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ANALYTICAL REPORT

PREPARED FOR

Attn: Junior Honeycutt
Union County Water
500 N Main St.
Monroe, North Carolina 28112

Generated 11/3/2023 1:49:53 AM

JOB DESCRIPTION

Union County Water NC0190413 UCMR5

JOB NUMBER

810-80315-1

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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Definitions/Glossary

Client: Union County Water
Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

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: Union County Water
Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Job ID: 810-80315-1

Laboratory: Eurofins Eaton Analytical South Bend

Narrative

Job Narrative 810-80315-1

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 sample was received on 10/5/2023 9:00 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice.

PFAS

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

Metals

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: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Client Sample ID: Anson County Water Intertie
PWSID Number: NC0190413

Lab Sample ID: 810-80315-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	0.0040		0.0030	ug/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0033		0.0030	ug/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0041		0.0040	ug/L	1		533	Total/NA

Client Sample ID: Anson County Water Intertie
PWSID Number: NC0190413

Lab Sample ID: 810-80315-1FRB

No Detections.

This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Client Sample ID: 810-79438-A-1-B FRB

**Lab Sample ID: 810-79438-A-1-B
FRB**

Date Collected:

Matrix: Drinking Water

Date Received:

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.0005		0.0050	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluoropentanoic acid (PFPeA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluorohexanoic acid (PFHxA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluoroheptanoic acid (PFHpA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluorooctanoic acid (PFOA)	<0.0004		0.0040	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluorononanoic acid (PFNA)	<0.0004		0.0040	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluorodecanoic acid (PFDA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluoroundecanoic acid (PFUnA)	<0.0004		0.0020	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluorododecanoic acid (PFDoA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluorobutanesulfonic acid (PFBS)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluorooctanesulfonic acid (PFOS)	<0.0004		0.0040	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0004		0.0040	ug/L		10/25/23 09:45	10/26/23 22:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0005		0.0050	ug/L		10/25/23 09:45	10/26/23 22:37	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<0.0005		0.0020	ug/L		10/25/23 09:45	10/26/23 22:37	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	<0.0005		0.0050	ug/L		10/25/23 09:45	10/26/23 22:37	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0006		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0007		0.0050	ug/L		10/25/23 09:45	10/26/23 22:37	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0006		0.0050	ug/L		10/25/23 09:45	10/26/23 22:37	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0009		0.0200	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0003		0.0040	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.0005		0.0030	ug/L		10/25/23 09:45	10/26/23 22:37	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	90		50 - 200			10/25/23 09:45	10/26/23 22:37	1
13C4 PFBA	95		50 - 200			10/25/23 09:45	10/26/23 22:37	1
13C3 PFBS	92		50 - 200			10/25/23 09:45	10/26/23 22:37	1
13C5 PFPeA	93		50 - 200			10/25/23 09:45	10/26/23 22:37	1
13C5 PFHxA	93		50 - 200			10/25/23 09:45	10/26/23 22:37	1
13C4 PFHpA	95		50 - 200			10/25/23 09:45	10/26/23 22:37	1
13C8 PFOA	97		50 - 200			10/25/23 09:45	10/26/23 22:37	1
13C9 PFNA	98		50 - 200			10/25/23 09:45	10/26/23 22:37	1
13C6 PFDA	94		50 - 200			10/25/23 09:45	10/26/23 22:37	1
13C7 PFUnA	94		50 - 200			10/25/23 09:45	10/26/23 22:37	1
13C2 PFDoA	93		50 - 200			10/25/23 09:45	10/26/23 22:37	1
13C8 PFOS	94		50 - 200			10/25/23 09:45	10/26/23 22:37	1

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Client Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Client Sample ID: 810-79438-A-1-B FRB

**Lab Sample ID: 810-79438-A-1-B
FRB**

Date Collected:

Matrix: Drinking Water

Date Received:

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 PFHxS	93		50 - 200	10/25/23 09:45	10/26/23 22:37	1
13C2-4:2-FTS	90		50 - 200	10/25/23 09:45	10/26/23 22:37	1
13C2-6:2-FTS	91		50 - 200	10/25/23 09:45	10/26/23 22:37	1
13C2-8:2-FTS	90		50 - 200	10/25/23 09:45	10/26/23 22:37	1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-80315-1

Date Collected: 10/04/23 10:39

Matrix: Drinking Water

Date Received: 10/05/23 09:00

PWSID Number: NC0190413

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.0050		0.0050	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluoropentanoic acid (PFPeA)	0.0040		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluorohexanoic acid (PFHxA)	0.0033		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluoroheptanoic acid (PFHpA)	<0.0030		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluorooctanoic acid (PFOA)	<0.0040		0.0040	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluorononanoic acid (PFNA)	<0.0040		0.0040	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluorodecanoic acid (PFDA)	<0.0030		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluoroundecanoic acid (PFUnA)	<0.0020		0.0020	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluorododecanoic acid (PFDoA)	<0.0030		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0030		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluorobutanesulfonic acid (PFBS)	<0.0030		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0030		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0030		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluorooctanesulfonic acid (PFOS)	0.0041		0.0040	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0040		0.0040	ug/L		10/25/23 09:45	10/26/23 21:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0050		0.0050	ug/L		10/25/23 09:45	10/26/23 21:56	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<0.0020		0.0020	ug/L		10/25/23 09:45	10/26/23 21:56	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	<0.0050		0.0050	ug/L		10/25/23 09:45	10/26/23 21:56	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0030		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0050		0.0050	ug/L		10/25/23 09:45	10/26/23 21:56	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0050		0.0050	ug/L		10/25/23 09:45	10/26/23 21:56	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0200		0.0200	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0040		0.0040	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0030		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.0030		0.0030	ug/L		10/25/23 09:45	10/26/23 21:56	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac		
13C3 HFPO-DA	83		50 - 200	10/25/23 09:45	10/26/23 21:56	1		

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-80315-1

Date Collected: 10/04/23 10:39

Matrix: Drinking Water

Date Received: 10/05/23 09:00

PWSID Number: NC0190413

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	92		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C3 PFBS	93		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C5 PFPeA	93		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C5 PFHxA	90		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C4 PFHpA	93		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C8 PFOA	92		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C9 PFNA	94		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C6 PFDA	91		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C7 PFUnA	91		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C2 PFDoA	88		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C8 PFOS	95		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C3 PFHxS	92		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C2-4:2-FTS	118		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C2-6:2-FTS	105		50 - 200	10/25/23 09:45	10/26/23 21:56	1
13C2-8:2-FTS	96		50 - 200	10/25/23 09:45	10/26/23 21:56	1

Method: EPA 537.1 UCMR5 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.0047		0.0047	ug/L		10/13/23 09:51	10/17/23 01:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.0056		0.0056	ug/L		10/13/23 09:51	10/17/23 01:55	1
Perfluorotetradecanoic acid (PFTA)	<0.0074		0.0074	ug/L		10/13/23 09:51	10/17/23 01:55	1
Perfluorotridecanoic acid (PFTDA)	<0.0065		0.0065	ug/L		10/13/23 09:51	10/17/23 01:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	83		70 - 130	10/13/23 09:51	10/17/23 01:55	1
13C2 PFHxA	84		70 - 130	10/13/23 09:51	10/17/23 01:55	1
13C2 PFDA	88		70 - 130	10/13/23 09:51	10/17/23 01:55	1
13C3 HFPO-DA	79		70 - 130	10/13/23 09:51	10/17/23 01:55	1

Method: EPA 200.7 UCMR5 - Metals (ICP)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	<9.00		9.00	ug/L		10/11/23 14:00	10/16/23 13:53	1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-80315-1FRB

Date Collected: 10/04/23 10:39

Matrix: Drinking Water

Date Received: 10/05/23 09:00

PWSID Number: NC0190413

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.0005		0.0049	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluoropentanoic acid (PFPeA)	<0.0004		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluorohexanoic acid (PFHxA)	<0.0004		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluoroheptanoic acid (PFHpA)	<0.0004		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluorooctanoic acid (PFOA)	<0.0004		0.0039	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluorononanoic acid (PFNA)	<0.0004		0.0039	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluorodecanoic acid (PFDA)	<0.0004		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluoroundecanoic acid (PFUnA)	<0.0004		0.0020	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluorododecanoic acid (PFDoA)	<0.0003		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-80315-1FRB

Date Collected: 10/04/23 10:39

Matrix: Drinking Water

Date Received: 10/05/23 09:00

PWSID Number: NC0190413

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0004		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluorobutanesulfonic acid (PFBS)	<0.0004		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0004		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0004		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluorooctanesulfonic acid (PFOS)	<0.0004		0.0039	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0004		0.0039	ug/L		10/31/23 13:18	11/01/23 23:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0005		0.0049	ug/L		10/31/23 13:18	11/01/23 23:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.0004		0.0020	ug/L		10/31/23 13:18	11/01/23 23:37	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.0005		0.0049	ug/L		10/31/23 13:18	11/01/23 23:37	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0005		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0007		0.0049	ug/L		10/31/23 13:18	11/01/23 23:37	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0006		0.0049	ug/L		10/31/23 13:18	11/01/23 23:37	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0009		0.0196	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0003		0.0039	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0003		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.0004		0.0029	ug/L		10/31/23 13:18	11/01/23 23:37	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	64		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C4 PFBA	70		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C3 PFBS	72		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C5 PFPeA	71		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C5 PFHxA	67		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C4 PFHpA	69		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C8 PFOA	69		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C9 PFNA	73		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C6 PFDA	71		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C7 PFUnA	70		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C2 PFDoA	67		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C8 PFOS	71		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C3 PFHxS	70		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C2-4:2-FTS	63		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C2-6:2-FTS	66		50 - 200			10/31/23 13:18	11/01/23 23:37	1
13C2-8:2-FTS	74		50 - 200			10/31/23 13:18	11/01/23 23:37	1

Surrogate Summary

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Method: 537.1 UCMR5 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		d5NEFOS (70-130)	PFHxA (70-130)	PFDA (70-130)	HFPODA (70-130)
810-80315-1	Anson County Water Intertie	83	84	88	79
LLCS 810-76769/2-A	Lab Control Sample	86	86	87	81
MBL 810-76769/1-A	Method Blank	79	80	79	77

Surrogate Legend

- d5NEFOS = d5-NEtFOSAA
- PFHxA = 13C2 PFHxA
- PFDA = 13C2 PFDA
- HFPODA = 13C3 HFPO-DA



Isotope Dilution Summary

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

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	HFPODA (50-200)	PFBA (50-200)	C3PFBS (50-200)	PFPeA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)
810-79438-A-1-B FRB	FRB	90	95	92	93	93	95	97	98
810-80315-1	Anson County Water Intertie	83	92	93	93	90	93	92	94
810-80315-1FRB	FRB	64	70	72	71	67	69	69	73
LLCS 810-77882/2-A	Lab Control Sample	92	96	95	97	95	98	96	97
LLCS 810-78492/2-A	Lab Control Sample	75	84	83	84	81	80	81	84
MBL 810-77882/1-A	Method Blank	94	98	93	99	97	100	98	97
MBL 810-78492/1-A	Method Blank	78	83	83	86	83	83	85	88

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C6PFDA (50-200)	13C7PUA (50-200)	PFD _o A (50-200)	C8PFOS (50-200)	C3PFHS (50-200)	42FTS (50-200)	62FTS (50-200)	82FTS (50-200)
810-79438-A-1-B FRB	FRB	94	94	93	94	93	90	91	90
810-80315-1	Anson County Water Intertie	91	91	88	95	92	118	105	96
810-80315-1FRB	FRB	71	70	67	71	70	63	66	74
LLCS 810-77882/2-A	Lab Control Sample	90	83	78	94	97	92	95	84
LLCS 810-78492/2-A	Lab Control Sample	79	77	76	81	81	77	83	85
MBL 810-77882/1-A	Method Blank	93	89	82	92	97	91	92	87
MBL 810-78492/1-A	Method Blank	84	81	81	82	82	79	84	83

Surrogate Legend

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

QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

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

Lab Sample ID: MBL 810-77882/1-A
Matrix: Drinking Water
Analysis Batch: 78028

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 77882

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.0005		0.0050	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluoropentanoic acid (PFPeA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluorohexanoic acid (PFHxA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluoroheptanoic acid (PFHpA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluorooctanoic acid (PFOA)	<0.0004		0.0040	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluorononanoic acid (PFNA)	<0.0004		0.0040	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluorodecanoic acid (PFDA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluoroundecanoic acid (PFUnA)	<0.0004		0.0020	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluorododecanoic acid (PFDoA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluorobutanesulfonic acid (PFBS)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluorooctanesulfonic acid (PFOS)	<0.0004		0.0040	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0004		0.0040	ug/L		10/25/23 09:45	10/26/23 16:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0005		0.0050	ug/L		10/25/23 09:45	10/26/23 16:58	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	<0.0005		0.0020	ug/L		10/25/23 09:45	10/26/23 16:58	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	<0.0005		0.0050	ug/L		10/25/23 09:45	10/26/23 16:58	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0006		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0007		0.0050	ug/L		10/25/23 09:45	10/26/23 16:58	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0006		0.0050	ug/L		10/25/23 09:45	10/26/23 16:58	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0009		0.0200	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0003		0.0040	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0004		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<0.0005		0.0030	ug/L		10/25/23 09:45	10/26/23 16:58	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	94		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C4 PFBA	98		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C3 PFBS	93		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C5 PFPeA	99		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C5 PFHxA	97		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C4 PFHpA	100		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C8 PFOA	98		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C9 PFNA	97		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C6 PFDA	93		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C7 PFUnA	89		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C2 PFDoA	82		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C8 PFOS	92		50 - 200	10/25/23 09:45	10/26/23 16:58	1

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

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

Lab Sample ID: MBL 810-77882/1-A
Matrix: Drinking Water
Analysis Batch: 78028

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 77882

Isotope Dilution	MBL MBL		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 PFHxS	97		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C2-4:2-FTS	91		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C2-6:2-FTS	92		50 - 200	10/25/23 09:45	10/26/23 16:58	1
13C2-8:2-FTS	87		50 - 200	10/25/23 09:45	10/26/23 16:58	1

Lab Sample ID: LLCS 810-77882/2-A
Matrix: Drinking Water
Analysis Batch: 78028

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 77882

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	0.00200	0.0019		ug/L		94	50 - 150
Perfluorohexanoic acid (PFHxA)	0.00200	0.0019		ug/L		93	50 - 150
Perfluoroheptanoic acid (PFHpA)	0.00200	0.0018		ug/L		91	50 - 150
Perfluorooctanoic acid (PFOA)	0.00200	0.0019		ug/L		96	50 - 150
Perfluorononanoic acid (PFNA)	0.00200	0.0019		ug/L		95	50 - 150
Perfluorodecanoic acid (PFDA)	0.00200	0.0019		ug/L		95	50 - 150
Perfluoroundecanoic acid (PFUnA)	0.00200	0.0019		ug/L		95	50 - 150
Perfluorododecanoic acid (PFDoA)	0.00200	0.0019		ug/L		95	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.00189	0.0017		ug/L		89	50 - 150
Perfluorobutanesulfonic acid (PFBS)	0.00178	0.0017		ug/L		93	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.00183	0.0016		ug/L		89	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	0.00191	0.0017		ug/L		88	50 - 150
Perfluorooctanesulfonic acid (PFOS)	0.00186	0.0017		ug/L		90	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	0.00188	0.0016		ug/L		86	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0.00200	0.0018		ug/L		92	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0.00187	0.0016		ug/L		85	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0.00189	0.0014		ug/L		76	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0.00188	0.0019		ug/L		102	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0.00190	0.0019		ug/L		97	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0.00192	0.0019		ug/L		100	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.00200	0.0018		ug/L		91	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.00200	0.0019		ug/L		97	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	0.00200	0.0018		ug/L		91	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	0.00178	0.0018		ug/L		99	50 - 150

QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

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

Isotope Dilution	LLCS LLCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	92		50 - 200
13C4 PFBA	96		50 - 200
13C3 PFBS	95		50 - 200
13C5 PFPeA	97		50 - 200
13C5 PFHxA	95		50 - 200
13C4 PFHpA	98		50 - 200
13C8 PFOA	96		50 - 200
13C9 PFNA	97		50 - 200
13C6 PFDA	90		50 - 200
13C7 PFUnA	83		50 - 200
13C2 PFDoA	78		50 - 200
13C8 PFOS	94		50 - 200
13C3 PFHxS	97		50 - 200
13C2-4:2-FTS	92		50 - 200
13C2-6:2-FTS	95		50 - 200
13C2-8:2-FTS	84		50 - 200

Lab Sample ID: MBL 810-78492/1-A
Matrix: Drinking Water
Analysis Batch: 78615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 78492

Analyte	MBL	MBL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Perfluorobutanoic acid (PFBA)	<0.0005		0.0050	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluoropentanoic acid (PFPeA)	<0.0004		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluorohexanoic acid (PFHxA)	<0.0004		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluoroheptanoic acid (PFHpA)	<0.0004		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluorooctanoic acid (PFOA)	<0.0004		0.0040	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluorononanoic acid (PFNA)	<0.0004		0.0040	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluorodecanoic acid (PFDA)	<0.0004		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluoroundecanoic acid (PFUnA)	<0.0004		0.0020	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluorododecanoic acid (PFDoA)	<0.0004		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.0004		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluorobutanesulfonic acid (PFBS)	<0.0004		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluorohexanesulfonic acid (PFHxS)	<0.0004		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.0004		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluorooctanesulfonic acid (PFOS)	<0.0004		0.0040	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluoropentanesulfonic acid (PFPeS)	<0.0004		0.0040	ug/L		10/31/23 13:18	11/01/23 18:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<0.0005		0.0050	ug/L		10/31/23 13:18	11/01/23 18:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	<0.0005		0.0020	ug/L		10/31/23 13:18	11/01/23 18:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	<0.0005		0.0050	ug/L		10/31/23 13:18	11/01/23 18:11	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.0006		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.0007		0.0050	ug/L		10/31/23 13:18	11/01/23 18:11	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.0006		0.0050	ug/L		10/31/23 13:18	11/01/23 18:11	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.0009		0.0200	ug/L		10/31/23 13:18	11/01/23 18:11	1

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QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

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

Lab Sample ID: MBL 810-78492/1-A
Matrix: Drinking Water
Analysis Batch: 78615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 78492

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.0003		0.0040	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.0004		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<0.0005		0.0030	ug/L		10/31/23 13:18	11/01/23 18:11	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	78		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C4 PFBA	83		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C3 PFBS	83		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C5 PFPeA	86		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C5 PFHxA	83		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C4 PFHpA	83		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C8 PFOA	85		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C9 PFNA	88		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C6 PFDA	84		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C7 PFUnA	81		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C2 PFDoA	81		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C8 PFOS	82		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C3 PFHxS	82		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C2-4:2-FTS	79		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C2-6:2-FTS	84		50 - 200	10/31/23 13:18	11/01/23 18:11	1
13C2-8:2-FTS	83		50 - 200	10/31/23 13:18	11/01/23 18:11	1

Lab Sample ID: LLCS 810-78492/2-A
Matrix: Drinking Water
Analysis Batch: 78615

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 78492

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	0.00200	0.0021		ug/L		103	50 - 150
Perfluoropentanoic acid (PFPeA)	0.00200	0.0021		ug/L		106	50 - 150
Perfluorohexanoic acid (PFHxA)	0.00200	0.0020		ug/L		101	50 - 150
Perfluoroheptanoic acid (PFHpA)	0.00200	0.0020		ug/L		102	50 - 150
Perfluorooctanoic acid (PFOA)	0.00200	0.0020		ug/L		102	50 - 150
Perfluorononanoic acid (PFNA)	0.00200	0.0021		ug/L		104	50 - 150
Perfluorodecanoic acid (PFDA)	0.00200	0.0021		ug/L		105	50 - 150
Perfluoroundecanoic acid (PFUnA)	0.00200	0.0021		ug/L		104	50 - 150
Perfluorododecanoic acid (PFDoA)	0.00200	0.0021		ug/L		104	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.00189	0.0020		ug/L		103	50 - 150
Perfluorobutanesulfonic acid (PFBS)	0.00178	0.0017		ug/L		98	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.00183	0.0018		ug/L		98	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	0.00191	0.0019		ug/L		99	50 - 150
Perfluorooctanesulfonic acid (PFOS)	0.00186	0.0019		ug/L		103	50 - 150

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

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

Lab Sample ID: LLCS 810-78492/2-A
Matrix: Drinking Water
Analysis Batch: 78615

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 78492

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanesulfonic acid (PFPeS)	0.00188	0.0019		ug/L		99	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	0.00200	0.0020		ug/L		101	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	0.00187	0.0017		ug/L		91	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	0.00189	0.0018		ug/L		96	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	0.00188	0.0021		ug/L		110	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0.00190	0.0022		ug/L		117	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	0.00192	0.0021		ug/L		108	50 - 150
Nonafluoro-3,6-dioxahheptanoic acid (NFDHA)	0.00200	0.0021		ug/L		103	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.00200	0.0021		ug/L		106	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	0.00200	0.0021		ug/L		103	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEA)	0.00178	0.0019		ug/L		108	50 - 150

Isotope Dilution	LLCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	75		50 - 200
13C4 PFBA	84		50 - 200
13C3 PFBS	83		50 - 200
13C5 PFPeA	84		50 - 200
13C5 PFHxA	81		50 - 200
13C4 PFHpA	80		50 - 200
13C8 PFOA	81		50 - 200
13C9 PFNA	84		50 - 200
13C6 PFDA	79		50 - 200
13C7 PFUnA	77		50 - 200
13C2 PFDoA	76		50 - 200
13C8 PFOS	81		50 - 200
13C3 PFHxS	81		50 - 200
13C2-4:2-FTS	77		50 - 200
13C2-6:2-FTS	83		50 - 200
13C2-8:2-FTS	85		50 - 200

Method: 537.1 UCMR5 - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MBL 810-76769/1-A
Matrix: Drinking Water
Analysis Batch: 76935

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76769

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NETFOSAA)	<0.0005		0.0050	ug/L		10/13/23 09:51	10/16/23 21:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.0006		0.0060	ug/L		10/13/23 09:51	10/16/23 21:36	1

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Method: 537.1 UCMR5 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: MBL 810-76769/1-A
Matrix: Drinking Water
Analysis Batch: 76935

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76769

Analyte	MBL	MBL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Perfluorotetradecanoic acid (PFTA)	<0.0007		0.0080	ug/L		10/13/23 09:51	10/16/23 21:36	1
Perfluorotridecanoic acid (PFTTrDA)	<0.0006		0.0070	ug/L		10/13/23 09:51	10/16/23 21:36	1

Surrogate	MBL	MBL	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
d5-NEtFOSAA	79		70 - 130	10/13/23 09:51	10/16/23 21:36	1
13C2 PFHxA	80		70 - 130	10/13/23 09:51	10/16/23 21:36	1
13C2 PFDA	79		70 - 130	10/13/23 09:51	10/16/23 21:36	1
13C3 HFPO-DA	77		70 - 130	10/13/23 09:51	10/16/23 21:36	1

Lab Sample ID: LLCS 810-76769/2-A
Matrix: Drinking Water
Analysis Batch: 76935

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76769

Analyte	Spike Added	LLCS	LLCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
N-ethylperfluorooctanesulfonami doacetic acid (NEtFOSAA)	0.00200	0.0020		ug/L		99	50 - 150
N-methylperfluorooctanesulfona midoacetic acid (NMeFOSAA)	0.00200	0.0019		ug/L		96	50 - 150
Perfluorotetradecanoic acid (PFTA)	0.00200	0.0020		ug/L		99	50 - 150
Perfluorotridecanoic acid (PFTTrDA)	0.00200	0.0020		ug/L		102	50 - 150

Surrogate	LLCS	LLCS	Limits
	%Recovery	Qualifier	
d5-NEtFOSAA	86		70 - 130
13C2 PFHxA	86		70 - 130
13C2 PFDA	87		70 - 130
13C3 HFPO-DA	81		70 - 130

Method: 200.7 UCMR5 - Metals (ICP)

Lab Sample ID: MBL 810-76543/1-A
Matrix: Drinking Water
Analysis Batch: 76973

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76543

Analyte	MBL	MBL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Lithium	<1.80		9.00	ug/L		10/11/23 14:00	10/16/23 13:16	1

Lab Sample ID: LLCS 810-76543/2-A
Matrix: Drinking Water
Analysis Batch: 76973

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76543

Analyte	Spike Added	LLCS	LLCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Lithium	9.00	9.10		ug/L		101	50 - 150

QC Association Summary

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

LCMS

Prep Batch: 76769

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-80315-1	Anson County Water Intertie	Total/NA	Drinking Water	537.1 DW	
MBL 810-76769/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW	
LLCS 810-76769/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW	

Analysis Batch: 76935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-80315-1	Anson County Water Intertie	Total/NA	Drinking Water	537.1 UCMR5	76769
MBL 810-76769/1-A	Method Blank	Total/NA	Drinking Water	537.1 UCMR5	76769
LLCS 810-76769/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 UCMR5	76769

Prep Batch: 77882

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-79438-A-1-B FRB	FRB	Total/NA	Drinking Water	533	
810-80315-1	Anson County Water Intertie	Total/NA	Drinking Water	533	
MBL 810-77882/1-A	Method Blank	Total/NA	Drinking Water	533	
LLCS 810-77882/2-A	Lab Control Sample	Total/NA	Drinking Water	533	

Analysis Batch: 78028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-79438-A-1-B FRB	FRB	Total/NA	Drinking Water	533	77882
810-80315-1	Anson County Water Intertie	Total/NA	Drinking Water	533	77882
MBL 810-77882/1-A	Method Blank	Total/NA	Drinking Water	533	77882
LLCS 810-77882/2-A	Lab Control Sample	Total/NA	Drinking Water	533	77882

Prep Batch: 78492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-80315-1FRB	FRB	Total/NA	Drinking Water	533	
MBL 810-78492/1-A	Method Blank	Total/NA	Drinking Water	533	
LLCS 810-78492/2-A	Lab Control Sample	Total/NA	Drinking Water	533	

Analysis Batch: 78615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-80315-1FRB	FRB	Total/NA	Drinking Water	533	78492
MBL 810-78492/1-A	Method Blank	Total/NA	Drinking Water	533	78492
LLCS 810-78492/2-A	Lab Control Sample	Total/NA	Drinking Water	533	78492

Metals

Prep Batch: 76543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-80315-1	Anson County Water Intertie	Total/NA	Drinking Water	200.7 UCMR5	
MBL 810-76543/1-A	Method Blank	Total/NA	Drinking Water	200.7 UCMR5	
LLCS 810-76543/2-A	Lab Control Sample	Total/NA	Drinking Water	200.7 UCMR5	

Analysis Batch: 76973

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-80315-1	Anson County Water Intertie	Total/NA	Drinking Water	200.7 UCMR5	76543
MBL 810-76543/1-A	Method Blank	Total/NA	Drinking Water	200.7 UCMR5	76543
LLCS 810-76543/2-A	Lab Control Sample	Total/NA	Drinking Water	200.7 UCMR5	76543

Lab Chronicle

Client: Union County Water
 Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Client Sample ID: Anson County Water Intertie

Lab Sample ID: 810-80315-1

Date Collected: 10/04/23 10:39

Matrix: Drinking Water

Date Received: 10/05/23 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			77882	KB	EA SB	10/25/23 09:45
Total/NA	Analysis	533		1	78028	KB	EA SB	10/26/23 21:56
Total/NA	Prep	537.1 DW			76769	AD	EA SB	10/13/23 09:51
Total/NA	Analysis	537.1 UCMR5		1	76935	MH	EA SB	10/17/23 01:55
Total/NA	Prep	200.7 UCMR5			76543	NB	EA SB	10/11/23 14:00
Total/NA	Analysis	200.7 UCMR5		1	76973	NB	EA SB	10/16/23 13:53

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: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Laboratory: Eurofins Eaton Analytical South Bend

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

Authority	Program	Identification Number	Expiration Date
USEPA UCMR 5	US Federal Programs	IN00035	12-31-25

- 1
- 2
- 3
- 4
- 5
- 6
- 7
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- 9
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- 14
- 15
- 16

Method Summary

Client: Union County Water
Project/Site: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Method	Method Description	Protocol	Laboratory
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA SB
537.1 UCMR5	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA SB
200.7 UCMR5	Metals (ICP)	EPA	EA SB
200.7 UCMR5	Preparation, Total Recoverable Metals	EPA	EA SB
533	Extraction of Perfluorinated and Polyfluorinated Alkyl Acids	EPA	EA SB
537.1 DW	Extraction of Perfluorinated 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: Union County Water NC0190413 UCMR5

Job ID: 810-80315-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
810-80315-1	Anson County Water Intertie	Drinking Water	10/04/23 10:39	10/05/23 09:00	NC0190413
810-80315-1FRB	Anson County Water Intertie	Drinking Water	10/04/23 10:39	10/05/23 09:00	NC0190413

- 1
- 2
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4582

South Bend, IN

110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777; Phone (574) 233-8207

"UCMR 5 Sampling Form for Single Collection Site"

(Separate form is needed for each collection site)



Environment Testing
America

Company Contact: Donald Honeycutt
Company Name: Union County Water
Company Address: 500 N. Main St
Monroe NC 28112
Phone: 704-289-7044
Email: Junior.Honeycutt@unioncountync.gov
Purchase Order:

Lab PM(name):
PM Email:
EEA Project:
PWSID: NC01904B
FacID:
SPID:
FacName:
SPName:
Sampling Event:

Water System Name: Union County Water System
Collection Location: Anson County Water Interstie
Scheduled Collection Date: 10/4/23

Sampler Name (Print): Jordan Helms

Date/Time Sampled: 10/4/23 10:39A

Client Storage temp, if > 2 days from collection:



810-80315 Chain of Custody

AREA BELOW FOR LAB USE ONLY

For UCMR 5 specific criteria see: REC-WI55108 Guidance Document for UCMR 5 Sample Receiving

Method	Type	# Bot	IR Gun#: <u>23</u>		pH* value	Ice: Wet / Blue		Cl (P/A)**	Sample Comments	✓if sample is invalid
			Temp °C (10°C within 2 days of collection, 6°C for > 2 days)	Initial / Corrected		✓if receipt pH acceptable	✓if pH needs adjustment			
200.7	FS	1								
200.7	FS	2				✓				
533	FS	1		<u>8.8 / 8.0</u>						
533	FS	2		<u>/</u>						
533	FS	3		<u>/</u>						
533	FRB	1		<u>9.0 / 8.2</u>						
537.1	FS	1		<u>9.0 / 8.2</u>						
537.1	FS	2		<u>/</u>						
537.1	FS	3		<u>/</u>						
537.1	FRB	1		<u>9.2 / 8.4</u>						

* pH <2 for 200.7. pH 6-8 for 533 & 537.1. Note: 200.7 & 533 pH may be adjusted upon receipt.

** A = Absent if Free Cl <0.1 mg/L; P = Chlorine is present

Received By: Rubine Helms

Date/Time: 10-5-23 9:00 A

Login Sample Receipt Checklist

Client: Union County Water

Job Number: 810-80315-1

Login Number: 80315

List Source: Eurofins Eaton Analytical South Bend

List Number: 1

Creator: Alfred, Robbin

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	