ormond Beach, FL 32174 Phone (904) 903-7948		Pace Analytical Minnesota 1700 Elm Street SE Suite 200 Minneapolis, MN 55414 Phone (612)607-1700																	
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers											537M Extract and Hold Analysis		
						NA25203													
20	RE-2	PS	7/10/2018 13:09	35404131020	Drinking	1												X	013
21	RE-3	PS	7/10/2018 13:15	35404131021	Drinking	1												X	019
22	CB-1	PS	7/10/2018 13:51	35404131022	Drinking	1											X	015	
23	CB-2	PS	7/10/2018 14:02	35404131023	Drinking	1											X	016	
24	CB-3	PS	7/10/2018 14:10	35404131024	Drinking	1											X	017	
25	F7-1	PS	7/10/2018 14:38	35404131025	Drinking	1											X	018	
26	F7-2	PS	7/10/2018 14:44	35404131026	Drinking	1											X	019	
27	F7-3	PS	7/10/2018 14:52	35404131027	Drinking	1											X	020	
28	SP-1	PS	7/11/2018 08:02	35404131028	Drinking	1											X	021	
29	SP-2	PS	7/11/2018 08:07	35404131029	Drinking	1											X	022	
30	SP-3	PS	7/11/2018 08:15	35404131030	Drinking	1											X	023	
31	HE-1	PS	7/11/2018 08:50	35404131031	Drinking	1											X	024	
32	HE-2	PS	7/11/2018 08:55	35404131032	Drinking	1											X	025	
33	HE-3	PS	7/11/2018 09:05	35404131033	Drinking	1											X	026	
34	DM-1	PS	7/11/2018 09:37	35404131034	Drinking	1											X		
35	DM-2	PS	7/11/2018 09:44	35404131035	Drinking	1											X		
36	DM-3	PS	7/11/2018 09:51	35404131036	Drinking	1											X		
37	SH-1	PS	7/11/2018 10:10	35404131037	Drinking	1											X		
38	SH-2	PS	7/11/2018 10:17	35404131038	Drinking	1											X		
39	SH-3	PS	7/11/2018 10:17	35404131039	Drinking	1											X		

10439978



Chain of Custody

Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: FL

Workorder: 35404131 Workorder Name: DW Sampling Owner Received Date: 7/13/2018 Results Requested By: 7/27/2018

Report To Todd Rea Pace Analytical Ormond Beach 8 East Tower Circle Ormond Beach, FL 32174 Phone (904) 903-7948			Subcontract To Pace Analytical Minnesota 1700 Elm Street SE Suite 200 Minneapolis, MN 55414 Phone (612)607-1700			Requested Analysis														
						Extract and Hold Analysis														
						LAB USE ONLY														
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	NAZS203														
40	FB	PS	7/11/2018 10:20	35404131040	Drinking	1														
41	Trip	PS	7/11/2018 00:01	35404131041	Drinking	1														
42																				
43																				
44																				

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1			<i>[Signature]</i>	7/18/18 09:30	
2					
3					

Cooler Temperature on Receipt °C Custody Seal Y or N Received on Ice Y or N Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

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Sample Condition Upon Receipt	Client Name: <u>PACE Diamond Beach</u>	Project #: WO# : 10439978
	Courier: <input checked="" type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Client <input type="checkbox"/> Commercial <input type="checkbox"/> Pace <input type="checkbox"/> Speedee <input type="checkbox"/> Other:	PM: KNH Due Date: 07/27/18
Tracking Number: <u>4394 2203 8402/8398</u>		CLIENT: PASI-FL

Custody Seal on Cooler/Box Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Seals Intact? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Optional: Proj. Due Date: Proj. Name:
Packing Material: <input checked="" type="checkbox"/> Bubble Wrap <input type="checkbox"/> Bubble Bags <input type="checkbox"/> None <input type="checkbox"/> Other: _____	Temp Blank? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Thermometer Used: <input checked="" type="checkbox"/> G87A9170600254 <input type="checkbox"/> G87A9155100842	Type of Ice: <input checked="" type="checkbox"/> Wet <input type="checkbox"/> Blue <input type="checkbox"/> None <input type="checkbox"/> Dry <input type="checkbox"/> Melted	
Cooler Temp Read (°C): <u>2.96.0</u>	Cooler Temp Corrected (°C): <u>2.96.0</u>	Biological Tissue Frozen? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Temp should be above freezing to 6°C	Correction Factor: <u>Tr 4.2</u>	Date and Initials of Person Examining Contents: <u>7/28/18 JH</u>
USDA Regulated Soil <input checked="" type="checkbox"/> N/A, water sample	Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? <input type="checkbox"/> Yes <input type="checkbox"/> No	Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? <input type="checkbox"/> Yes <input type="checkbox"/> No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and/or Signature on COC?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Is sufficient information available to reconcile the samples to the COC? Matrix: <u>wt</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12. <u>sample 40 only 1 sample</u>
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water) and Dioxin/PBAS	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Initial when completed: Lot # of added preservative:
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. <u>sample 4</u>
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Pace Trip Blank Lot # (if purchased):		

CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Kirsten Hofer Date: 7/20/2018

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

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Appendix B

Sample Analysis Summary



PFAA Sample Analysis Summary

Client's Sample ID	GE-1	Date Extracted	07/20/2018
Lab Sample ID	35404131001	Total Amount Extracted	251 mL
Filename	10LCMS02_180730A_031	ICAL ID	180730A02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180730A_029
Collected	07/10/2018	Ending CCal	10LCMS02_180730A_042
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	4.4	2.0	0.61	1	07/30/2018 15:30	375-22-4	N2
PFPeA	ND	2.0	0.37	1	07/30/2018 15:30	2706-90-3	N2
PFBS	ND	1.8	0.32	1	07/30/2018 15:30	375-73-5	N2
PFHxA	ND	2.0	0.39	1	07/30/2018 15:30	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	07/30/2018 15:30	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	07/30/2018 15:30	375-85-9	N2
NaDONA	ND	4.0	1.5	1	07/30/2018 15:30	958445-44-8	N2
PFHxS	ND	1.9	0.62	1	07/30/2018 15:30	355-46-4	N2
PFOA	ND	2.0	0.43	1	07/30/2018 15:30	335-67-1	N2
PFNA	ND	2.0	0.69	1	07/30/2018 15:30	375-95-1	N2
PFOS	ND	1.9	0.45	1	07/30/2018 15:30	1763-23-1	N2
PFDA	ND	2.0	0.39	1	07/30/2018 15:30	335-76-2	N2
PFUdA	ND	2.0	0.55	1	07/30/2018 15:30	2058-94-8	N2
N-MeFOSAA	ND	4.0	0.99	1	07/30/2018 15:30	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	07/30/2018 15:30	2991-50-6	N2
PFDS	ND	1.9	0.47	1	07/30/2018 15:30	335-77-3	N2
PFDoA	ND	2.0	0.47	1	07/30/2018 15:30	307-55-1	N2
PFTTrDA	ND	2.0	0.45	1	07/30/2018 15:30	72629-94-8	N2
PFTeDA	ND	2.0	0.37	1	07/30/2018 15:30	376-06-7	N2
PFHxDA	ND	2.0	0.51	1	07/30/2018 15:30	67905-19-5	N2
PFODA	ND	2.0	0.60	1	07/30/2018 15:30	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.9	97	70 - 130	Pass
13C2_PFDA	2.0	2.1	103	70 - 130	Pass
d5-EtFOSAA	8.0	7.7	96	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	85786	50857 - 152571	66325 - 132650	Pass
13C2_PFOA	200158	93671 - 281012	128682 - 257364	Pass
13C4_PFOS	329908	157029 - 471088	210666 - 421332	Pass
d3-MeFOSAA	90104	44971 - 134914	58102 - 116203	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	IE-3	Date Extracted	07/20/2018
Lab Sample ID	35404131006	Total Amount Extracted	249 mL
Filename	10LCMS02_180730A_032	ICAL ID	180730A02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180730A_029
Collected	07/10/2018	Ending CCal	10LCMS02_180730A_042
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	4.7	2.0	0.62	1	07/30/2018 15:42	375-22-4	N2
PFPeA	ND	2.0	0.37	1	07/30/2018 15:42	2706-90-3	N2
PFBS	ND	1.8	0.32	1	07/30/2018 15:42	375-73-5	N2
PFHxA	ND	2.0	0.39	1	07/30/2018 15:42	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	07/30/2018 15:42	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	07/30/2018 15:42	375-85-9	N2
NaDONA	ND	4.0	1.5	1	07/30/2018 15:42	958445-44-8	N2
PFHxS	ND	1.9	0.62	1	07/30/2018 15:42	355-46-4	N2
PFOA	ND	2.0	0.43	1	07/30/2018 15:42	335-67-1	N2
PFNA	ND	2.0	0.69	1	07/30/2018 15:42	375-95-1	N2
PFOS	ND	1.9	0.45	1	07/30/2018 15:42	1763-23-1	N2
PFDA	ND	2.0	0.39	1	07/30/2018 15:42	335-76-2	N2
PFUdA	ND	2.0	0.55	1	07/30/2018 15:42	2058-94-8	N2
N-MeFOSAA	ND	4.0	1.00	1	07/30/2018 15:42	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	07/30/2018 15:42	2991-50-6	N2
PFDS	ND	1.9	0.47	1	07/30/2018 15:42	335-77-3	N2
PFDoA	ND	2.0	0.47	1	07/30/2018 15:42	307-55-1	N2
PFTTrDA	ND	2.0	0.46	1	07/30/2018 15:42	72629-94-8	N2
PFTeDA	ND	2.0	0.38	1	07/30/2018 15:42	376-06-7	N2
PFHxDA	ND	2.0	0.51	1	07/30/2018 15:42	67905-19-5	N2
PFODA	ND	2.0	0.60	1	07/30/2018 15:42	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.9	94	70 - 130	Pass
13C2_PFDA	2.0	2.0	101	70 - 130	Pass
d5-EtFOSAA	8.0	6.4	80	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	91578	50857 - 152571	66325 - 132650	Pass
13C2_PFOA	197955	93671 - 281012	128682 - 257364	Pass
13C4_PFOS	314734	157029 - 471088	210666 - 421332	Pass
d3-MeFOSAA	93473	44971 - 134914	58102 - 116203	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	HM-1	Date Extracted	07/20/2018
Lab Sample ID	35404131007	Total Amount Extracted	247 mL
Filename	10LCMS02_180730A_033	ICAL ID	180730A02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180730A_029
Collected	07/10/2018	Ending CCal	10LCMS02_180730A_042
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	2.7	2.0	0.62	1	07/30/2018 15:55	375-22-4	N2
PFPeA	ND	2.0	0.37	1	07/30/2018 15:55	2706-90-3	N2
PFBS	ND	1.8	0.33	1	07/30/2018 15:55	375-73-5	N2
PFHxA	ND	2.0	0.39	1	07/30/2018 15:55	307-24-4	N2
PFPPrOPrA	ND	4.1	1.4	1	07/30/2018 15:55	62037-80-3	N2
PFHpA	ND	2.0	0.66	1	07/30/2018 15:55	375-85-9	N2
NaDONA	ND	4.1	1.5	1	07/30/2018 15:55	958445-44-8	N2
PFHxS	ND	1.9	0.63	1	07/30/2018 15:55	355-46-4	N2
PFOA	ND	2.0	0.44	1	07/30/2018 15:55	335-67-1	N2
PFNA	ND	2.0	0.70	1	07/30/2018 15:55	375-95-1	N2
PFOS	ND	1.9	0.46	1	07/30/2018 15:55	1763-23-1	N2
PFDA	ND	2.0	0.40	1	07/30/2018 15:55	335-76-2	N2
PFUdA	ND	2.0	0.56	1	07/30/2018 15:55	2058-94-8	N2
N-MeFOSAA	ND	4.1	1.0	1	07/30/2018 15:55	2355-31-9	N2
N-EtFOSAA	ND	4.1	1.3	1	07/30/2018 15:55	2991-50-6	N2
PFDS	ND	1.9	0.47	1	07/30/2018 15:55	335-77-3	N2
PFDoA	ND	2.0	0.48	1	07/30/2018 15:55	307-55-1	N2
PFTTrDA	ND	2.0	0.46	1	07/30/2018 15:55	72629-94-8	N2
PFTeDA	ND	2.0	0.38	1	07/30/2018 15:55	376-06-7	N2
PFHxDA	ND	2.0	0.52	1	07/30/2018 15:55	67905-19-5	N2
PFODA	ND	2.0	0.61	1	07/30/2018 15:55	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	2.0	98	70 - 130	Pass
13C2_PFDA	2.0	2.0	98	70 - 130	Pass
d5-EtFOSAA	8.0	6.5	81	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	101434	50857 - 152571	66325 - 132650	Pass
13C2_PFOA	197339	93671 - 281012	128682 - 257364	Pass
13C4_PFOS	319464	157029 - 471088	210666 - 421332	Pass
d3-MeFOSAA	93442	44971 - 134914	58102 - 116203	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	OB-1	Date Extracted	07/20/2018
Lab Sample ID	35404131010	Total Amount Extracted	249 mL
Filename	10LCMS02_180730A_034	ICAL ID	180730A02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180730A_029
Collected	07/10/2018	Ending CCal	10LCMS02_180730A_042
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	4.5	2.0	0.62	1	07/30/2018 16:07	375-22-4	N2
PFPeA	ND	2.0	0.37	1	07/30/2018 16:07	2706-90-3	N2
PFBS	ND	1.8	0.32	1	07/30/2018 16:07	375-73-5	N2
PFHxA	ND	2.0	0.39	1	07/30/2018 16:07	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	07/30/2018 16:07	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	07/30/2018 16:07	375-85-9	N2
NaDONA	ND	4.0	1.5	1	07/30/2018 16:07	958445-44-8	N2
PFHxS	ND	1.9	0.62	1	07/30/2018 16:07	355-46-4	N2
PFOA	ND	2.0	0.43	1	07/30/2018 16:07	335-67-1	N2
PFNA	ND	2.0	0.69	1	07/30/2018 16:07	375-95-1	N2
PFOS	ND	1.9	0.45	1	07/30/2018 16:07	1763-23-1	N2
PFDA	ND	2.0	0.39	1	07/30/2018 16:07	335-76-2	N2
PFUdA	ND	2.0	0.55	1	07/30/2018 16:07	2058-94-8	N2
N-MeFOSAA	ND	4.0	1.00	1	07/30/2018 16:07	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	07/30/2018 16:07	2991-50-6	N2
PFDS	ND	1.9	0.47	1	07/30/2018 16:07	335-77-3	N2
PFDoA	ND	2.0	0.47	1	07/30/2018 16:07	307-55-1	N2
PFTTrDA	ND	2.0	0.46	1	07/30/2018 16:07	72629-94-8	N2
PFTeDA	ND	2.0	0.38	1	07/30/2018 16:07	376-06-7	N2
PFHxDA	ND	2.0	0.51	1	07/30/2018 16:07	67905-19-5	N2
PFODA	ND	2.0	0.60	1	07/30/2018 16:07	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.9	95	70 - 130	Pass
13C2_PFDA	2.0	1.9	97	70 - 130	Pass
d5-EtFOSAA	8.0	6.1	76	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	82436	50857 - 152571	66325 - 132650	Pass
13C2_PFOA	198815	93671 - 281012	128682 - 257364	Pass
13C4_PFOS	308492	157029 - 471088	210666 - 421332	Pass
d3-MeFOSAA	91939	44971 - 134914	58102 - 116203	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	SE-1	Date Extracted	07/20/2018
Lab Sample ID	35404131013	Total Amount Extracted	249 mL
Filename	10LCMS02_180730A_035	ICAL ID	180730A02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180730A_029
Collected	07/10/2018	Ending CCal	10LCMS02_180730A_042
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	4.6	2.0	0.62	1	07/30/2018 16:19	375-22-4	N2
PFPeA	ND	2.0	0.37	1	07/30/2018 16:19	2706-90-3	N2
PFBS	ND	1.8	0.32	1	07/30/2018 16:19	375-73-5	N2
PFHxA	ND	2.0	0.39	1	07/30/2018 16:19	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	07/30/2018 16:19	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	07/30/2018 16:19	375-85-9	N2
NaDONA	ND	4.0	1.5	1	07/30/2018 16:19	958445-44-8	N2
PFHxS	ND	1.9	0.62	1	07/30/2018 16:19	355-46-4	N2
PFOA	ND	2.0	0.43	1	07/30/2018 16:19	335-67-1	N2
PFNA	ND	2.0	0.69	1	07/30/2018 16:19	375-95-1	N2
PFOS	ND	1.9	0.45	1	07/30/2018 16:19	1763-23-1	N2
PFDA	ND	2.0	0.39	1	07/30/2018 16:19	335-76-2	N2
PFUdA	ND	2.0	0.56	1	07/30/2018 16:19	2058-94-8	N2
N-MeFOSAA	ND	4.0	1.00	1	07/30/2018 16:19	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	07/30/2018 16:19	2991-50-6	N2
PFDS	ND	1.9	0.47	1	07/30/2018 16:19	335-77-3	N2
PFDoA	ND	2.0	0.47	1	07/30/2018 16:19	307-55-1	N2
PFTTrDA	ND	2.0	0.46	1	07/30/2018 16:19	72629-94-8	N2
PFTeDA	ND	2.0	0.38	1	07/30/2018 16:19	376-06-7	N2
PFHxDA	ND	2.0	0.52	1	07/30/2018 16:19	67905-19-5	N2
PFODA	ND	2.0	0.61	1	07/30/2018 16:19	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.7	87	70 - 130	Pass
13C2_PFDA	2.0	1.9	93	70 - 130	Pass
d5-EtFOSAA	8.0	5.4	67	70 - 130	Fail

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	84754	50857 - 152571	66325 - 132650	Pass
13C2_PFOA	196939	93671 - 281012	128682 - 257364	Pass
13C4_PFOS	312972	157029 - 471088	210666 - 421332	Pass
d3-MeFOSAA	90705	44971 - 134914	58102 - 116203	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	CV-1	Date Extracted	07/20/2018
Lab Sample ID	35404131016	Total Amount Extracted	247 mL
Filename	10LCMS02_180730A_036	ICAL ID	180730A02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180730A_029
Collected	07/10/2018	Ending CCal	10LCMS02_180730A_042
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	ND	2.0	0.62	1	07/30/2018 16:32	375-22-4	N2
PFPeA	ND	2.0	0.37	1	07/30/2018 16:32	2706-90-3	N2
PFBS	ND	1.8	0.33	1	07/30/2018 16:32	375-73-5	N2
PFHxA	ND	2.0	0.39	1	07/30/2018 16:32	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	07/30/2018 16:32	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	07/30/2018 16:32	375-85-9	N2
NaDONA	ND	4.0	1.5	1	07/30/2018 16:32	958445-44-8	N2
PFHxS	ND	1.9	0.63	1	07/30/2018 16:32	355-46-4	N2
PFOA	ND	2.0	0.43	1	07/30/2018 16:32	335-67-1	N2
PFNA	ND	2.0	0.69	1	07/30/2018 16:32	375-95-1	N2
PFOS	ND	1.9	0.46	1	07/30/2018 16:32	1763-23-1	N2
PFDA	ND	2.0	0.40	1	07/30/2018 16:32	335-76-2	N2
PFUdA	ND	2.0	0.56	1	07/30/2018 16:32	2058-94-8	N2
N-MeFOSAA	ND	4.0	1.0	1	07/30/2018 16:32	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	07/30/2018 16:32	2991-50-6	N2
PFDS	ND	1.9	0.47	1	07/30/2018 16:32	335-77-3	N2
PFDoA	ND	2.0	0.48	1	07/30/2018 16:32	307-55-1	N2
PFTTrDA	ND	2.0	0.46	1	07/30/2018 16:32	72629-94-8	N2
PFTeDA	ND	2.0	0.38	1	07/30/2018 16:32	376-06-7	N2
PFHxDA	ND	2.0	0.52	1	07/30/2018 16:32	67905-19-5	N2
PFODA	ND	2.0	0.61	1	07/30/2018 16:32	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.8	91	70 - 130	Pass
13C2_PFDA	2.0	1.6	82	70 - 130	Pass
d5-EtFOSAA	8.0	4.6	57	70 - 130	Fail

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	80227	50857 - 152571	66325 - 132650	Pass
13C2_PFOA	185563	93671 - 281012	128682 - 257364	Pass
13C4_PFOS	292300	157029 - 471088	210666 - 421332	Pass
d3-MeFOSAA	86270	44971 - 134914	58102 - 116203	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	RE-1	Date Extracted	07/20/2018
Lab Sample ID	35404131019	Total Amount Extracted	251 mL
Filename	10LCMS02_180802C_016	ICAL ID	180802B02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180802C_013
Collected	07/10/2018	Ending CCal	10LCMS02_180802C_029
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	ND	2.0	0.61	1	08/03/201803:17	375-22-4	N2
PFPeA	ND	2.0	0.37	1	08/03/201803:17	2706-90-3	N2
PFBS	ND	1.8	0.32	1	08/03/201803:17	375-73-5	N2
PFHxA	ND	2.0	0.39	1	08/03/201803:17	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	08/03/201803:17	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	08/03/201803:17	375-85-9	N2
NaDONA	ND	4.0	1.5	1	08/03/201803:17	958445-44-8	N2
PFHxS	ND	1.9	0.62	1	08/03/201803:17	355-46-4	N2
PFOA	ND	2.0	0.43	1	08/03/201803:17	335-67-1	N2
PFNA	ND	2.0	0.69	1	08/03/201803:17	375-95-1	N2
PFOS	ND	1.9	0.45	1	08/03/201803:17	1763-23-1	N2
PFDA	ND	2.0	0.39	1	08/03/201803:17	335-76-2	N2
PFUdA	ND	2.0	0.55	1	08/03/201803:17	2058-94-8	N2
N-MeFOSAA	ND	4.0	0.99	1	08/03/201803:17	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	08/03/201803:17	2991-50-6	N2
PFDS	ND	1.9	0.47	1	08/03/201803:17	335-77-3	N2
PFDoA	ND	2.0	0.47	1	08/03/201803:17	307-55-1	N2
PFTTrDA	ND	2.0	0.45	1	08/03/201803:17	72629-94-8	N2
PFTeDA	ND	2.0	0.37	1	08/03/201803:17	376-06-7	N2
PFHxDA	ND	2.0	0.51	1	08/03/201803:17	67905-19-5	N2
PFODA	ND	2.0	0.60	1	08/03/201803:17	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.8	90	70 - 130	Pass
13C2_PFDA	2.0	1.8	92	70 - 130	Pass
d5-EtFOSAA	8.0	6.3	79	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	104840	44964 - 134893	78464 - 156928	Pass
13C2_PFOA	204007	91733 - 275199	152464 - 304927	Pass
13C4_PFOS	297759	137450 - 412350	230082 - 460163	Pass
d3-MeFOSAA	167285	72237 - 216710	113971 - 227942	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	RE-1	Date Extracted	07/20/2018
Lab Sample ID	35404131019-DUP	Total Amount Extracted	248 mL
Filename	10LCMS02_180802C_028	ICAL ID	180802B02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180802C_013
Collected	07/10/2018	Ending CCal	10LCMS02_180802C_029
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	ND	2.0	0.62	1	08/03/201809:18	375-22-4	N2
PFPeA	ND	2.0	0.37	1	08/03/201809:18	2706-90-3	N2
PFBS	ND	1.8	0.33	1	08/03/201809:18	375-73-5	N2
PFHxA	ND	2.0	0.39	1	08/03/201809:18	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	08/03/201809:18	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	08/03/201809:18	375-85-9	N2
NaDONA	ND	4.0	1.5	1	08/03/201809:18	958445-44-8	N2
PFHxS	ND	1.9	0.63	1	08/03/201809:18	355-46-4	N2
PFOA	ND	2.0	0.43	1	08/03/201809:18	335-67-1	N2
PFNA	ND	2.0	0.69	1	08/03/201809:18	375-95-1	N2
PFOS	ND	1.9	0.45	1	08/03/201809:18	1763-23-1	N2
PFDA	ND	2.0	0.39	1	08/03/201809:18	335-76-2	N2
PFUdA	ND	2.0	0.56	1	08/03/201809:18	2058-94-8	N2
N-MeFOSAA	ND	4.0	1.00	1	08/03/201809:18	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	08/03/201809:18	2991-50-6	N2
PFDS	ND	1.9	0.47	1	08/03/201809:18	335-77-3	N2
PFDoA	ND	2.0	0.48	1	08/03/201809:18	307-55-1	N2
PFTTrDA	ND	2.0	0.46	1	08/03/201809:18	72629-94-8	N2
PFTeDA	ND	2.0	0.38	1	08/03/201809:18	376-06-7	N2
PFHxDA	ND	2.0	0.52	1	08/03/201809:18	67905-19-5	N2
PFODA	ND	2.0	0.61	1	08/03/201809:18	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.8	92	70 - 130	Pass
13C2_PFDA	2.0	2.0	101	70 - 130	Pass
d5-EtFOSAA	8.0	7.6	95	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	96839	44964 - 134893	78464 - 156928	Pass
13C2_PFOA	194578	91733 - 275199	152464 - 304927	Pass
13C4_PFOS	296512	137450 - 412350	230082 - 460163	Pass
d3-MeFOSAA	152980	72237 - 216710	113971 - 227942	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	CB-1	Date Extracted	07/20/2018
Lab Sample ID	35404131022	Total Amount Extracted	247 mL
Filename	10LCMS02_180802C_017	ICAL ID	180802B02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180802C_013
Collected	07/10/2018	Ending CCal	10LCMS02_180802C_029
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	ND	2.0	0.62	1	08/03/201803:30	375-22-4	N2
PFPeA	ND	2.0	0.37	1	08/03/201803:30	2706-90-3	N2
PFBS	ND	1.8	0.33	1	08/03/201803:30	375-73-5	N2
PFHxA	ND	2.0	0.39	1	08/03/201803:30	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	08/03/201803:30	62037-80-3	N2
PFHpA	ND	2.0	0.66	1	08/03/201803:30	375-85-9	N2
NaDONA	ND	4.0	1.5	1	08/03/201803:30	958445-44-8	N2
PFHxS	ND	1.9	0.63	1	08/03/201803:30	355-46-4	N2
PFOA	ND	2.0	0.44	1	08/03/201803:30	335-67-1	N2
PFNA	ND	2.0	0.70	1	08/03/201803:30	375-95-1	N2
PFOS	ND	1.9	0.46	1	08/03/201803:30	1763-23-1	N2
PFDA	ND	2.0	0.40	1	08/03/201803:30	335-76-2	N2
PFUdA	ND	2.0	0.56	1	08/03/201803:30	2058-94-8	N2
N-MeFOSAA	ND	4.0	1.0	1	08/03/201803:30	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	08/03/201803:30	2991-50-6	N2
PFDS	ND	1.9	0.47	1	08/03/201803:30	335-77-3	N2
PFDoA	ND	2.0	0.48	1	08/03/201803:30	307-55-1	N2
PFTTrDA	ND	2.0	0.46	1	08/03/201803:30	72629-94-8	N2
PFTeDA	ND	2.0	0.38	1	08/03/201803:30	376-06-7	N2
PFHxDA	ND	2.0	0.52	1	08/03/201803:30	67905-19-5	N2
PFODA	ND	2.0	0.61	1	08/03/201803:30	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	2.0	98	70 - 130	Pass
13C2_PFDA	2.0	2.0	101	70 - 130	Pass
d5-EtFOSAA	8.0	7.0	88	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	118646	44964 - 134893	78464 - 156928	Pass
13C2_PFOA	244624	91733 - 275199	152464 - 304927	Pass
13C4_PFOS	367031	137450 - 412350	230082 - 460163	Pass
d3-MeFOSAA	207014	72237 - 216710	113971 - 227942	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	F7-2	Date Extracted	07/20/2018
Lab Sample ID	35404131026	Total Amount Extracted	248 mL
Filename	10LCMS02_180802C_018	ICAL ID	180802B02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180802C_013
Collected	07/10/2018	Ending CCal	10LCMS02_180802C_029
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	ND	2.0	0.62	1	08/03/201803:42	375-22-4	N2
PFPeA	ND	2.0	0.37	1	08/03/201803:42	2706-90-3	N2
PFBS	ND	1.8	0.33	1	08/03/201803:42	375-73-5	N2
PFHxA	ND	2.0	0.39	1	08/03/201803:42	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	08/03/201803:42	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	08/03/201803:42	375-85-9	N2
NaDONA	ND	4.0	1.5	1	08/03/201803:42	958445-44-8	N2
PFHxS	ND	1.9	0.63	1	08/03/201803:42	355-46-4	N2
PFOA	ND	2.0	0.43	1	08/03/201803:42	335-67-1	N2
PFNA	ND	2.0	0.69	1	08/03/201803:42	375-95-1	N2
PFOS	ND	1.9	0.45	1	08/03/201803:42	1763-23-1	N2
PFDA	ND	2.0	0.39	1	08/03/201803:42	335-76-2	N2
PFUdA	ND	2.0	0.56	1	08/03/201803:42	2058-94-8	N2
N-MeFOSAA	ND	4.0	1.0	1	08/03/201803:42	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	08/03/201803:42	2991-50-6	N2
PFDS	ND	1.9	0.47	1	08/03/201803:42	335-77-3	N2
PFDoA	ND	2.0	0.48	1	08/03/201803:42	307-55-1	N2
PFTTrDA	ND	2.0	0.46	1	08/03/201803:42	72629-94-8	N2
PFTeDA	ND	2.0	0.38	1	08/03/201803:42	376-06-7	N2
PFHxDA	ND	2.0	0.52	1	08/03/201803:42	67905-19-5	N2
PFODA	ND	2.0	0.61	1	08/03/201803:42	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.7	84	70 - 130	Pass
13C2_PFDA	2.0	1.7	84	70 - 130	Pass
d5-EtFOSAA	8.0	6.3	79	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	98279	44964 - 134893	78464 - 156928	Pass
13C2_PFOA	220628	91733 - 275199	152464 - 304927	Pass
13C4_PFOS	346567	137450 - 412350	230082 - 460163	Pass
d3-MeFOSAA	177098	72237 - 216710	113971 - 227942	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	SP-1	Date Extracted	07/20/2018
Lab Sample ID	35404131028	Total Amount Extracted	248 mL
Filename	10LCMS02_180802C_019	ICAL ID	180802B02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180802C_013
Collected	07/11/2018	Ending CCal	10LCMS02_180802C_029
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	4.0	2.0	0.62	1	08/03/201803:54	375-22-4	N2
PFPeA	ND	2.0	0.37	1	08/03/201803:54	2706-90-3	N2
PFBS	ND	1.8	0.33	1	08/03/201803:54	375-73-5	N2
PFHxA	ND	2.0	0.39	1	08/03/201803:54	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	08/03/201803:54	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	08/03/201803:54	375-85-9	N2
NaDONA	ND	4.0	1.5	1	08/03/201803:54	958445-44-8	N2
PFHxS	ND	1.9	0.63	1	08/03/201803:54	355-46-4	N2
PFOA	ND	2.0	0.43	1	08/03/201803:54	335-67-1	N2
PFNA	ND	2.0	0.69	1	08/03/201803:54	375-95-1	N2
PFOS	ND	1.9	0.45	1	08/03/201803:54	1763-23-1	N2
PFDA	ND	2.0	0.39	1	08/03/201803:54	335-76-2	N2
PFUdA	ND	2.0	0.56	1	08/03/201803:54	2058-94-8	N2
N-MeFOSAA	ND	4.0	1.0	1	08/03/201803:54	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	08/03/201803:54	2991-50-6	N2
PFDS	ND	1.9	0.47	1	08/03/201803:54	335-77-3	N2
PFDoA	ND	2.0	0.48	1	08/03/201803:54	307-55-1	N2
PFTTrDA	ND	2.0	0.46	1	08/03/201803:54	72629-94-8	N2
PFTeDA	ND	2.0	0.38	1	08/03/201803:54	376-06-7	N2
PFHxDA	ND	2.0	0.52	1	08/03/201803:54	67905-19-5	N2
PFODA	ND	2.0	0.61	1	08/03/201803:54	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	2.1	103	70 - 130	Pass
13C2_PFDA	2.0	1.9	95	70 - 130	Pass
d5-EtFOSAA	8.0	8.2	103	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	106678	44964 - 134893	78464 - 156928	Pass
13C2_PFOA	212777	91733 - 275199	152464 - 304927	Pass
13C4_PFOS	336768	137450 - 412350	230082 - 460163	Pass
d3-MeFOSAA	188739	72237 - 216710	113971 - 227942	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	HE-1	Date Extracted	07/20/2018
Lab Sample ID	35404131031	Total Amount Extracted	243 mL
Filename	10LCMS02_180802C_020	ICAL ID	180802B02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180802C_013
Collected	07/11/2018	Ending CCal	10LCMS02_180802C_029
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	2.5	2.1	0.63	1	08/03/201804:07	375-22-4	N2
PFPeA	ND	2.1	0.38	1	08/03/201804:07	2706-90-3	N2
PFBS	ND	1.8	0.33	1	08/03/201804:07	375-73-5	N2
PFHxA	ND	2.1	0.40	1	08/03/201804:07	307-24-4	N2
PFPPrOPrA	ND	4.1	1.4	1	08/03/201804:07	62037-80-3	N2
PFHpA	ND	2.1	0.67	1	08/03/201804:07	375-85-9	N2
NaDONA	ND	4.1	1.6	1	08/03/201804:07	958445-44-8	N2
PFHxS	ND	1.9	0.64	1	08/03/201804:07	355-46-4	N2
PFOA	ND	2.1	0.44	1	08/03/201804:07	335-67-1	N2
PFNA	ND	2.1	0.71	1	08/03/201804:07	375-95-1	N2
PFOS	ND	2.0	0.46	1	08/03/201804:07	1763-23-1	N2
PFDA	ND	2.1	0.40	1	08/03/201804:07	335-76-2	N2
PFUdA	ND	2.1	0.57	1	08/03/201804:07	2058-94-8	N2
N-MeFOSAA	ND	4.1	1.0	1	08/03/201804:07	2355-31-9	N2
N-EtFOSAA	ND	4.1	1.4	1	08/03/201804:07	2991-50-6	N2
PFDS	ND	2.0	0.48	1	08/03/201804:07	335-77-3	N2
PFDoA	ND	2.1	0.49	1	08/03/201804:07	307-55-1	N2
PFTTrDA	ND	2.1	0.47	1	08/03/201804:07	72629-94-8	N2
PFTeDA	ND	2.1	0.38	1	08/03/201804:07	376-06-7	N2
PFHxDA	ND	2.1	0.53	1	08/03/201804:07	67905-19-5	N2
PFODA	ND	2.1	0.62	1	08/03/201804:07	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	2.1	105	70 - 130	Pass
13C2_PFDA	2.0	2.0	102	70 - 130	Pass
d5-EtFOSAA	8.0	8.6	108	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	106009	44964 - 134893	78464 - 156928	Pass
13C2_PFOA	212750	91733 - 275199	152464 - 304927	Pass
13C4_PFOS	314230	137450 - 412350	230082 - 460163	Pass
d3-MeFOSAA	168777	72237 - 216710	113971 - 227942	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	DM-1	Date Extracted	07/20/2018
Lab Sample ID	35404131034	Total Amount Extracted	249 mL
Filename	10LCMS02_180802C_021	ICAL ID	180802B02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180802C_013
Collected	07/11/2018	Ending CCal	10LCMS02_180802C_029
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	3.4	2.0	0.62	1	08/03/201804:19	375-22-4	N2
PFPeA	ND	2.0	0.37	1	08/03/201804:19	2706-90-3	N2
PFBS	ND	1.8	0.32	1	08/03/201804:19	375-73-5	N2
PFHxA	ND	2.0	0.39	1	08/03/201804:19	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	08/03/201804:19	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	08/03/201804:19	375-85-9	N2
NaDONA	ND	4.0	1.5	1	08/03/201804:19	958445-44-8	N2
PFHxS	ND	1.9	0.62	1	08/03/201804:19	355-46-4	N2
PFOA	ND	2.0	0.43	1	08/03/201804:19	335-67-1	N2
PFNA	ND	2.0	0.69	1	08/03/201804:19	375-95-1	N2
PFOS	ND	1.9	0.45	1	08/03/201804:19	1763-23-1	N2
PFDA	ND	2.0	0.39	1	08/03/201804:19	335-76-2	N2
PFUdA	ND	2.0	0.56	1	08/03/201804:19	2058-94-8	N2
N-MeFOSAA	ND	4.0	1.00	1	08/03/201804:19	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	08/03/201804:19	2991-50-6	N2
PFDS	ND	1.9	0.47	1	08/03/201804:19	335-77-3	N2
PFDoA	ND	2.0	0.47	1	08/03/201804:19	307-55-1	N2
PFTTrDA	ND	2.0	0.46	1	08/03/201804:19	72629-94-8	N2
PFTeDA	ND	2.0	0.38	1	08/03/201804:19	376-06-7	N2
PFHxDA	ND	2.0	0.52	1	08/03/201804:19	67905-19-5	N2
PFODA	ND	2.0	0.61	1	08/03/201804:19	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.8	92	70 - 130	Pass
13C2_PFDA	2.0	2.0	101	70 - 130	Pass
d5-EtFOSAA	8.0	6.7	84	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	107571	44964 - 134893	78464 - 156928	Pass
13C2_PFOA	220341	91733 - 275199	152464 - 304927	Pass
13C4_PFOS	332830	137450 - 412350	230082 - 460163	Pass
d3-MeFOSAA	167290	72237 - 216710	113971 - 227942	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	SH-1	Date Extracted	07/20/2018
Lab Sample ID	35404131037	Total Amount Extracted	242 mL
Filename	10LCMS02_180802C_022	ICAL ID	180802B02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180802C_013
Collected	07/11/2018	Ending CCal	10LCMS02_180802C_029
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	12	2.1	0.64	1	08/03/201804:31	375-22-4	N2
PFPeA	ND	2.1	0.38	1	08/03/201804:31	2706-90-3	N2
PFBS	ND	1.8	0.33	1	08/03/201804:31	375-73-5	N2
PFHxA	ND	2.1	0.40	1	08/03/201804:31	307-24-4	N2
PFPPrOPrA	ND	4.1	1.4	1	08/03/201804:31	62037-80-3	N2
PFHpA	ND	2.1	0.67	1	08/03/201804:31	375-85-9	N2
NaDONA	ND	4.1	1.6	1	08/03/201804:31	958445-44-8	N2
PFHxS	ND	1.9	0.64	1	08/03/201804:31	355-46-4	N2
PFOA	ND	2.1	0.44	1	08/03/201804:31	335-67-1	N2
PFNA	ND	2.1	0.71	1	08/03/201804:31	375-95-1	N2
PFOS	ND	2.0	0.47	1	08/03/201804:31	1763-23-1	N2
PFDA	ND	2.1	0.40	1	08/03/201804:31	335-76-2	N2
PFUdA	ND	2.1	0.57	1	08/03/201804:31	2058-94-8	N2
N-MeFOSAA	ND	4.1	1.0	1	08/03/201804:31	2355-31-9	N2
N-EtFOSAA	ND	4.1	1.4	1	08/03/201804:31	2991-50-6	N2
PFDS	ND	2.0	0.48	1	08/03/201804:31	335-77-3	N2
PFDaA	ND	2.1	0.49	1	08/03/201804:31	307-55-1	N2
PFTTrDA	ND	2.1	0.47	1	08/03/201804:31	72629-94-8	N2
PFTeDA	ND	2.1	0.39	1	08/03/201804:31	376-06-7	N2
PFHxDA	ND	2.1	0.53	1	08/03/201804:31	67905-19-5	N2
PFODA	ND	2.1	0.62	1	08/03/201804:31	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.8	92	70 - 130	Pass
13C2_PFDA	2.0	1.9	95	70 - 130	Pass
d5-EtFOSAA	8.0	6.2	78	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	47260	44964 - 134893	78464 - 156928	Fail
13C2_PFOA	91697	91733 - 275199	152464 - 304927	Fail
13C4_PFOS	133134	137450 - 412350	230082 - 460163	Fail
d3-MeFOSAA	76724	72237 - 216710	113971 - 227942	Fail

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID	FB	Date Extracted	07/20/2018
Lab Sample ID	35404131040	Total Amount Extracted	244 mL
Filename	10LCMS02_180802C_023	ICAL ID	180802B02
Matrix	Drinking_Water	Starting CCal	10LCMS02_180802C_013
Collected	07/11/2018	Ending CCal	10LCMS02_180802C_029
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	ND	2.0	0.63	1	08/03/201804:44	375-22-4	N2
PFPeA	ND	2.0	0.38	1	08/03/201804:44	2706-90-3	N2
PFBS	ND	1.8	0.33	1	08/03/201804:44	375-73-5	N2
PFHxA	ND	2.0	0.40	1	08/03/201804:44	307-24-4	N2
PFPPrOPrA	ND	4.1	1.4	1	08/03/201804:44	62037-80-3	N2
PFHpA	ND	2.0	0.66	1	08/03/201804:44	375-85-9	N2
NaDONA	ND	4.1	1.5	1	08/03/201804:44	958445-44-8	N2
PFHxS	ND	1.9	0.64	1	08/03/201804:44	355-46-4	N2
PFOA	ND	2.0	0.44	1	08/03/201804:44	335-67-1	N2
PFNA	ND	2.0	0.70	1	08/03/201804:44	375-95-1	N2
PFOS	ND	2.0	0.46	1	08/03/201804:44	1763-23-1	N2
PFDA	ND	2.0	0.40	1	08/03/201804:44	335-76-2	N2
PFUdA	ND	2.0	0.57	1	08/03/201804:44	2058-94-8	N2
N-MeFOSAA	ND	4.1	1.0	1	08/03/201804:44	2355-31-9	N2
N-EtFOSAA	ND	4.1	1.4	1	08/03/201804:44	2991-50-6	N2
PFDS	ND	2.0	0.48	1	08/03/201804:44	335-77-3	N2
PFDoA	ND	2.0	0.48	1	08/03/201804:44	307-55-1	N2
PFTTrDA	ND	2.0	0.47	1	08/03/201804:44	72629-94-8	N2
PFTeDA	ND	2.0	0.38	1	08/03/201804:44	376-06-7	N2
PFHxDA	ND	2.0	0.53	1	08/03/201804:44	67905-19-5	N2
PFODA	ND	2.0	0.62	1	08/03/201804:44	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.9	96	70 - 130	Pass
13C2_PFDA	2.0	2.0	100	70 - 130	Pass
d5-EtFOSAA	8.0	8.4	105	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	114735	44964 - 134893	78464 - 156928	Pass
13C2_PFOA	222809	91733 - 275199	152464 - 304927	Pass
13C4_PFOS	354577	137450 - 412350	230082 - 460163	Pass
d3-MeFOSAA	181211	72237 - 216710	113971 - 227942	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Sample Analysis Summary

Client's Sample ID		Date Extracted	07/20/2018
Lab Sample ID	35404131041	Total Amount Extracted	250 mL
Filename	10LCMS02_180802C_024	ICAL ID	180802B02
Matrix	Water	Starting CCal	10LCMS02_180802C_013
Collected	07/11/2018	Ending CCal	10LCMS02_180802C_029
Received	07/18/2018	Method Blank Filename	10LCMS02_180731A_021

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	ND	2.0	0.62	1	08/03/201804:56	375-22-4	N2
PFPeA	ND	2.0	0.37	1	08/03/201804:56	2706-90-3	N2
PFBS	ND	1.8	0.32	1	08/03/201804:56	375-73-5	N2
PFHxA	ND	2.0	0.39	1	08/03/201804:56	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	08/03/201804:56	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	08/03/201804:56	375-85-9	N2
NaDONA	ND	4.0	1.5	1	08/03/201804:56	958445-44-8	N2
PFHxS	ND	1.9	0.62	1	08/03/201804:56	355-46-4	N2
PFOA	ND	2.0	0.43	1	08/03/201804:56	335-67-1	N2
PFNA	ND	2.0	0.69	1	08/03/201804:56	375-95-1	N2
PFOS	ND	1.9	0.45	1	08/03/201804:56	1763-23-1	N2
PFDA	ND	2.0	0.39	1	08/03/201804:56	335-76-2	N2
PFUdA	ND	2.0	0.55	1	08/03/201804:56	2058-94-8	N2
N-MeFOSAA	ND	4.0	0.99	1	08/03/201804:56	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	08/03/201804:56	2991-50-6	N2
PFDS	ND	1.9	0.47	1	08/03/201804:56	335-77-3	N2
PFDoA	ND	2.0	0.47	1	08/03/201804:56	307-55-1	N2
PFTTrDA	ND	2.0	0.45	1	08/03/201804:56	72629-94-8	N2
PFTeDA	ND	2.0	0.37	1	08/03/201804:56	376-06-7	N2
PFHxDA	ND	2.0	0.51	1	08/03/201804:56	67905-19-5	N2
PFODA	ND	2.0	0.60	1	08/03/201804:56	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.9	96	70 - 130	Pass
13C2_PFDA	2.0	2.0	102	70 - 130	Pass
d5-EtFOSAA	8.0	7.5	94	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	106541	44964 - 134893	78464 - 156928	Pass
13C2_PFOA	232696	91733 - 275199	152464 - 304927	Pass
13C4_PFOS	357373	137450 - 412350	230082 - 460163	Pass
d3-MeFOSAA	178648	72237 - 216710	113971 - 227942	Pass

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Blank Analysis Summary

Lab Sample ID	BLANK-63579	Total Amount Extracted	250 mL
Filename	10LCMS02_180731A_021	ICAL ID	180731A02
Matrix	Water	Starting CCal	10LCMS02_180731A_015
Date Extracted	07/20/2018	Ending CCal	10LCMS02_180731A_022

Compound	Concentration (ng/L)	PQL (ng/L)	MDL (ng/L)	Dilution	Analyzed	CAS No.	Qual.
PFBA	ND	2.0	0.62	1	07/31/2018 19:16	375-22-4	N2
PFPeA	ND	2.0	0.37	1	07/31/2018 19:16	2706-90-3	N2
PFBS	ND	1.8	0.32	1	07/31/2018 19:16	375-73-5	N2
PFHxA	ND	2.0	0.39	1	07/31/2018 19:16	307-24-4	N2
PFPPrOPrA	ND	4.0	1.4	1	07/31/2018 19:16	62037-80-3	N2
PFHpA	ND	2.0	0.65	1	07/31/2018 19:16	375-85-9	N2
NaDONA	ND	4.0	1.5	1	07/31/2018 19:16	958445-44-8	N2
PFHxS	ND	1.9	0.62	1	07/31/2018 19:16	355-46-4	N2
PFOA	ND	2.0	0.43	1	07/31/2018 19:16	335-67-1	N2
PFNA	ND	2.0	0.69	1	07/31/2018 19:16	375-95-1	N2
PFOS	ND	1.9	0.45	1	07/31/2018 19:16	1763-23-1	N2
PFDA	ND	2.0	0.39	1	07/31/2018 19:16	335-76-2	N2
PFUdA	ND	2.0	0.55	1	07/31/2018 19:16	2058-94-8	N2
N-MeFOSAA	ND	4.0	0.99	1	07/31/2018 19:16	2355-31-9	N2
N-EtFOSAA	ND	4.0	1.3	1	07/31/2018 19:16	2991-50-6	N2
PFDS	ND	1.9	0.47	1	07/31/2018 19:16	335-77-3	N2
PFDaA	ND	2.0	0.47	1	07/31/2018 19:16	307-55-1	N2
PFTTrDA	ND	2.0	0.46	1	07/31/2018 19:16	72629-94-8	N2
PFTeDA	ND	2.0	0.37	1	07/31/2018 19:16	376-06-7	N2
PFHxDA	ND	2.0	0.51	1	07/31/2018 19:16	67905-19-5	N2
PFODA	ND	2.0	0.60	1	07/31/2018 19:16	16517-11-6	N2

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.9	97	70 - 130	Pass
13C2_PFDA	2.0	2.1	106	70 - 130	Pass
d5-EtFOSAA	8.0	7.8	98	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	63045	37169 - 111506	52265 - 104531	Pass
13C2_PFOA	193641	96701 - 290102	140974 - 281949	Pass
13C4_PFOS	279467	146147 - 438440	211120 - 422241	Pass
d3-MeFOSAA	88384	44694 - 134083	66730 - 133460	Pass

50-150% of Ical area
70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



PFAA Laboratory Control Sample (LCS)

LCS Lab Sample ID	LCS-63580	Matrix	Water
LCS Filename	10LCMS02_180731A_017	Dilution	1
Total Amount Extracted	251mL	Extracted	07/20/2018
ICAL ID	180731A02	Analyzed	07/31/2018 18:28
Start CCal Filename	10LCMS02_180731A_015	Injected By	QL
End CCal Filename	10LCMS02_180731A_022		
Method Blank Filename	10LCMS02_180731A_021		

Compound	Spiked (ng/L)	Recovered (ng/L)	Recovery %	Limits
PFBA	2.0	1.6 J	82	50.0 - 150.0
PFPeA	2.0	1.6 J	81	50.0 - 150.0
PFBS	1.8	1.6 J	93	50.0 - 150.0
PFHxA	2.0	1.6 J	82	50.0 - 150.0
PFPrOPrA	4.0	3.2 J	79	50.0 - 150.0
PFHpA	2.0	1.6 J	80	50.0 - 150.0
NaDONA	4.0	4.1	103	50.0 - 150.0
PFHxS	1.9	1.8 J	97	50.0 - 150.0
PFOA	2.0	1.8 J	92	50.0 - 150.0
PFNA	2.0	2.0	101	50.0 - 150.0
PFOS	1.9	2.1	107	50.0 - 150.0
PFDA	2.0	2.2	113	50.0 - 150.0
PFUdA	2.0	2.0	102	50.0 - 150.0
N-MeFOSAA	4.0	3.7 J	92	50.0 - 150.0
N-EtFOSAA	4.0	4.2	106	50.0 - 150.0
PFDS	1.9	2.1	112	50.0 - 150.0
PFDoA	2.0	2.6	131	50.0 - 150.0
PFTTrDA	2.0	2.3	117	50.0 - 150.0
PFTeDA	2.0	2.4	119	50.0 - 150.0
PFHxDA	2.0	2.0 J	98	50.0 - 150.0
PFODA	2.0	2.0 J	99	50.0 - 150.0

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.8	88	70 - 130	Pass
13C2_PFDA	2.0	2.3	115	70 - 130	Pass
d5-EtFOSAA	8.0	8.4	105	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	64065	37169 - 111506	52265 - 104531	Pass
13C2_PFOA	203996	96701 - 290102	140974 - 281949	Pass
13C4_PFOS	298748	146147 - 438440	211120 - 422241	Pass
d3-MeFOSAA	84529	44694 - 134083	66730 - 133460	Pass

50-150% of Ical area
70-140% of the preceding CCV area



PFAA Laboratory Control Sample (LCS)

LCS Lab Sample ID	LCS-63581	Matrix	Water
LCS Filename	10LCMS02_180731A_018	Dilution	1
Total Amount Extracted	251mL	Extracted	07/20/2018
ICAL ID	180731A02	Analyzed	07/31/2018 18:40
Start CCal Filename	10LCMS02_180731A_015	Injected By	QL
End CCal Filename	10LCMS02_180731A_022		
Method Blank Filename	10LCMS02_180731A_021		

Compound	Spiked (ng/L)	Recovered (ng/L)	Recovery %	Limits
PFBA	20	18	88	70.0 - 130.0
PFPeA	20	17	87	70.0 - 130.0
PFBS	18	17	97	70.0 - 130.0
PFHxA	20	18	90	70.0 - 130.0
PFPrOPrA	40	36	91	70.0 - 130.0
PFHpA	20	16	78	70.0 - 130.0
NaDONA	40	38	94	70.0 - 130.0
PFHxS	19	18	97	70.0 - 130.0
PFOA	20	19	94	70.0 - 130.0
PFNA	20	20	99	70.0 - 130.0
PFOS	19	19	101	70.0 - 130.0
PFDA	20	20	102	70.0 - 130.0
PFUdA	20	20	101	70.0 - 130.0
N-MeFOSAA	40	35	87	70.0 - 130.0
N-EtFOSAA	40	36	90	70.0 - 130.0
PFDS	19	20	106	70.0 - 130.0
PFDoA	20	22	112	70.0 - 130.0
PFTTrDA	20	23	115	70.0 - 130.0
PFTeDA	20	22	111	70.0 - 130.0
PFHxDA	20	18	92	70.0 - 130.0
PFODA	20	20	101	70.0 - 130.0

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.7	85	70 - 130	Pass
13C2_PFDA	2.0	2.0	102	70 - 130	Pass
d5-EtFOSAA	8.0	7.5	93	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	71415	37169 - 111506	52265 - 104531	Pass
13C2_PFOA	206465	96701 - 290102	140974 - 281949	Pass
13C4_PFOS	297836	146147 - 438440	211120 - 422241	Pass
d3-MeFOSAA	90656	44694 - 134083	66730 - 133460	Pass

50-150% of Ical area
70-140% of the preceding CCV area



PFAA Laboratory Control Sample Duplicate (LCSD)

LCSD Lab Sample ID	LCSD-63582	LCS Filename	10LCMS02_180731A_018
LCSD Filename	10LCMS02_180731A_019	Matrix	Water
Total Amount Extracted	251mL	Dilution	1
ICAL ID	180731A02	Extracted	07/20/2018
Start CCal Filename	10LCMS02_180731A_015	Analyzed	07/31/2018 18:52
End CCal Filename	10LCMS02_180731A_022	Injected By	QL
Method Blank Filename	10LCMS02_180731A_021		

Compound	Spiked (ng/L)	Recovered (ng/L)	Recovery %	Recovery Limits	RPD %
PFBA	20	18	91	70.0 - 130.0	3
PFPeA	20	18	89	70.0 - 130.0	3
PFBS	18	17	100	70.0 - 130.0	3
PFHxA	20	18	90	70.0 - 130.0	0
PFPrOPrA	40	36	90	70.0 - 130.0	1
PFHpA	20	16	80	70.0 - 130.0	3
NaDONA	40	41	103	70.0 - 130.0	9
PFHxS	19	18	97	70.0 - 130.0	1
PFOA	20	19	96	70.0 - 130.0	2
PFNA	20	21	106	70.0 - 130.0	6
PFOS	19	19	98	70.0 - 130.0	3
PFDA	20	20	99	70.0 - 130.0	2
PFUdA	20	22	108	70.0 - 130.0	7
N-MeFOSAA	40	37	93	70.0 - 130.0	6
N-EtFOSAA	40	38	96	70.0 - 130.0	6
PFDS	19	19	101	70.0 - 130.0	4
PFDoA	20	22	112	70.0 - 130.0	0
PFTTrDA	20	23	115	70.0 - 130.0	1
PFTeDA	20	22	109	70.0 - 130.0	2
PFHxDA	20	19	96	70.0 - 130.0	4
PFODA	20	21	104	70.0 - 130.0	4

Surrogate Standards

SS Compound	Spiked	Found	%Recovery	Limits	Pass/Fail
13C2_PFHxA	2.0	1.9	96	70 - 130	Pass
13C2_PFDA	2.0	2.1	105	70 - 130	Pass
d5-EtFOSAA	8.0	7.6	95	70 - 130	Pass

Internal Standards

IS Compound	Area	Ical Limits	CCV Limits	Pass/Fail
13C3_PFPPrOPrA	67466	37169 - 111506	52265 - 104531	Pass
13C2_PFOA	199747	96701 - 290102	140974 - 281949	Pass
13C4_PFOS	299732	146147 - 438440	211120 - 422241	Pass
d3-MeFOSAA	88939	44694 - 134083	66730 - 133460	Pass

50-150% of Ical area
70-140% of the preceding CCV area