

ANALYTICAL REPORT

PREPARED FOR

Attn: Justin Huntley
Union County Water
500 N Main St.
Monroe, North Carolina 28112

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JOB DESCRIPTION

PFAS - 533

JOB NUMBER

810-73461-1

Eurofins Eaton Analytical South Bend

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Eaton Analytical, LLC Project Manager.

Authorization



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Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Isotope Dilution Summary	11
QC Sample Results	12
QC Association Summary	19
Lab Chronicle	20
Certification Summary	21
Method Summary	22
Sample Summary	23
Chain of Custody	24
Receipt Checklists	25

Definitions/Glossary

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

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.
α	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: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

Job ID: 810-73461-1

Laboratory: Eurofins Eaton Analytical South Bend

Narrative

Job Narrative
810-73461-1

Receipt

The samples were received on 8/11/2023 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 time was 14.6°C

Receipt Exceptions

The following sample(s) was received at the laboratory outside the required temperature criteria (14.6 degrees Celsius): All samples. There was no cooling media present in the cooler. The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis per JM on 08/11/23.

PFAS

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Detection Summary

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

Client Sample ID: J18 - Rehobeth ARV

Lab Sample ID: 810-73461-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.4		2.0		ng/L	1		533	Total/NA
Perfluoropentanoic acid (PFPeA)	6.7		2.0		ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	5.7		2.0		ng/L	1		533	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.1		2.0		ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	3.2		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.3		2.0		ng/L	1		533	Total/NA

Client Sample ID: T07 - Hwy 74 East Bps

Lab Sample ID: 810-73461-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.1		1.9		ng/L	1		533	Total/NA
Perfluoropentanoic acid (PFPeA)	3.5		1.9		ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	3.0		1.9		ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	2.8		1.9		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.2		1.9		ng/L	1		533	Total/NA

Client Sample ID: NOR - Norwood WTP

Lab Sample ID: 810-73461-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.0		2.0		ng/L	1		533	Total/NA
Perfluoropentanoic acid (PFPeA)	2.7		2.0		ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	2.5		2.0		ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	2.3		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.8		2.0		ng/L	1		533	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

Client Sample ID: J18 - Rehobeth ARV

Lab Sample ID: 810-73461-1

Date Collected: 08/10/23 08:14

Matrix: Drinking Water

Date Received: 08/11/23 09:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	4.4		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluoropentanoic acid (PFPeA)	6.7		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluorohexanoic acid (PFHxA)	5.7		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluoroheptanoic acid (PFHpA)	2.1		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluorooctanoic acid (PFOA)	3.2		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluorooctanesulfonic acid (PFOS)	2.3		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluoro(4-methoxybutanoic acid)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1
Perfluoro-3,6-dioxaheptanoic acid	<2.0		2.0		ng/L		08/28/23 09:04	08/29/23 07:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	123		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C5 PFPeA	121		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C5 PFHxA	118		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C4 PFHpA	120		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C8 PFOA	125		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C9 PFNA	128		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C6 PFDA	125		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C7 PFUnA	121		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C2 PFDoA	113		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C3 HFPO-DA	121		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C3 PFBS	123		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C8 PFOS	126		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C2-4:2-FTS	118		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C2-6:2-FTS	123		50 - 200	08/28/23 09:04	08/29/23 07:52	1

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

Client Sample ID: J18 - Rehobeth ARV

Lab Sample ID: 810-73461-1

Date Collected: 08/10/23 08:14

Matrix: Drinking Water

Date Received: 08/11/23 09:15

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2-8:2-FTS	131		50 - 200	08/28/23 09:04	08/29/23 07:52	1
13C3 PFHxS	121		50 - 200	08/28/23 09:04	08/29/23 07:52	1

Client Sample ID: T07 - Hwy 74 East Bps

Lab Sample ID: 810-73461-2

Date Collected: 08/10/23 09:13

Matrix: Drinking Water

Date Received: 08/11/23 09:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.1		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluoropentanoic acid (PFPeA)	3.5		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluorohexanoic acid (PFHxA)	3.0		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluorooctanoic acid (PFOA)	2.8		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluorononanoic acid (PFNA)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluorooctanesulfonic acid (PFOS)	4.2		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluoro(4-methoxybutanoic acid)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1
Perfluoro-3,6-dioxaheptanoic acid	<1.9		1.9		ng/L		08/29/23 06:38	08/29/23 17:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	127		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C5 PFPeA	123		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C5 PFHxA	121		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C4 PFHpA	122		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C8 PFOA	129		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C9 PFNA	133		50 - 200	08/29/23 06:38	08/29/23 17:51	1

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Client Sample Results

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

Client Sample ID: T07 - Hwy 74 East Bps

Lab Sample ID: 810-73461-2

Date Collected: 08/10/23 09:13

Matrix: Drinking Water

Date Received: 08/11/23 09:15

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C6 PFDA	130		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C7 PFUnA	126		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C2 PFDoA	115		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C3 HFPO-DA	118		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C3 PFBS	121		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C8 PFOS	127		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C2-4:2-FTS	118		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C2-6:2-FTS	132		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C2-8:2-FTS	136		50 - 200	08/29/23 06:38	08/29/23 17:51	1
13C3 PFHxS	125		50 - 200	08/29/23 06:38	08/29/23 17:51	1

Client Sample ID: NOR - Norwood WTP

Lab Sample ID: 810-73461-3

Date Collected: 08/10/23 10:10

Matrix: Drinking Water

Date Received: 08/11/23 09:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluoropentanoic acid (PFPeA)	2.7		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluorohexanoic acid (PFHxA)	2.5		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluorooctanoic acid (PFOA)	2.3		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluorooctanesulfonic acid (PFOS)	3.8		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluoro(4-methoxybutanoic acid)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Union County Water
 Project/Site: PFAS - 533

Job ID: 810-73461-1

Client Sample ID: NOR - Norwood WTP

Lab Sample ID: 810-73461-3

Date Collected: 08/10/23 10:10

Matrix: Drinking Water

Date Received: 08/11/23 09:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3,6-dioxaheptanoic acid	<2.0		2.0		ng/L		08/29/23 06:38	08/29/23 18:05	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	133		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C5 PFPeA	127		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C5 PFHxA	115		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C4 PFHpA	117		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C8 PFOA	122		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C9 PFNA	124		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C6 PFDA	116		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C7 PFUnA	102		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C2 PFDoA	88		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C3 HFPO-DA	116		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C3 PFBS	127		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C8 PFOS	130		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C2-4:2-FTS	122		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C2-6:2-FTS	139		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C2-8:2-FTS	140		50 - 200				08/29/23 06:38	08/29/23 18:05	1
13C3 PFHxS	128		50 - 200				08/29/23 06:38	08/29/23 18:05	1

Isotope Dilution Summary

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

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)
810-73461-1	J18 - Rehobeth ARV	123	121	118	120	125	128	125	121
810-73461-2	T07 - Hwy 74 East Bps	127	123	121	122	129	133	130	126
810-73461-3	NOR - Norwood WTP	133	127	115	117	122	124	116	102
LCS 810-71386/3-A	Lab Control Sample	119	116	122	125	124	120	124	123
LLCS 810-71386/2-A	Lab Control Sample	118	115	118	119	125	124	121	115
LLCS 810-71550/2-A	Lab Control Sample	121	117	120	120	124	126	122	118
MBL 810-71386/1-A	Method Blank	107	108	111	115	112	119	110	107
MBL 810-71550/1-A	Method Blank	117	114	118	120	123	124	118	116

		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)
810-73461-1	J18 - Rehobeth ARV	113	121	123	126	118	123	131	121
810-73461-2	T07 - Hwy 74 East Bps	115	118	121	127	118	132	136	125
810-73461-3	NOR - Norwood WTP	88	116	127	130	122	139	140	128
LCS 810-71386/3-A	Lab Control Sample	116	125	124	125	130	136	130	124
LLCS 810-71386/2-A	Lab Control Sample	104	114	124	123	112	118	130	123
LLCS 810-71550/2-A	Lab Control Sample	106	114	129	130	112	131	135	128
MBL 810-71386/1-A	Method Blank	100	110	121	123	110	118	125	121
MBL 810-71550/1-A	Method Blank	108	113	128	130	116	133	136	129

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

QC Sample Results

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

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

Lab Sample ID: MBL 810-71386/1-A
Matrix: Drinking Water
Analysis Batch: 71435

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 71386

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.52		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluorohexanoic acid (PFHxA)	<0.42		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluoroheptanoic acid (PFHpA)	<0.40		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluorononanoic acid (PFNA)	<0.38		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluorodecanoic acid (PFDA)	<0.36		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluoroundecanoic acid (PFUnA)	<0.38		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluorododecanoic acid (PFDoA)	<0.35		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluorobutanesulfonic acid (PFBS)	<0.42		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluoropentanesulfonic acid (PFPeS)	<0.37		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluorohexanesulfonic acid (PFHxS)	<0.39		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.44		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluorooctanesulfonic acid (PFOS)	<0.39		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.45		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.56		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.68		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.57		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.53		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<0.45		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<0.51		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluoro(4-methoxybutanoic acid)	<0.35		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.32		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1
Perfluoro-3,6-dioxaheptanoic acid	<0.93		2.0		ng/L		08/28/23 09:04	08/29/23 02:26	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	107		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C5 PFPeA	108		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C5 PFHxA	111		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C4 PFHpA	115		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C8 PFOA	112		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C9 PFNA	119		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C6 PFDA	110		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C7 PFUnA	107		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C2 PFDoA	100		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C3 HFPO-DA	110		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C3 PFBS	121		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C8 PFOS	123		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C2-4:2-FTS	110		50 - 200	08/28/23 09:04	08/29/23 02:26	1

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QC Sample Results

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

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

Lab Sample ID: MBL 810-71386/1-A
Matrix: Drinking Water
Analysis Batch: 71435

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 71386

Isotope Dilution	MBL MBL		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2-6:2-FTS	118		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C2-8:2-FTS	125		50 - 200	08/28/23 09:04	08/29/23 02:26	1
13C3 PFHxS	121		50 - 200	08/28/23 09:04	08/29/23 02:26	1

Lab Sample ID: LCS 810-71386/3-A
Matrix: Drinking Water
Analysis Batch: 71435

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71386

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	400	355		ng/L		89	70 - 130
Perfluorohexanoic acid (PFHxA)	400	353		ng/L		88	70 - 130
Perfluoroheptanoic acid (PFHpA)	400	356		ng/L		89	70 - 130
Perfluorooctanoic acid (PFOA)	400	356		ng/L		89	70 - 130
Perfluorononanoic acid (PFNA)	400	359		ng/L		90	70 - 130
Perfluorodecanoic acid (PFDA)	400	347		ng/L		87	70 - 130
Perfluoroundecanoic acid (PFUnA)	400	347		ng/L		87	70 - 130
Perfluorododecanoic acid (PFDoA)	400	359		ng/L		90	70 - 130
Perfluorobutanesulfonic acid (PFBS)	355	312		ng/L		88	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	376	332		ng/L		88	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	365	333		ng/L		91	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	382	333		ng/L		87	70 - 130
Perfluorooctanesulfonic acid (PFOS)	371	332		ng/L		90	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	357	303		ng/L		85	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	375	343		ng/L		91	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	381	337		ng/L		89	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	384	350		ng/L		91	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	400	353		ng/L		88	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	378	322		ng/L		85	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	374	327		ng/L		88	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	378	323		ng/L		86	70 - 130
Perfluoro(4-methoxybutanoic acid)	400	357		ng/L		89	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	400	341		ng/L		85	70 - 130
Perfluoro-3,6-dioxaheptanoic acid	400	345		ng/L		86	70 - 130

QC Sample Results

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

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

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	119		50 - 200
13C5 PFPeA	116		50 - 200
13C5 PFHxA	122		50 - 200
13C4 PFHpA	125		50 - 200
13C8 PFOA	124		50 - 200
13C9 PFNA	120		50 - 200
13C6 PFDA	124		50 - 200
13C7 PFUnA	123		50 - 200
13C2 PFDoA	116		50 - 200
13C3 HFPO-DA	125		50 - 200
13C3 PFBS	124		50 - 200
13C8 PFOS	125		50 - 200
13C2-4:2-FTS	130		50 - 200
13C2-6:2-FTS	136		50 - 200
13C2-8:2-FTS	130		50 - 200
13C3 PFHxS	124		50 - 200

Lab Sample ID: LLCS 810-71386/2-A

Matrix: Drinking Water

Analysis Batch: 71435

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 71386

Analyte	Spike Added	LLCS	LLCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Perfluorobutanoic acid (PFBA)	2.00	1.99	J	ng/L		99	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.05		ng/L		103	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.02		ng/L		101	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.03		ng/L		101	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.02		ng/L		101	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.14		ng/L		107	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.25		ng/L		113	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.54		ng/L		127	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.80		ng/L		140	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.78	1.69	J	ng/L		95	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	1.88	1.76	J	ng/L		94	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	1.78	J	ng/L		97	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	1.91	1.81	J	ng/L		95	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.86	1.97	J	ng/L		106	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	1.78	2.41		ng/L		135	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	1.88	2.05		ng/L		109	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	1.90	2.27		ng/L		119	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	1.92	2.37		ng/L		124	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	1.96	J	ng/L		98	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	1.91	J	ng/L		101	50 - 150

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

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

Lab Sample ID: LLCS 810-71386/2-A

Matrix: Drinking Water

Analysis Batch: 71435

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 71386

Analyte	Spike Added	LLCS	LLCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
9-Chlorohexadecafluoro-3-oxan onane-1-sulfonic acid	1.87	1.91	J	ng/L		102	50 - 150
11-Chloroeicosfluoro-3-oxaund ecane-1-sulfonic acid	1.89	2.55		ng/L		135	50 - 150
Perfluoro(4-methoxybutanoic acid)	2.00	1.92	J	ng/L		96	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	1.94	J	ng/L		97	50 - 150
Perfluoro-3,6-dioxaheptanoic acid	2.00	2.00		ng/L		100	50 - 150

Isotope Dilution	LLCS	LLCS	Limits
	%Recovery	Qualifier	
13C4 PFBA	118		50 - 200
13C5 PFPeA	115		50 - 200
13C5 PFHxA	118		50 - 200
13C4 PFHpA	119		50 - 200
13C8 PFOA	125		50 - 200
13C9 PFNA	124		50 - 200
13C6 PFDA	121		50 - 200
13C7 PFUnA	115		50 - 200
13C2 PFDoA	104		50 - 200
13C3 HFPO-DA	114		50 - 200
13C3 PFBS	124		50 - 200
13C8 PFOS	123		50 - 200
13C2-4:2-FTS	112		50 - 200
13C2-6:2-FTS	118		50 - 200
13C2-8:2-FTS	130		50 - 200
13C3 PFHxS	123		50 - 200

Lab Sample ID: MBL 810-71550/1-A

Matrix: Drinking Water

Analysis Batch: 71651

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 71550

Analyte	MBL	MBL	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<0.52		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluoropentanoic acid (PFPeA)	<0.38		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluorohexanoic acid (PFHxA)	<0.42		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluoroheptanoic acid (PFHpA)	<0.40		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluorononanoic acid (PFNA)	<0.38		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluorodecanoic acid (PFDA)	<0.36		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluoroundecanoic acid (PFUnA)	<0.38		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluorododecanoic acid (PFDoA)	<0.35		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluorobutanesulfonic acid (PFBS)	<0.42		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluoropentanesulfonic acid (PFPeS)	<0.37		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluorohexanesulfonic acid (PFHxS)	<0.39		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluoroheptanesulfonic acid (PFHpS)	<0.44		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	
Perfluorooctanesulfonic acid (PFOS)	<0.39		2.0		ng/L	08/29/23 06:38	08/29/23 14:27	1	

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QC Sample Results

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

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

Lab Sample ID: MBL 810-71550/1-A

Matrix: Drinking Water

Analysis Batch: 71651

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 71550

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.45		2.0		ng/L		08/29/23 06:38	08/29/23 14:27	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.56		2.0		ng/L		08/29/23 06:38	08/29/23 14:27	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.68		2.0		ng/L		08/29/23 06:38	08/29/23 14:27	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.57		2.0		ng/L		08/29/23 06:38	08/29/23 14:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.53		2.0		ng/L		08/29/23 06:38	08/29/23 14:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0		ng/L		08/29/23 06:38	08/29/23 14:27	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<0.45		2.0		ng/L		08/29/23 06:38	08/29/23 14:27	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<0.51		2.0		ng/L		08/29/23 06:38	08/29/23 14:27	1
Perfluoro(4-methoxybutanoic acid)	<0.35		2.0		ng/L		08/29/23 06:38	08/29/23 14:27	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.32		2.0		ng/L		08/29/23 06:38	08/29/23 14:27	1
Perfluoro-3,6-dioxaheptanoic acid	<0.93		2.0		ng/L		08/29/23 06:38	08/29/23 14:27	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	117		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C5 PFPeA	114		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C5 PFHxA	118		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C4 PFHpA	120		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C8 PFOA	123		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C9 PFNA	124		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C6 PFDA	118		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C7 PFUnA	116		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C2 PFDoA	108		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C3 HFPO-DA	113		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C3 PFBS	128		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C8 PFOS	130		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C2-4:2-FTS	116		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C2-6:2-FTS	133		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C2-8:2-FTS	136		50 - 200	08/29/23 06:38	08/29/23 14:27	1
13C3 PFHxS	129		50 - 200	08/29/23 06:38	08/29/23 14:27	1

Lab Sample ID: LLCS 810-71550/2-A

Matrix: Drinking Water

Analysis Batch: 71651

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 71550

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	2.00	1.85	J	ng/L		93	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	1.95	J	ng/L		98	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	1.90	J	ng/L		95	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	1.88	J	ng/L		94	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	1.88	J	ng/L		94	50 - 150
Perfluorononanoic acid (PFNA)	2.00	1.90	J	ng/L		95	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	1.89	J	ng/L		95	50 - 150

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

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

Lab Sample ID: LLCS 810-71550/2-A
Matrix: Drinking Water
Analysis Batch: 71651

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71550

Analyte	Spike Added	LLCS	LLCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Perfluoroundecanoic acid (PFUnA)	2.00	1.87	J	ng/L		94	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	1.91	J	ng/L		96	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.78	1.60	J	ng/L		90	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	1.88	1.67	J	ng/L		89	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	1.66	J	ng/L		91	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	1.91	1.67	J	ng/L		88	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.86	1.67	J	ng/L		90	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	1.78	2.12		ng/L		119	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	1.88	2.09		ng/L		111	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	1.90	2.02		ng/L		106	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	1.92	1.96	J	ng/L		102	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	1.84	J	ng/L		92	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	1.75	J	ng/L		93	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.87	1.77	J	ng/L		95	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.89	1.71	J	ng/L		91	50 - 150
Perfluoro(4-methoxybutanoic acid)	2.00	1.86	J	ng/L		93	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	1.86	J	ng/L		93	50 - 150
Perfluoro-3,6-dioxaheptanoic acid	2.00	1.77	J	ng/L		88	50 - 150

Isotope Dilution	LLCS	LLCS	Limits
	%Recovery	Qualifier	
13C4 PFBA	121		50 - 200
13C5 PFPeA	117		50 - 200
13C5 PFHxA	120		50 - 200
13C4 PFHpA	120		50 - 200
13C8 PFOA	124		50 - 200
13C9 PFNA	126		50 - 200
13C6 PFDA	122		50 - 200
13C7 PFUnA	118		50 - 200
13C2 PFDoA	106		50 - 200
13C3 HFPO-DA	114		50 - 200
13C3 PFBS	129		50 - 200
13C8 PFOS	130		50 - 200
13C2-4:2-FTS	112		50 - 200
13C2-6:2-FTS	131		50 - 200
13C2-8:2-FTS	135		50 - 200

QC Sample Results

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

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

Lab Sample ID: LLCS 810-71550/2-A
Matrix: Drinking Water
Analysis Batch: 71651

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71550

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>LLCS LLCS</i> <i>Qualifier</i>	<i>Limits</i>
<i>¹³C3 PFHxS</i>	128		50 - 200

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QC Association Summary

Client: Union County Water
 Project/Site: PFAS - 533

Job ID: 810-73461-1

LCMS

Prep Batch: 71386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-73461-1	J18 - Rehobeth ARV	Total/NA	Drinking Water	533	
MBL 810-71386/1-A	Method Blank	Total/NA	Drinking Water	533	
LCS 810-71386/3-A	Lab Control Sample	Total/NA	Drinking Water	533	
LLCS 810-71386/2-A	Lab Control Sample	Total/NA	Drinking Water	533	

Analysis Batch: 71435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-73461-1	J18 - Rehobeth ARV	Total/NA	Drinking Water	533	71386
MBL 810-71386/1-A	Method Blank	Total/NA	Drinking Water	533	71386
LCS 810-71386/3-A	Lab Control Sample	Total/NA	Drinking Water	533	71386
LLCS 810-71386/2-A	Lab Control Sample	Total/NA	Drinking Water	533	71386

Prep Batch: 71550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-73461-2	T07 - Hwy 74 East Bps	Total/NA	Drinking Water	533	
810-73461-3	NOR - Norwood WTP	Total/NA	Drinking Water	533	
MBL 810-71550/1-A	Method Blank	Total/NA	Drinking Water	533	
LLCS 810-71550/2-A	Lab Control Sample	Total/NA	Drinking Water	533	

Analysis Batch: 71651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-73461-2	T07 - Hwy 74 East Bps	Total/NA	Drinking Water	533	71550
810-73461-3	NOR - Norwood WTP	Total/NA	Drinking Water	533	71550
MBL 810-71550/1-A	Method Blank	Total/NA	Drinking Water	533	71550
LLCS 810-71550/2-A	Lab Control Sample	Total/NA	Drinking Water	533	71550

Lab Chronicle

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

Client Sample ID: J18 - Rehobeth ARV

Lab Sample ID: 810-73461-1

Date Collected: 08/10/23 08:14

Matrix: Drinking Water

Date Received: 08/11/23 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			71386	TK	EA SB	08/28/23 09:04
Total/NA	Analysis	533		1	71435	KB	EA SB	08/29/23 07:52

Client Sample ID: T07 - Hwy 74 East Bps

Lab Sample ID: 810-73461-2

Date Collected: 08/10/23 09:13

Matrix: Drinking Water

Date Received: 08/11/23 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			71550	TK	EA SB	08/29/23 06:38
Total/NA	Analysis	533		1	71651	KB	EA SB	08/29/23 17:51

Client Sample ID: NOR - Norwood WTP

Lab Sample ID: 810-73461-3

Date Collected: 08/10/23 10:10

Matrix: Drinking Water

Date Received: 08/11/23 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			71550	TK	EA SB	08/29/23 06:38
Total/NA	Analysis	533		1	71651	KB	EA SB	08/29/23 18:05

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: Union County Water
 Project/Site: PFAS - 533

Job ID: 810-73461-1

Laboratory: Eurofins Eaton Analytical South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
North Carolina (DW)	State	18700	07-31-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
533	533	Drinking Water	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid
533	533	Drinking Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
533	533	Drinking Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
533	533	Drinking Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
533	533	Drinking Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)
533	533	Drinking Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)
533	533	Drinking Water	Perfluoro(4-methoxybutanoic acid)
533	533	Drinking Water	Perfluoro-3,6-dioxaheptanoic acid
533	533	Drinking Water	Perfluoro-3-methoxypropanoic acid (PFMPA)
533	533	Drinking Water	Perfluorobutanesulfonic acid (PFBS)
533	533	Drinking Water	Perfluorobutanoic acid (PFBA)
533	533	Drinking Water	Perfluorodecanoic acid (PFDA)
533	533	Drinking Water	Perfluorododecanoic acid (PFDoA)
533	533	Drinking Water	Perfluoroheptanesulfonic acid (PFHpS)
533	533	Drinking Water	Perfluoroheptanoic acid (PFHpA)
533	533	Drinking Water	Perfluorohexanesulfonic acid (PFHxS)
533	533	Drinking Water	Perfluorohexanoic acid (PFHxA)
533	533	Drinking Water	Perfluorononanoic acid (PFNA)
533	533	Drinking Water	Perfluorooctanesulfonic acid (PFOS)
533	533	Drinking Water	Perfluorooctanoic acid (PFOA)
533	533	Drinking Water	Perfluoropentanesulfonic acid (PFPeS)
533	533	Drinking Water	Perfluoropentanoic acid (PFPeA)
533	533	Drinking Water	Perfluoroundecanoic acid (PFUnA)

Method Summary

Client: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

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: Union County Water
Project/Site: PFAS - 533

Job ID: 810-73461-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-73461-1	J18 - Rehobeth ARV	Drinking Water	08/10/23 08:14	08/11/23 09:15
810-73461-2	T07 - Hwy 74 East Bps	Drinking Water	08/10/23 09:13	08/11/23 09:15
810-73461-3	NOR - Norwood WTP	Drinking Water	08/10/23 10:10	08/11/23 09:15

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

Chain of Custody Record

eurofins

Environment Testing



Client Information Client Contact: Justin Huntley Company: Union County Water Address: 500 N Main St. City: Monroe State, Zip: NC, 28112 Phone: 704-289-3307 (Tel) Email: Justin.Huntley@UnionCountyNC.gov Project Name: PFAS - 533 Site:		Sampler: Chris Tye Lab PM: Mattheis, Joe Phone: 980-417-9078 E-Mail: Joe.Mattheis@et.eurofins.com PWSID:		OC No: 10-22202-6174.1 Page: Page 1 of 1 Job #:	
Due Date Requested: TAT Requested (days): Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No PO #: Purchase Order not required WO #:		Analysis Requested Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)			
Sample Identification JTB - Rehobeth ARV TOT - Hwy 74 east bps MOR - Norwood WTP		Sample Date 8/10/23 8/10/23 8/10/23		Sample Time 8:14 AM 9:13 AM 10:10 AM	
Sample Type (C=comp, G=grab) Preservation Code: Matrix (Water, Solid, Other)		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 533 - (MOD) Local Method		Total Number of Containers Special Instructions/Note: Initial Temp: 14.4 Corrected Temp: 14.0 IR Gun # 25 METERED *Rec'd over temp requirements (14.6c). Per JM on 08/11/23, please proceed with analysis per 8/10/23	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)					
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements:					
Empty Kit Relinquished by Relinquished by: Chris Tye Date/Time: 8/10/23 11:19 AM Relinquished by: _____ Date/Time: _____ Relinquished by: _____ Date/Time: _____					
Method of Shipment: Received by: Roman Williams 8/10/23 0915 Date/Time: _____ Received by: _____ Date/Time: _____ Received by: _____ Date/Time: _____					
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:					



Login Sample Receipt Checklist

Client: Union County Water

Job Number: 810-73461-1

Login Number: 73461

List Source: Eurofins Eaton Analytical South Bend

List Number: 1

Creator: Williams, Kameron

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.	False	Water present in cooler; indicates evidence of melted ice.
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
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	

