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ANALYTICAL REPORT

Eurofins Eaton Analytical - South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-7357-1
Client Project/Site: PFC18

For:
Iowa Department of Natural Resources
502 East 9th
Des Moines, Iowa 50319

Attn: Claire Hruby

Authorized for release by:
12/2/2021 5:24:00 PM
Nathan Trowbridge, Manager of Project Management
(574)233-4777
nathan.trowbridge@eurofinset.com

Designee for

Traci Chlebowski, Project Manager
(574)233-4777
traci.chlebowski@eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Case Narrative

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

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Laboratory: Eurofins Eaton Analytical - South Bend

Narrative

Job Narrative
810-7357-1

Comments
No additional comments.

Receipt
The samples were received on 11/11/2021 9:15 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.4º C.

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

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

Detection Summary

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

Client Sample ID: 160-Iowa River (Sand Pit) Raw
Lab Sample ID: 810-7357-1
PWSID Number: IA5225079

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.2		1.9		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.4		1.9		ng/L	1		533	Total/NA

Client Sample ID: 161-Iowa River at New Plant Raw
Lab Sample ID: 810-7357-2
PWSID Number: IA5225079

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	3.3		1.9		ng/L	1		533	Total/NA

Client Sample ID: 162-S/EP IA River-Finished
Lab Sample ID: 810-7357-3
PWSID Number: IA5225079

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.0		1.8		ng/L	1		533	Total/NA

Client Sample ID: 163-Site 39-Blank
Lab Sample ID: 810-7357-4
PWSID Number: IA5225079

No Detections.

Client Sample ID: 164-Site 39-Duplicate
Lab Sample ID: 810-7357-5
PWSID Number: IA5225079

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.0		1.8		ng/L	1		533	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

Client Sample ID: 160-Iowa River (Sand Pit) Raw

Date Collected: 11/10/21 13:55
Date Received: 11/11/21 09:15

Lab Sample ID: 810-7357-1

Matrix: Water
PWSID Number: IA5225079

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.2**		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluoropentanoic acid (PFPeA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluorononanoic acid (PFNA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluorooctanesulfonic acid (PFOS)	**2.4**		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.9		1.9		ng/L		11/16/21 06:09	11/17/21 00:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*93*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C5 PFPeA	*112*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C5 PFHxA	*97*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C4 PFHpA	*94*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C8 PFOA	*89*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C9 PFNA	*88*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C6 PFDA	*84*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C7 PFUnA	*80*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C2 PFDoA	*75*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C3 HFPO-DA	*95*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C3 PFBS	*103*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C8 PFOS	*96*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C2-4:2-FTS	*119*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*

Client Sample ID: 160-Iowa River (Sand Pit) Raw

Lab Sample ID: 810-7357-1
Date Collected: 11/10/21 13:55
Matrix: Water
Date Received: 11/11/21 09:15
PWSID Number: IA5225079

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2-6:2-FTS	*103*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C2-8:2-FTS	*107*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*
13C3 PFHxS	*97*		*50 - 200*	*11/16/21 06:09*	*11/17/21 00:24*	*1*

Client Sample ID: 161-Iowa River at New Plant Raw

Lab Sample ID: 810-7357-2
Date Collected: 11/10/21 13:40
Matrix: Water
Date Received: 11/11/21 09:15
PWSID Number: IA5225079

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluoropentanoic acid (PFPeA)	**3.3**		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluorononanoic acid (PFNA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluorooctanesulfonic acid (PFOS)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.9		1.9		ng/L		11/17/21 07:35	11/18/21 00:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*102*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:28*	*1*
13C5 PFPeA	*133*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:28*	*1*
13C5 PFHxA	*113*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:28*	*1*
13C4 PFHpA	*105*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:28*	*1*

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

Client Sample ID: 161-Iowa River at New Plant Raw

Lab Sample ID: 810-7357-2
Date Collected: 11/10/21 13:40
Matrix: Water
Date Received: 11/11/21 09:15
PWSID Number: IA5225079

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	96		50 - 200	11/17/21 07:35	11/18/21 00:28	1
13C9 PFNA	96		50 - 200	11/17/21 07:35	11/18/21 00:28	1
13C6 PFDA	95		50 - 200	11/17/21 07:35	11/18/21 00:28	1
13C7 PFUnA	90		50 - 200	11/17/21 07:35	11/18/21 00:28	1
13C2 PFDoA	85		50 - 200	11/17/21 07:35	11/18/21 00:28	1
13C3 HFPO-DA	116		50 - 200	11/17/21 07:35	11/18/21 00:28	1
13C3 PFBS	107		50 - 200	11/17/21 07:35	11/18/21 00:28	1
13C8 PFOS	94		50 - 200	11/17/21 07:35	11/18/21 00:28	1
13C2-4:2-FTS	118		50 - 200	11/17/21 07:35	11/18/21 00:28	1
13C2-6:2-FTS	94		50 - 200	11/17/21 07:35	11/18/21 00:28	1
13C2-8:2-FTS	100		50 - 200	11/17/21 07:35	11/18/21 00:28	1
13C3 PFHxS	99		50 - 200	11/17/21 07:35	11/18/21 00:28	1

Client Sample ID: 162-S/EP IA River-Finished

Lab Sample ID: 810-7357-3
Date Collected: 11/10/21 13:22
Matrix: Drinking Water
Date Received: 11/11/21 09:15
PWSID Number: IA5225079

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.0**		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluorononanoic acid (PFNA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

Client Sample ID: 162-S/EP IA River-Finished

Lab Sample ID: 810-7357-3
Date Collected: 11/10/21 13:22
Matrix: Drinking Water
Date Received: 11/11/21 09:15
PWSID Number: IA5225079

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 00:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*99*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C5 PFPeA	*112*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C5 PFHxA	*105*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C4 PFHpA	*99*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C8 PFOA	*89*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C9 PFNA	*87*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C6 PFDA	*90*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C7 PFUnA	*85*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C2 PFDoA	*78*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C3 HFPO-DA	*100*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C3 PFBS	*101*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C8 PFOS	*97*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C2-4:2-FTS	*96*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C2-6:2-FTS	*84*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C2-8:2-FTS	*98*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*
13C3 PFHxS	*96*		*50 - 200*	*11/17/21 07:35*	*11/18/21 00:55*	*1*

Client Sample ID: 163-Site 39-Blank

Lab Sample ID: 810-7357-4
Date Collected: 11/10/21 13:20
Matrix: Drinking Water
Date Received: 11/11/21 09:15
PWSID Number: IA5225079

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluorononanoic acid (PFNA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1

Client Sample ID: 163-Site 39-Blank

Date Collected: 11/10/21 13:20
Date Received: 11/11/21 09:15

Lab Sample ID: 810-7357-4
Matrix: Drinking Water
PWSID Number: IA5225079

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*101*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C5 PFPeA	*101*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C5 PFHxA	*107*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C4 PFHpA	*105*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C8 PFOA	*100*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C9 PFNA	*103*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C6 PFDA	*105*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C7 PFUnA	*97*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C2 PFDoA	*83*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C3 HFPO-DA	*113*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C3 PFBS	*102*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C8 PFOS	*100*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C2-4:2-FTS	*95*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C2-6:2-FTS	*87*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C2-8:2-FTS	*100*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*
13C3 PFHxS	*99*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:22*	*1*

Client Sample ID: 164-Site 39-Duplicate

Date Collected: 11/10/21 13:24
Date Received: 11/11/21 09:15

Lab Sample ID: 810-7357-5
Matrix: Drinking Water
PWSID Number: IA5225079

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.0**		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluorononanoic acid (PFNA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

Client Sample ID: 164-Site 39-Duplicate
Date Collected: 11/10/21 13:24
Date Received: 11/11/21 09:15

Lab Sample ID: 810-7357-5
Matrix: Drinking Water
PWSID Number: IA5225079

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.8		1.8		ng/L		11/17/21 07:35	11/18/21 01:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*100*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C5 PFPeA	*112*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C5 PFHxA	*105*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C4 PFHpA	*98*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C8 PFOA	*81*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C9 PFNA	*72*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C6 PFDA	*75*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C7 PFUnA	*77*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C2 PFDoA	*80*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C3 HFPO-DA	*116*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C3 PFBS	*101*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C8 PFOS	*98*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C2-4:2-FTS	*99*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C2-6:2-FTS	*86*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C2-8:2-FTS	*102*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*
13C3 PFHxS	*98*		*50 - 200*	*11/17/21 07:35*	*11/18/21 01:36*	*1*

Isotope Dilution Summary

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Matrix: Drinking Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (50-200)	PFPeA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)	C6PFDA (50-200)	13C7PUA (50-200)
810-7357-3	162-S/EP IA River-Finished	99	112	105	99	89	87	90	85
810-7357-3 LMS	162-S/EP IA River-Finished	101	113	105	100	87	82	84	81
810-7357-4	163-Site 39-Blank	101	101	107	105	100	103	105	97
810-7357-5	164-Site 39-Duplicate	100	112	105	98	81	72	75	77
LCS 810-7469/3-A	Lab Control Sample	100	99	106	104	100	99	98	94
LLCS 810-7469/2-A	Lab Control Sample	99	102	101	103	103	103	104	102
MB 810-7469/1-A	Method Blank	100	98	103	105	102	101	102	98

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (50-200)	HFPODA (50-200)	C3PFBS (50-200)	C8PFOS (50-200)	42FTS (50-200)	62FTS (50-200)	82FTS (50-200)	C3PFHS (50-200)
810-7357-3	162-S/EP IA River-Finished	78	100	101	97	96	84	98	96
810-7357-3 LMS	162-S/EP IA River-Finished	79	113	103	99	100	87	102	100
810-7357-4	163-Site 39-Blank	83	113	102	100	95	87	100	99
810-7357-5	164-Site 39-Duplicate	80	116	101	98	99	86	102	98
LCS 810-7469/3-A	Lab Control Sample	89	113	106	102	108	106	104	104
LLCS 810-7469/2-A	Lab Control Sample	98	98	107	104	100	99	103	106
MB 810-7469/1-A	Method Blank	90	102	107	104	98	98	100	106

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
C6PFDA = 13C6 PFDA
13C7PUA = 13C7 PFUnA
PFDoA = 13C2 PFDoA
HFPODA = 13C3 HFPO-DA
C3PFBS = 13C3 PFBS
C8PFOS = 13C8 PFOS
42FTS = 13C2-4:2-FTS
62FTS = 13C2-6:2-FTS
82FTS = 13C2-8:2-FTS
C3PFHS = 13C3 PFHxS

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (50-200)	PFPeA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)	C6PFDA (50-200)	13C7PUA (50-200)
810-7357-1	160-Iowa River (Sand Pit) Raw	93	112	97	94	89	88	84	80
810-7357-2	161-Iowa River at New Plant Raw	102	133	113	105	96	96	95	90
LCS 810-7368/3-A	Lab Control Sample	91	89	90	91	91	92	89	83
LLCS 810-7368/2-A	Lab Control Sample	95	93	94	95	96	96	94	88
MB 810-7368/1-A	Method Blank	81	79	80	81	82	84	84	84

Isotope Dilution Summary

Client: Iowa Department of Natural Resources
Job ID: 810-7357-1
Project/Site: PFC18

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (50-200)	HFPODA (50-200)	C3PFBS (50-200)	C8PFOS (50-200)	42FTS (50-200)	62FTS (50-200)	82FTS (50-200)	C3PFHS (50-200)
810-7357-1	160-Iowa River (Sand Pit) Raw	75	95	103	96	119	103	107	97
810-7357-2	161-Iowa River at New Plant Raw	85	116	107	94	118	94	100	99
LCS 810-7368/3-A	Lab Control Sample	79	106	92	90	86	89	87	90
LLCS 810-7368/2-A	Lab Control Sample	83	97	97	94	89	90	91	97
MB 810-7368/1-A	Method Blank	83	73	94	92	86	87	92	92

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
C6PFDA = 13C6 PFDA
13C7PUA = 13C7 PFUnA
PFDoA = 13C2 PFDoA
HFPODA = 13C3 HFPO-DA
C3PFBS = 13C3 PFBS
C8PFOS = 13C8 PFOS
42FTS = 13C2-4:2-FTS
62FTS = 13C2-6:2-FTS
82FTS = 13C2-8:2-FTS
C3PFHS = 13C3 PFHxS

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Lab Sample ID: MB 810-7368/1-A
Matrix: Water
Analysis Batch: 7443

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7368

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0		ng/L		11/16/21 06:09	11/16/21 21:28	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*81*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*
13C5 PFPeA	*79*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*
13C5 PFHxA	*80*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*
13C4 PFHpA	*81*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*
13C8 PFOA	*82*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*
13C9 PFNA	*84*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*
13C6 PFDA	*84*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*
13C7 PFUnA	*84*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*
13C2 PFDoA	*83*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*
13C3 HFPO-DA	*73*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*
13C3 PFBS	*94*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*
13C8 PFOS	*92*		*50 - 200*	*11/16/21 06:09*	*11/16/21 21:28*	*1*

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: MB 810-7368/1-A
Matrix: Water
Analysis Batch: 7443

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7368

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2-4:2-FTS	86		50 - 200	11/16/21 06:09	11/16/21 21:28	1
13C2-6:2-FTS	87		50 - 200	11/16/21 06:09	11/16/21 21:28	1
13C2-8:2-FTS	92		50 - 200	11/16/21 06:09	11/16/21 21:28	1
13C3 PFHxS	92		50 - 200	11/16/21 06:09	11/16/21 21:28	1

Lab Sample ID: LCS 810-7368/3-A
Matrix: Water
Analysis Batch: 7443

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7368

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	193	192		ng/L		99	70 - 130
Perfluoropentanoic acid (PFPeA)	193	191		ng/L		99	70 - 130
Perfluorohexanoic acid (PFHxA)	193	191		ng/L		99	70 - 130
Perfluoroheptanoic acid (PFHpA)	193	190		ng/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	193	190		ng/L		98	70 - 130
Perfluorononanoic acid (PFNA)	193	192		ng/L		99	70 - 130
Perfluorodecanoic acid (PFDA)	193	191		ng/L		99	70 - 130
Perfluoroundecanoic acid (PFUnA)	193	191		ng/L		99	70 - 130
Perfluorododecanoic acid (PFDoA)	193	194		ng/L		100	70 - 130
Perfluorobutanesulfonic acid (PFBS)	172	171		ng/L		100	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	182	184		ng/L		101	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	176	177		ng/L		101	70 - 130
Perfluoroheptanesulfonic Acid (PFHpS)	184	183		ng/L		99	70 - 130
Perfluorooctanesulfonic acid (PFOS)	179	176		ng/L		98	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	172	172		ng/L		100	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	181	183		ng/L		101	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	184	181		ng/L		98	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	186	187		ng/L		101	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	193	170		ng/L		88	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	183	181		ng/L		99	70 - 130
9-Chlorohexadecafluoro-3-oxan onane-1-sulfonic acid	181	173		ng/L		96	70 - 130
11-Chloroeicosafluoro-3-oxaund ecane-1-sulfonic acid	183	159		ng/L		87	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	193	187		ng/L		97	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	193	188		ng/L		97	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	193	209		ng/L		108	70 - 130

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	91		50 - 200
13C5 PFPeA	89		50 - 200
13C5 PFHxA	90		50 - 200
13C4 PFHpA	91		50 - 200
13C8 PFOA	91		50 - 200
13C9 PFNA	92		50 - 200
13C6 PFDA	89		50 - 200
13C7 PFUnA	83		50 - 200
13C2 PFDoA	79		50 - 200
13C3 HFPO-DA	106		50 - 200
13C3 PFBS	92		50 - 200
13C8 PFOS	90		50 - 200
13C2-4:2-FTS	86		50 - 200
13C2-6:2-FTS	89		50 - 200
13C2-8:2-FTS	87		50 - 200
13C3 PFHxS	90		50 - 200

Lab Sample ID: LLCS 810-7368/2-A
Matrix: Water
Analysis Batch: 7443

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7368

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	1.86	1.64	J	ng/L		88	50 - 150
Perfluoropentanoic acid (PFPeA)	1.86	1.74	J	ng/L		94	50 - 150
Perfluorohexanoic acid (PFHxA)	1.86	1.59	J	ng/L		85	50 - 150
Perfluoroheptanoic acid (PFHpA)	1.86	1.58	J	ng/L		85	50 - 150
Perfluorooctanoic acid (PFOA)	1.86	1.57	J	ng/L		85	50 - 150
Perfluorononanoic acid (PFNA)	1.86	1.58	J	ng/L		85	50 - 150
Perfluorodecanoic acid (PFDA)	1.86	1.63	J	ng/L		87	50 - 150
Perfluoroundecanoic acid (PFUnA)	1.86	1.57	J	ng/L		85	50 - 150
Perfluorododecanoic acid (PFDoA)	1.86	1.65	J	ng/L		89	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.65	1.37	J	ng/L		83	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	1.75	1.42	J	ng/L		81	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.70	1.41	J	ng/L		83	50 - 150
Perfluoroheptanesulfonic Acid (PFHpS)	1.78	1.49	J	ng/L		84	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.73	1.54	J	ng/L		89	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	1.66	1.37	J	ng/L		83	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	1.75	1.56	J	ng/L		90	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	1.77	1.51	J	ng/L		85	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	1.79	1.56	J	ng/L		87	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	1.86	1.62	J	ng/L		87	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.76	1.47	J	ng/L		84	50 - 150

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: LLCS 810-7368/2-A
Matrix: Water
Analysis Batch: 7443

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7368

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.74	1.46	J	ng/L		84	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.76	1.35	J	ng/L		77	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	1.86	1.55	J	ng/L		83	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	1.86	1.51	J	ng/L		81	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.86	1.65	J	ng/L		89	50 - 150

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C4 PFBA	*95*		*50 - 200*
13C5 PFPeA	*93*		*50 - 200*
13C5 PFHxA	*94*		*50 - 200*
13C4 PFHpA	*95*		*50 - 200*
13C8 PFOA	*96*		*50 - 200*
13C9 PFNA	*96*		*50 - 200*
13C6 PFDA	*94*		*50 - 200*
13C7 PFUnA	*88*		*50 - 200*
13C2 PFDoA	*83*		*50 - 200*
13C3 HFPO-DA	*97*		*50 - 200*
13C3 PFBS	*97*		*50 - 200*
13C8 PFOS	*94*		*50 - 200*
13C2-4:2-FTS	*89*		*50 - 200*
13C2-6:2-FTS	*90*		*50 - 200*
13C2-8:2-FTS	*91*		*50 - 200*
13C3 PFHxS	*97*		*50 - 200*

Lab Sample ID: MB 810-7469/1-A
Matrix: Drinking Water
Analysis Batch: 7539

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7469

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluoroheptanesulfonic Acid (PFHpS)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		11/17/21 07:35	11/17/21 20:52	1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: MB 810-7469/1-A
Matrix: Drinking Water
Analysis Batch: 7539

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7469

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		11/17/21 07:35	11/17/21 20:52	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		11/17/21 07:35	11/17/21 20:52	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		11/17/21 07:35	11/17/21 20:52	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		11/17/21 07:35	11/17/21 20:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<2.0		2.0		ng/L		11/17/21 07:35	11/17/21 20:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		11/17/21 07:35	11/17/21 20:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<2.0		2.0		ng/L		11/17/21 07:35	11/17/21 20:52	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<2.0		2.0		ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0		ng/L		11/17/21 07:35	11/17/21 20:52	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		11/17/21 07:35	11/17/21 20:52	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0		ng/L		11/17/21 07:35	11/17/21 20:52	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*100*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C5 PFPeA	*98*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C5 PFHxA	*103*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C4 PFHpA	*105*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C8 PFOA	*102*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C9 PFNA	*101*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C6 PFDA	*102*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C7 PFUnA	*98*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C2 PFDoA	*90*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C3 HFPO-DA	*102*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C3 PFBS	*107*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C8 PFOS	*104*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C2-4:2-FTS	*98*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C2-6:2-FTS	*98*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C2-8:2-FTS	*100*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*
13C3 PFHxS	*106*		*50 - 200*	*11/17/21 07:35*	*11/17/21 20:52*	*1*

Lab Sample ID: LCS 810-7469/3-A
Matrix: Drinking Water
Analysis Batch: 7539

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7469

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorobutanoic acid (PFBA)			401	406		ng/L		101	70 - 130		
Perfluoropentanoic acid (PFPeA)			401	406		ng/L		101	70 - 130		
Perfluorohexanoic acid (PFHxA)			401	401		ng/L		100	70 - 130		
Perfluoroheptanoic acid (PFHpA)			401	404		ng/L		101	70 - 130		
Perfluorooctanoic acid (PFOA)			401	407		ng/L		101	70 - 130		
Perfluorononanoic acid (PFNA)			401	407		ng/L		101	70 - 130		

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: LCS 810-7469/3-A
Matrix: Drinking Water
Analysis Batch: 7539

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7469

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	401	405		ng/L		101	70 - 130
Perfluoroundecanoic acid (PFUnA)	401	411		ng/L		102	70 - 130
Perfluorododecanoic acid (PFDoA)	401	408		ng/L		102	70 - 130
Perfluorobutanesulfonic acid (PFBS)	356	355		ng/L		100	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	377	379		ng/L		100	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	366	371		ng/L		101	70 - 130
Perfluoroheptanesulfonic Acid (PFHpS)	383	389		ng/L		102	70 - 130
Perfluorooctanesulfonic acid (PFOS)	372	378		ng/L		102	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	358	357		ng/L		100	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	376	390		ng/L		104	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	382	387		ng/L		101	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	385	394		ng/L		102	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	401	374		ng/L		93	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	379	376		ng/L		99	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	375	371		ng/L		99	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	379	358		ng/L		95	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	401	396		ng/L		99	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	401	394		ng/L		98	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	401	402		ng/L		100	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*100*		*50 - 200*
13C5 PFPeA	*99*		*50 - 200*
13C5 PFHxA	*106*		*50 - 200*
13C4 PFHpA	*104*		*50 - 200*
13C8 PFOA	*100*		*50 - 200*
13C9 PFNA	*99*		*50 - 200*
13C6 PFDA	*98*		*50 - 200*
13C7 PFUnA	*94*		*50 - 200*
13C2 PFDoA	*89*		*50 - 200*
13C3 HFPO-DA	*113*		*50 - 200*
13C3 PFBS	*106*		*50 - 200*
13C8 PFOS	*102*		*50 - 200*
13C2-4:2-FTS	*108*		*50 - 200*
13C2-6:2-FTS	*106*		*50 - 200*

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: LCS 810-7469/3-A
Matrix: Drinking Water
Analysis Batch: 7539

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7469

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2-8:2-FTS	*104*		*50 - 200*
13C3 PFHxS	*104*		*50 - 200*

Lab Sample ID: LLCS 810-7469/2-A
Matrix: Drinking Water
Analysis Batch: 7539

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7469

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	1.87	1.65	J	ng/L		88	50 - 150
Perfluoropentanoic acid (PFPeA)	1.87	1.80	J	ng/L		96	50 - 150
Perfluorohexanoic acid (PFHxA)	1.87	1.67	J	ng/L		89	50 - 150
Perfluoroheptanoic acid (PFHpA)	1.87	1.61	J	ng/L		86	50 - 150
Perfluorooctanoic acid (PFOA)	1.87	1.66	J	ng/L		89	50 - 150
Perfluorononanoic acid (PFNA)	1.87	1.66	J	ng/L		89	50 - 150
Perfluorodecanoic acid (PFDA)	1.87	1.69	J	ng/L		91	50 - 150
Perfluoroundecanoic acid (PFUnA)	1.87	1.62	J	ng/L		87	50 - 150
Perfluorododecanoic acid (PFDoA)	1.87	1.71	J	ng/L		92	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.66	1.46	J	ng/L		88	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	1.76	1.63	J	ng/L		93	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.70	1.47	J	ng/L		86	50 - 150
Perfluoroheptanesulfonic Acid (PFHpS)	1.78	1.51	J	ng/L		85	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.73	1.53	J	ng/L		88	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	1.67	1.46	J	ng/L		88	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	1.75	1.50	J	ng/L		86	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	1.78	1.65	J	ng/L		93	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	1.79	1.56	J	ng/L		87	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	1.87	1.55	J	ng/L		83	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.77	1.56	J	ng/L		88	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.74	1.57	J	ng/L		90	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.76	1.45	J	ng/L		82	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	1.87	1.52	J	ng/L		82	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	1.87	1.57	J	ng/L		84	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.87	1.65	J	ng/L		89	50 - 150

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Isotope Dilution	LLCS %Recovery	LLCS Qualifier	Limits
13C4 PFBA	99		50 - 200
13C5 PFPeA	102		50 - 200
13C5 PFHxA	101		50 - 200
13C4 PFHpA	103		50 - 200
13C8 PFOA	103		50 - 200
13C9 PFNA	103		50 - 200
13C6 PFDA	104		50 - 200
13C7 PFUnA	102		50 - 200
13C2 PFDoA	98		50 - 200
13C3 HFPO-DA	98		50 - 200
13C3 PFBS	107		50 - 200
13C8 PFOS	104		50 - 200
13C2-4:2-FTS	100		50 - 200
13C2-6:2-FTS	99		50 - 200
13C2-8:2-FTS	103		50 - 200
13C3 PFHxS	106		50 - 200

Lab Sample ID: 810-7357-3 LMS — **Client Sample ID: 162-S/EP IA River-Finished**
Matrix: Drinking Water — **Prep Type: Total/NA**
Analysis Batch: 7539 — **Prep Batch: 7469**

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	3.0		1.87	4.50		ng/L		80	50 - 150
Perfluoropentanoic acid (PFPeA)	<1.8		1.87	2.68		ng/L		83	50 - 150
Perfluorohexanoic acid (PFHxA)	<1.8		1.87	2.19		ng/L		84	50 - 150
Perfluoroheptanoic acid (PFHpA)	<1.8		1.87	1.90		ng/L		86	50 - 150
Perfluorooctanoic acid (PFOA)	<1.8		1.87	2.73		ng/L		85	50 - 150
Perfluorononanoic acid (PFNA)	<1.8		1.87	1.85	J	ng/L		85	50 - 150
Perfluorodecanoic acid (PFDA)	<1.8		1.87	1.65	J	ng/L		88	50 - 150
Perfluoroundecanoic acid (PFUnA)	<1.8		1.87	1.75	J	ng/L		94	50 - 150
Perfluorododecanoic acid (PFDoA)	<1.8		1.87	1.73	J	ng/L		80	50 - 150
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.66	2.57		ng/L		80	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.76	1.53	J	ng/L		87	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.71	1.76	J	ng/L		77	50 - 150
Perfluoroheptanesulfonic Acid (PFHpS)	<1.8		1.79	1.50	J	ng/L		84	50 - 150
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.74	2.39		ng/L		82	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.8		1.67	1.40	J	ng/L		84	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.8		1.76	1.47	J	ng/L		84	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<1.8		1.78	1.72	J	ng/L		96	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.8		1.80	1.65	J	ng/L		92	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.8		1.87	1.43	J	ng/L		76	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.77	1.51	J	ng/L		85	50 - 150

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: 810-7357-3 LMS
Matrix: Drinking Water
Analysis Batch: 7539

Client Sample ID: 162-S/EP IA River-Finished
Prep Type: Total/NA
Prep Batch: 7469

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	%Rec. Limits
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<1.8		1.75	1.58	J	ng/L		90	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<1.8		1.77	1.38	J	ng/L		78	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.8		1.87	1.55	J	ng/L		83	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.8		1.87	1.81	J	ng/L		96	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.8		1.87	2.05		ng/L		109	50 - 150

Isotope Dilution	*LMS %Recovery*	*LMS Qualifier*	*Limits*
13C4 PFBA	*101*		*50 - 200*
13C5 PFPeA	*113*		*50 - 200*
13C5 PFHxA	*105*		*50 - 200*
13C4 PFHpA	*100*		*50 - 200*
13C8 PFOA	*87*		*50 - 200*
13C9 PFNA	*82*		*50 - 200*
13C6 PFDA	*84*		*50 - 200*
13C7 PFUnA	*81*		*50 - 200*
13C2 PFDoA	*79*		*50 - 200*
13C3 HFPO-DA	*113*		*50 - 200*
13C3 PFBS	*103*		*50 - 200*
13C8 PFOS	*99*		*50 - 200*
13C2-4:2-FTS	*100*		*50 - 200*
13C2-6:2-FTS	*87*		*50 - 200*
13C2-8:2-FTS	*102*		*50 - 200*
13C3 PFHxS	*100*		*50 - 200*

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

LCMS

Prep Batch: 7368

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-7357-1	160-Iowa River (Sand Pit) Raw	Total/NA	Water	533	
MB 810-7368/1-A	Method Blank	Total/NA	Water	533	
LCS 810-7368/3-A	Lab Control Sample	Total/NA	Water	533	
LLCS 810-7368/2-A	Lab Control Sample	Total/NA	Water	533	

Analysis Batch: 7443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-7357-1	160-Iowa River (Sand Pit) Raw	Total/NA	Water	533	7368
MB 810-7368/1-A	Method Blank	Total/NA	Water	533	7368
LCS 810-7368/3-A	Lab Control Sample	Total/NA	Water	533	7368
LLCS 810-7368/2-A	Lab Control Sample	Total/NA	Water	533	7368

Prep Batch: 7469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-7357-2	161-Iowa River at New Plant Raw	Total/NA	Water	533	
810-7357-3	162-S/EP IA River-Finished	Total/NA	Drinking Water	533	
810-7357-4	163-Site 39-Blank	Total/NA	Drinking Water	533	
810-7357-5	164-Site 39-Duplicate	Total/NA	Drinking Water	533	
MB 810-7469/1-A	Method Blank	Total/NA	Drinking Water	533	
LCS 810-7469/3-A	Lab Control Sample	Total/NA	Drinking Water	533	
LLCS 810-7469/2-A	Lab Control Sample	Total/NA	Drinking Water	533	
810-7357-3 LMS	162-S/EP IA River-Finished	Total/NA	Drinking Water	533	

Analysis Batch: 7539

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-7357-2	161-Iowa River at New Plant Raw	Total/NA	Water	533	7469
810-7357-3	162-S/EP IA River-Finished	Total/NA	Drinking Water	533	7469
810-7357-4	163-Site 39-Blank	Total/NA	Drinking Water	533	7469
810-7357-5	164-Site 39-Duplicate	Total/NA	Drinking Water	533	7469
MB 810-7469/1-A	Method Blank	Total/NA	Drinking Water	533	7469
LCS 810-7469/3-A	Lab Control Sample	Total/NA	Drinking Water	533	7469
LLCS 810-7469/2-A	Lab Control Sample	Total/NA	Drinking Water	533	7469
810-7357-3 LMS	162-S/EP IA River-Finished	Total/NA	Drinking Water	533	7469

Lab Chronicle

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

Client Sample ID: 160-Iowa River (Sand Pit) Raw
Lab Sample ID: 810-7357-1
Date Collected: 11/10/21 13:55
Matrix: Water
Date Received: 11/11/21 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	533			7368	11/16/21 06:09	CM	EA SB
Total/NA	Analysis	533		1	7443	11/17/21 00:24	CM	EA SB

Client Sample ID: 161-Iowa River at New Plant Raw
Lab Sample ID: 810-7357-2
Date Collected: 11/10/21 13:40
Matrix: Water
Date Received: 11/11/21 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	533			7469	11/17/21 07:35	TR	EA SB
Total/NA	Analysis	533		1	7539	11/18/21 00:28	CM	EA SB

Client Sample ID: 162-S/EP IA River-Finished
Lab Sample ID: 810-7357-3
Date Collected: 11/10/21 13:22
Matrix: Drinking Water
Date Received: 11/11/21 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	533			7469	11/17/21 07:35	TR	EA SB
Total/NA	Analysis	533		1	7539	11/18/21 00:55	CM	EA SB

Client Sample ID: 163-Site 39-Blank
Lab Sample ID: 810-7357-4
Date Collected: 11/10/21 13:20
Matrix: Drinking Water
Date Received: 11/11/21 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	533			7469	11/17/21 07:35	TR	EA SB
Total/NA	Analysis	533		1	7539	11/18/21 01:22	CM	EA SB

Client Sample ID: 164-Site 39-Duplicate
Lab Sample ID: 810-7357-5
Date Collected: 11/10/21 13:24
Matrix: Drinking Water
Date Received: 11/11/21 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	533			7469	11/17/21 07:35	TR	EA SB
Total/NA	Analysis	533		1	7539	11/18/21 01:36	CM	EA SB

Laboratory References:
EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Iowa Department of Natural Resources
Job ID: 810-7357-1
Project/Site: PFC18

Laboratory: Eurofins Eaton Analytical - South Bend

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	ISO/IEC 17025	5794.01	07-31-22
Iowa	State	IA Lab #098	11-01-21 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

Method	Method Description	Protocol	Laboratory
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA SB
533	Extraction of Perfluorinated and Polyfluorinated Alkyl Acids	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton Analytical - South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Iowa Department of Natural Resources
Project/Site: PFC18

Job ID: 810-7357-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
810-7357-1	160-Iowa River (Sand Pit) Raw	Water	11/10/21 13:55	11/11/21 09:15	IA5225079
810-7357-2	161-Iowa River at New Plant Raw	Water	11/10/21 13:40	11/11/21 09:15	IA5225079
810-7357-3	162-S/EP IA River-Finished	Drinking Water	11/10/21 13:22	11/11/21 09:15	IA5225079
810-7357-4	163-Site 39-Blank	Drinking Water	11/10/21 13:20	11/11/21 09:15	IA5225079
810-7357-5	164-Site 39-Duplicate	Drinking Water	11/10/21 13:24	11/11/21 09:15	IA5225079

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone: 574-233-4777 Fax: 574-233-8207

Chain of Custody Record

810-7357 Chain of Custody

eurofins | Environment Testing America

Client Information	Sampler: C. Hruby	Lab PM: Chlebowski, Traci	COC No: 310-2698-887.2
Client Contact: Claire Hruby	Phone: 515.777.5161	E-Mail: traci.chlebowski@eurofinset.com	State of Origin: IA
Company: Iowa Department of Natural Resources	PWSID: IA5225079		Page: Page 2 of 2
Address: 502 East 9th	Due Date Requested:		Job #:
City: Des Moines	TAT Requested (days):		
State, Zip: IA, 50319	Compliance Project: Δ Yes Δ No		
Phone: 515-777-5161(Tel)	PO #: 22 ESD-WQB-RBrun-0005		
Email: claire.hruby@dnr.iowa.gov	WO #:		
Project Name: 533	Project #: 81001225		
Site: 39-Iowa City Water Dept.	SSOW#:		

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Duplicates are Blu Labels due to Bottle shortage

Special Instructions/Note:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	533 - Local Method	Total Number of containers
			Preservation Code:					
160 - Iowa River (Sand Pit) Raw	11/10/21	13:55	G	Water				3
161 - Iowa River at new plant Raw	11/10/21	13:40	G	W				3
162 - S/EP IA River - Finished	11/10/21	13:22	G	W				3
163 - Site 39 - blank	11/10/21	13:20	G	W				1
164 - Site 39 - duplicate	11/10/21	13:24	G	W				3

Cross Offs on COC by Client

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date: 11/10/21	Time:	Method of Shipment: Fedex

Relinquished by:	Date/Time: 4:00 11/10/21	Company: DNR	Received by:	Date/Time: 11-11-21 0915	Company: EEA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes X No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.4°C IR 23

12/2/2021

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Iowa Department of Natural Resources

Job Number: 810-7357-1

Login Number: 7357
List Number: 1
Creator: Spurgeon, Sheri

List Source: Eurofins Eaton Analytical - South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	