

ANALYTICAL REPORT

PREPARED FOR

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Union County Water
500 N Main St.
Monroe, North Carolina 28112

Generated 3/18/2024 1:49:11 AM

JOB DESCRIPTION

PFAS - 533

JOB NUMBER

810-96442-1

Eurofins Eaton Analytical South Bend

Job Notes

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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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Definitions/Glossary

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

Job ID: 810-96442-1

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: PFAS - 533

Job ID: 810-96442-1

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Job Narrative 810-96442-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 3/7/2024 9:00 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 0.0°C.

PFAS

Method 533: The pH of the following sample was adjusted to pH 7 in the laboratory:.

Method 533: The pH of the following sample was adjusted to pH 7 in the laboratory.

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

Detection Summary

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

Job ID: 810-96442-1

Client Sample ID: j18-Rehobeth ARV

Lab Sample ID: 810-96442-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.6		1.9		ng/L	1		533	Total/NA
Perfluoropentanoic acid (PFPeA)	5.3		1.9		ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	5.1		1.9		ng/L	1		533	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.9		1.9		ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	3.0		1.9		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.5		1.9		ng/L	1		533	Total/NA

Client Sample ID: Y01 Yadkin Finished Water

Lab Sample ID: 810-96442-2

No Detections.

Client Sample ID: Y02 Yadkin Raw Water

Lab Sample ID: 810-96442-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.0		1.9		ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	2.0		1.9		ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	2.4		1.9		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.8		1.9		ng/L	1		533	Total/NA

This Detection Summary does not include radiochemical test results.

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Client Sample Results

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

Job ID: 810-96442-1

Client Sample ID: j18-Rehobeth ARV

Lab Sample ID: 810-96442-1

Date Collected: 03/06/24 10:55

Matrix: Drinking Water

Date Received: 03/07/24 09:00

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)	3.6		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluoropentanoic acid (PFPeA)	5.3		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluorohexanoic acid (PFHxA)	5.1		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluoroheptanoic acid (PFHpA)	1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluorooctanoic acid (PFOA)	3.0		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluorononanoic acid (PFNA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluoroheptanesulfonic acid (PFHxS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluorooctanesulfonic acid (PFOS)	2.5		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluoro(4-methoxybutanoic acid)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1
Perfluoro-3,6-dioxaheptanoic acid	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	124		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C5 PFPeA	141		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C5 PFHxA	119		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C4 PFHpA	111		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C8 PFOA	102		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C9 PFNA	92		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C6 PFDA	79		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C7 PFUnA	73		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C2 PFDoA	67		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C3 HFPO-DA	112		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C3 PFBS	125		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C8 PFOS	124		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C2-4:2-FTS	133		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C2-6:2-FTS	123		50 - 200	03/11/24 08:52	03/12/24 02:25	1

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Client Sample Results

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

Job ID: 810-96442-1

Client Sample ID: j18-Rehobeth ARV

Lab Sample ID: 810-96442-1

Date Collected: 03/06/24 10:55

Matrix: Drinking Water

Date Received: 03/07/24 09:00

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	127		50 - 200	03/11/24 08:52	03/12/24 02:25	1
13C3 PFHxS	122		50 - 200	03/11/24 08:52	03/12/24 02:25	1

Client Sample ID: Y01 Yadkin Finished Water

Lab Sample ID: 810-96442-2

Date Collected: 03/06/24 11:51

Matrix: Drinking Water

Date Received: 03/07/24 09:00

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)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluoropentanoic acid (PFPeA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluorononanoic acid (PFNA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluorooctanesulfonic acid (PFOS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluoro(4-methoxybutanoic acid)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Perfluoro-3,6-dioxaheptanoic acid	<1.9		1.9		ng/L		03/11/24 08:52	03/12/24 02:38	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C4 PFBA	119		50 - 200	03/11/24 08:52	03/12/24 02:38	1			
13C5 PFPeA	119		50 - 200	03/11/24 08:52	03/12/24 02:38	1			
13C5 PFHxA	108		50 - 200	03/11/24 08:52	03/12/24 02:38	1			
13C4 PFHpA	107		50 - 200	03/11/24 08:52	03/12/24 02:38	1			
13C8 PFOA	104		50 - 200	03/11/24 08:52	03/12/24 02:38	1			
13C9 PFNA	100		50 - 200	03/11/24 08:52	03/12/24 02:38	1			

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Client Sample Results

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

Job ID: 810-96442-1

Client Sample ID: Y01 Yadkin Finished Water

Lab Sample ID: 810-96442-2

Date Collected: 03/06/24 11:51

Matrix: Drinking Water

Date Received: 03/07/24 09:00

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C6 PFDA	90		50 - 200	03/11/24 08:52	03/12/24 02:38	1
13C7 PFUnA	87		50 - 200	03/11/24 08:52	03/12/24 02:38	1
13C2 PFDoA	93		50 - 200	03/11/24 08:52	03/12/24 02:38	1
13C3 HFPO-DA	106		50 - 200	03/11/24 08:52	03/12/24 02:38	1
13C3 PFBS	125		50 - 200	03/11/24 08:52	03/12/24 02:38	1
13C8 PFOS	125		50 - 200	03/11/24 08:52	03/12/24 02:38	1
13C2-4:2-FTS	113		50 - 200	03/11/24 08:52	03/12/24 02:38	1
13C2-6:2-FTS	117		50 - 200	03/11/24 08:52	03/12/24 02:38	1
13C2-8:2-FTS	129		50 - 200	03/11/24 08:52	03/12/24 02:38	1
13C3 PFHxS	127		50 - 200	03/11/24 08:52	03/12/24 02:38	1

Client Sample ID: Y02 Yadkin Raw Water

Lab Sample ID: 810-96442-3

Date Collected: 03/06/24 11:57

Matrix: Drinking Water

Date Received: 03/07/24 09:00

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)	2.0		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluoropentanoic acid (PFPeA)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluorohexanoic acid (PFHxA)	2.0		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluorooctanoic acid (PFOA)	2.4		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluorononanoic acid (PFNA)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluorooctanesulfonic acid (PFOS)	3.8		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluoro(4-methoxybutanoic acid)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	1

Eurofins Eaton Analytical South Bend

Client Sample Results

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

Job ID: 810-96442-1

Client Sample ID: Y02 Yadkin Raw Water

Lab Sample ID: 810-96442-3

Date Collected: 03/06/24 11:57

Matrix: Drinking Water

Date Received: 03/07/24 09:00

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	<1.9		1.9		ng/L		03/14/24 09:00	03/15/24 05:41	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	91		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C5 PFPeA	107		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C5 PFHxA	85		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C4 PFHpA	89		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C8 PFOA	85		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C9 PFNA	83		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C6 PFDA	76		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C7 PFUnA	76		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C2 PFDoA	75		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C3 HFPO-DA	82		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C3 PFBS	93		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C8 PFOS	93		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C2-4:2-FTS	117		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C2-6:2-FTS	100		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C2-8:2-FTS	102		50 - 200				03/14/24 09:00	03/15/24 05:41	1
13C3 PFHxS	92		50 - 200				03/14/24 09:00	03/15/24 05:41	1

Isotope Dilution Summary

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

Job ID: 810-96442-1

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)
810-96442-1	j18-Rehobeth ARV	124	141	119	111	102	92	79	73
810-96442-2	Y01 Yadkin Finished Water	119	119	108	107	104	100	90	87
810-96442-3	Y02 Yadkin Raw Water	91	107	85	89	85	83	76	76
LCS 810-92162/3-A	Lab Control Sample	57	59	57	59	61	61	65	72
LLCS 810-91603/2-A	Lab Control Sample	85	82	76	74	67	56	53	64
LLCS 810-92162/2-A	Lab Control Sample	80	82	75	76	85	84	79	80
MBL 810-91603/1-A	Method Blank	93	93	94	94	98	101	97	100
MBL 810-92162/1-A	Method Blank	74	74	68	72	76	76	74	76

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)
810-96442-1	j18-Rehobeth ARV	67	112	125	124	133	123	127	122
810-96442-2	Y01 Yadkin Finished Water	93	106	125	125	113	117	129	127
810-96442-3	Y02 Yadkin Raw Water	75	82	93	93	117	100	102	92
LCS 810-92162/3-A	Lab Control Sample	77	55	89	89	91	99	100	89
LLCS 810-91603/2-A	Lab Control Sample	79	73	119	122	106	111	123	121
LLCS 810-92162/2-A	Lab Control Sample	79	72	88	89	79	91	95	87
MBL 810-91603/1-A	Method Blank	104	89	118	119	103	111	119	118
MBL 810-92162/1-A	Method Blank	76	65	88	91	79	90	96	91

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: 810-96442-1

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

Lab Sample ID: MBL 810-91603/1-A
Matrix: Drinking Water
Analysis Batch: 91687

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 91603

Analyte	MBL	MBL	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<0.52		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluorohexanoic acid (PFHxA)	<0.42		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluoroheptanoic acid (PFHpA)	<0.40		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluorononanoic acid (PFNA)	<0.38		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluorodecanoic acid (PFDA)	<0.36		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluoroundecanoic acid (PFUnA)	<0.38		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluorododecanoic acid (PFDoA)	<0.35		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluorobutanesulfonic acid (PFBS)	<0.42		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluoropentanesulfonic acid (PFPeS)	<0.37		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluorohexanesulfonic acid (PFHxS)	<0.39		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.44		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluorooctanesulfonic acid (PFOS)	<0.39		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.45		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.56		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.68		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.57		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.53		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<0.45		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<0.51		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluoro(4-methoxybutanoic acid)	<0.35		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.32		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1
Perfluoro-3,6-dioxaheptanoic acid	<0.93		2.0		ng/L		03/11/24 08:52	03/11/24 21:12	1

Isotope Dilution	MBL	MBL	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA	93		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C5 PFPeA	93		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C5 PFHxA	94		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C4 PFHpA	94		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C8 PFOA	98		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C9 PFNA	101		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C6 PFDA	97		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C7 PFUnA	100		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C2 PFDoA	104		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C3 HFPO-DA	89		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C3 PFBS	118		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C8 PFOS	119		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C2-4:2-FTS	103		50 - 200	03/11/24 08:52	03/11/24 21:12	1

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QC Sample Results

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

Job ID: 810-96442-1

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

Lab Sample ID: MBL 810-91603/1-A
Matrix: Drinking Water
Analysis Batch: 91687

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 91603

Isotope Dilution	MBL MBL		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2-6:2-FTS	111		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C2-8:2-FTS	119		50 - 200	03/11/24 08:52	03/11/24 21:12	1
13C3 PFHxS	118		50 - 200	03/11/24 08:52	03/11/24 21:12	1

Lab Sample ID: LLCS 810-91603/2-A
Matrix: Drinking Water
Analysis Batch: 91687

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 91603

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	2.00	2.41		ng/L		121	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.46		ng/L		123	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.53		ng/L		126	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.40		ng/L		120	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.52		ng/L		126	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.52		ng/L		126	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.54		ng/L		127	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.76		ng/L		138	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.78	2.04		ng/L		115	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	1.88	2.15		ng/L		114	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	2.09		ng/L		114	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	1.91	2.13		ng/L		111	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.86	2.29		ng/L		123	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	1.78	2.24		ng/L		125	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	1.88	2.51		ng/L		134	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	1.90	2.54		ng/L		134	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	1.92	2.61		ng/L		136	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	2.36		ng/L		118	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	2.19		ng/L		116	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.87	2.23		ng/L		119	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.89	2.48		ng/L		131	50 - 150
Perfluoro(4-methoxybutanoic acid)	2.00	2.30		ng/L		115	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	2.30		ng/L		115	50 - 150
Perfluoro-3,6-dioxaheptanoic acid	2.00	2.37		ng/L		118	50 - 150

QC Sample Results

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

Job ID: 810-96442-1

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

Isotope Dilution	LLCS LLCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	85		50 - 200
13C5 PFPeA	82		50 - 200
13C5 PFHxA	76		50 - 200
13C4 PFHpA	74		50 - 200
13C8 PFOA	67		50 - 200
13C9 PFNA	56		50 - 200
13C6 PFDA	53		50 - 200
13C7 PFUnA	64		50 - 200
13C2 PFDoA	79		50 - 200
13C3 HFPO-DA	73		50 - 200
13C3 PFBS	119		50 - 200
13C8 PFOS	122		50 - 200
13C2-4:2-FTS	106		50 - 200
13C2-6:2-FTS	111		50 - 200
13C2-8:2-FTS	123		50 - 200
13C3 PFHxS	121		50 - 200

Lab Sample ID: MBL 810-92162/1-A
Matrix: Drinking Water
Analysis Batch: 92251

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 92162

Analyte	MBL	MBL	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<0.52		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluorohexanoic acid (PFHxA)	<0.42		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluoroheptanoic acid (PFHpA)	<0.40		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluorononanoic acid (PFNA)	<0.38		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluorodecanoic acid (PFDA)	<0.36		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluoroundecanoic acid (PFUnA)	<0.38		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluorododecanoic acid (PFDoA)	<0.35		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluorobutanesulfonic acid (PFBS)	<0.42		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluoropentanesulfonic acid (PFPeS)	<0.37		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluorohexanesulfonic acid (PFHxS)	<0.39		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.44		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluorooctanesulfonic acid (PFOS)	<0.39		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.45		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.56		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.68		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.57		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.53		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<0.45		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<0.51		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1

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QC Sample Results

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

Job ID: 810-96442-1

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

Lab Sample ID: MBL 810-92162/1-A
Matrix: Drinking Water
Analysis Batch: 92251

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 92162

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(4-methoxybutanoic acid)	<0.35		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.32		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Perfluoro-3,6-dioxahexanoic acid	<0.93		2.0		ng/L		03/14/24 09:00	03/15/24 04:06	1
Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	74		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C5 PFPeA	74		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C5 PFHxA	68		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C4 PFHpA	72		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C8 PFOA	76		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C9 PFNA	76		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C6 PFDA	74		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C7 PFUnA	76		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C2 PFDoA	76		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C3 HFPO-DA	65		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C3 PFBS	88		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C8 PFOS	91		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C2-4:2-FTS	79		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C2-6:2-FTS	90		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C2-8:2-FTS	96		50 - 200				03/14/24 09:00	03/15/24 04:06	1
13C3 PFHxS	91		50 - 200				03/14/24 09:00	03/15/24 04:06	1

Lab Sample ID: LCS 810-92162/3-A
Matrix: Drinking Water
Analysis Batch: 92251

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 92162

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	400	419		ng/L		105	70 - 130
Perfluoropentanoic acid (PFPeA)	400	423		ng/L		106	70 - 130
Perfluorohexanoic acid (PFHxA)	400	416		ng/L		104	70 - 130
Perfluoroheptanoic acid (PFHpA)	400	419		ng/L		105	70 - 130
Perfluorooctanoic acid (PFOA)	400	426		ng/L		106	70 - 130
Perfluorononanoic acid (PFNA)	400	413		ng/L		103	70 - 130
Perfluorodecanoic acid (PFDA)	400	411		ng/L		103	70 - 130
Perfluoroundecanoic acid (PFUnA)	400	417		ng/L		104	70 - 130
Perfluorododecanoic acid (PFDoA)	400	417		ng/L		104	70 - 130
Perfluorobutanesulfonic acid (PFBS)	355	357		ng/L		100	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	376	387		ng/L		103	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	365	384		ng/L		105	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	382	398		ng/L		104	70 - 130
Perfluorooctanesulfonic acid (PFOS)	371	387		ng/L		104	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	357	382		ng/L		107	70 - 130

Eurofins Eaton Analytical South Bend

QC Sample Results

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

Job ID: 810-96442-1

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

Lab Sample ID: LCS 810-92162/3-A
Matrix: Drinking Water
Analysis Batch: 92251

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 92162

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	375	388		ng/L		103	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	381	392		ng/L		103	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	384	385		ng/L		100	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	400	422		ng/L		105	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	378	355		ng/L		94	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	374	364		ng/L		97	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	378	390		ng/L		103	70 - 130
Perfluoro(4-methoxybutanoic acid)	400	406		ng/L		102	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	400	406		ng/L		102	70 - 130
Perfluoro-3,6-dioxaheptanoic acid	400	371		ng/L		93	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	57		50 - 200
13C5 PFPeA	59		50 - 200
13C5 PFHxA	57		50 - 200
13C4 PFHpA	59		50 - 200
13C8 PFOA	61		50 - 200
13C9 PFNA	61		50 - 200
13C6 PFDA	65		50 - 200
13C7 PFUnA	72		50 - 200
13C2 PFDoA	77		50 - 200
13C3 HFPO-DA	55		50 - 200
13C3 PFBS	89		50 - 200
13C8 PFOS	89		50 - 200
13C2-4:2-FTS	91		50 - 200
13C2-6:2-FTS	99		50 - 200
13C2-8:2-FTS	100		50 - 200
13C3 PFHxS	89		50 - 200

Lab Sample ID: LLCS 810-92162/2-A
Matrix: Drinking Water
Analysis Batch: 92251

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 92162

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	2.00	2.09		ng/L		104	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.03		ng/L		101	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.03		ng/L		102	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.03		ng/L		101	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.00		ng/L		100	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.05		ng/L		103	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.07		ng/L		104	50 - 150

Eurofins Eaton Analytical South Bend

QC Sample Results

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

Job ID: 810-96442-1

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

Lab Sample ID: LLCS 810-92162/2-A

Matrix: Drinking Water

Analysis Batch: 92251

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 92162

Analyte	Spike	LLCS	LLCS	Unit	D	%Rec	%Rec Limits
	Added	Result	Qualifier				
Perfluoroundecanoic acid (PFUnA)	2.00	2.06		ng/L		103	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.04		ng/L		102	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.78	1.65	J	ng/L		93	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	1.88	1.76	J	ng/L		93	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	1.75	J	ng/L		96	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	1.91	1.72	J	ng/L		90	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.86	1.81	J	ng/L		98	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	1.78	1.78	J	ng/L		100	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	1.88	2.01		ng/L		107	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	1.90	2.12		ng/L		112	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	1.92	2.07		ng/L		108	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.00	2.02		ng/L		101	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	1.92	J	ng/L		102	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	1.87	1.71	J	ng/L		92	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	1.89	1.79	J	ng/L		95	50 - 150
Perfluoro(4-methoxybutanoic acid)	2.00	1.97	J	ng/L		98	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	1.90	J	ng/L		95	50 - 150
Perfluoro-3,6-dioxaheptanoic acid	2.00	1.85	J	ng/L		93	50 - 150

Isotope Dilution	LLCS	LLCS	Limits
	%Recovery	Qualifier	
13C4 PFBA	80		50 - 200
13C5 PFPeA	82		50 - 200
13C5 PFHxA	75		50 - 200
13C4 PFHpA	76		50 - 200
13C8 PFOA	85		50 - 200
13C9 PFNA	84		50 - 200
13C6 PFDA	79		50 - 200
13C7 PFUnA	80		50 - 200
13C2 PFDoA	79		50 - 200
13C3 HFPO-DA	72		50 - 200
13C3 PFBS	88		50 - 200
13C8 PFOS	89		50 - 200
13C2-4:2-FTS	79		50 - 200
13C2-6:2-FTS	91		50 - 200
13C2-8:2-FTS	95		50 - 200

QC Sample Results

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

Job ID: 810-96442-1

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

Lab Sample ID: LLCS 810-92162/2-A
Matrix: Drinking Water
Analysis Batch: 92251

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 92162

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>LLCS LLCS</i> <i>Qualifier</i>	<i>Limits</i>
<i>¹³C3 PFHxS</i>	87		50 - 200

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QC Association Summary

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

Job ID: 810-96442-1

LCMS

Prep Batch: 91603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-96442-1	j18-Rehobeth ARV	Total/NA	Drinking Water	533	
810-96442-2	Y01 Yadkin Finished Water	Total/NA	Drinking Water	533	
MBL 810-91603/1-A	Method Blank	Total/NA	Drinking Water	533	
LLCS 810-91603/2-A	Lab Control Sample	Total/NA	Drinking Water	533	

Analysis Batch: 91687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-96442-1	j18-Rehobeth ARV	Total/NA	Drinking Water	533	91603
810-96442-2	Y01 Yadkin Finished Water	Total/NA	Drinking Water	533	91603
MBL 810-91603/1-A	Method Blank	Total/NA	Drinking Water	533	91603
LLCS 810-91603/2-A	Lab Control Sample	Total/NA	Drinking Water	533	91603

Prep Batch: 92162

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-96442-3	Y02 Yadkin Raw Water	Total/NA	Drinking Water	533	
MBL 810-92162/1-A	Method Blank	Total/NA	Drinking Water	533	
LCS 810-92162/3-A	Lab Control Sample	Total/NA	Drinking Water	533	
LLCS 810-92162/2-A	Lab Control Sample	Total/NA	Drinking Water	533	

Analysis Batch: 92251

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-96442-3	Y02 Yadkin Raw Water	Total/NA	Drinking Water	533	92162
MBL 810-92162/1-A	Method Blank	Total/NA	Drinking Water	533	92162
LCS 810-92162/3-A	Lab Control Sample	Total/NA	Drinking Water	533	92162
LLCS 810-92162/2-A	Lab Control Sample	Total/NA	Drinking Water	533	92162



Lab Chronicle

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

Job ID: 810-96442-1

Client Sample ID: j18-Rehobeth ARV

Lab Sample ID: 810-96442-1

Date Collected: 03/06/24 10:55

Matrix: Drinking Water

Date Received: 03/07/24 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			91603	LB	EA SB	03/11/24 08:52
Total/NA	Analysis	533		1	91687	KB	EA SB	03/12/24 02:25

Client Sample ID: Y01 Yadkin Finished Water

Lab Sample ID: 810-96442-2

Date Collected: 03/06/24 11:51

Matrix: Drinking Water

Date Received: 03/07/24 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			91603	LB	EA SB	03/11/24 08:52
Total/NA	Analysis	533		1	91687	KB	EA SB	03/12/24 02:38

Client Sample ID: Y02 Yadkin Raw Water

Lab Sample ID: 810-96442-3

Date Collected: 03/06/24 11:57

Matrix: Drinking Water

Date Received: 03/07/24 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			92162	RR	EA SB	03/14/24 09:00
Total/NA	Analysis	533		1	92251	KB	EA SB	03/15/24 05:41

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: 810-96442-1

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-Chloroeicosafluoro-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 (PFEEESA)
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: 810-96442-1

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: 810-96442-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-96442-1	j18-Rehobeth ARV	Drinking Water	03/06/24 10:55	03/07/24 09:00
810-96442-2	Y01 Yadkin Finished Water	Drinking Water	03/06/24 11:51	03/07/24 09:00
810-96442-3	Y02 Yadkin Raw Water	Drinking Water	03/06/24 11:57	03/07/24 09:00

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Eurofins Eaton Analytical South Bend

Chain of Custody Record

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

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:
 Project #: 181004979
 SSO#:

Sampler: Jordan Helms
Phone: 910-269-7728
Lab P.M.: Matthew Joe
E-Mail: Joe.Matthew@eurofins.com
810-96442 COC

Due Date Requested:
TAT Requested (days):
Compliance Project: Yes No
Purchase Order not required:
WO #:
Analysis Requested:
COC No: 810-34241-6174.1
Page: Page 1 of 1
Job #:
Preservation Codes:
 A - HCL M - Hexane
 B - NaOH N - None
 C - Zn Acetate O - As2O2
 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 - EDTA Y - Trizma
 Z - other (specify)

Sample Identification	Sample Date	Sample Time	Sample Type (G=Comp, G=grab)	Matrix (Water, Sewage, Comestible, B-Tissue, A=Air)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform Microbiology (Yes or No)	533 - (MOD) Local Method	Total Number of containers	Special Instructions/Note:
518 - Rehobeth ARV	3/6/24	10:55A	G	Drinking Water		N				
Y01 - Yadin Finished Water	3/6/24	11:51A	G	Drinking Water						
Y02 - Yadin Raw Water	3/6/24	11:57A	G	Drinking Water						
<p>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) _____ Empty Kit Relinquished by: _____ Date: _____ Relinquished by: _____ Date/Time: _____ Company: _____ Relinquished by: _____ Date/Time: _____ Company: _____ Relinquished by: _____ Date/Time: _____ Company: _____ Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No: _____ Cooler Temperature(s) °C and Other Remarks: _____</p>										
<p>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: _____</p>										



Login Sample Receipt Checklist

Client: Union County Water

Job Number: 810-96442-1

Login Number: 96442

List Source: Eurofins Eaton Analytical South Bend

List Number: 1

Creator: Moore, Gary

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	