

# ANALYTICAL REPORT

## PREPARED FOR

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## JOB DESCRIPTION

PFAS in DW by EPA 533

## JOB NUMBER

410-172417-1

## 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.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

## Authorization



Authorized for release by  
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## Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
- 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 is 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.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

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# Definitions/Glossary

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
cn	Refer to Case Narrative for further detail
D	The reported value is from a dilution.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
M	Manual integrated compound.

## 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: MN Dept of Military Affairs Facilities Management Office  
Project: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Job ID: 410-172417-1**

**Eurofins Lancaster Laboratories Environment**

## Job Narrative 410-172417-1

### REVISION

The report being provided is a revision of the original report sent on 6/19/2024. The report (revision 2) is being revised due to the client request to provide further explanation regarding the manual integration reason.

### Report revision history

Revision 1 - 6/28/2024 - Reason - reprocess by manual integration of the samples to fix automated integration issues.

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 5/17/2024 9:40 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 3.4°C.

### Receipt Exceptions

The following samples were submitted for analysis; however, they were not listed on the Chain-of-Custody (COC): HASTINGS-FB-01 (410-172417-24) and HASTINGS-01 (410-172417-25). Logged in from the bottles submitted. The client was contacted and provided instructions to analyze these samples.

The Chain-of-Custody (COC) was incomplete as received. The COC is missing the Sample Preservation, Number of containers per sample. This does not meet regulatory requirements. The client was notified and provided instructions to include this information on the COCs going forward. The client submitted 2 ammonium acetate preserved 250 ml plastic bottles for the samples and 1 ammonium acetate preserved 250 ml plastic bottle for each of the field blanks.

### PFAS

Method 533\_DOD5: Sample injection standard peak areas in W-MN-RIPL-022 (410-172417-12) are below the QC limit for both the initial injection and the re-injection. The values here are from the initial injection of the sample.

Method 533\_DOD5: In cases where a manual integration was required for samples: W-MN-RIPL-004 (410-172417-1), W-MN-RIPL-005 (410-172417-2), W-MN-RIPL-003 (410-172417-4), W-MN-RIPL-002 (410-172417-5), W-MN-RIPL-022 (410-172417-12), W-MN-RIPL-008 (410-172417-21), W-MN-RIPL-FD-01 (410-172417-23) and HASTINGS-01 (410-172417-25), it was due to improper baselines, integrations, or peaks chosen by the computer software.

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

# Detection Summary

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Client Sample ID: W-MN-RIPL-004

## Lab Sample ID: 410-172417-1

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.8	M cn	2.6	1.7	0.87	ng/L	1		EPA 533	Total/NA
Perfluoropentanoic acid (PFPeA)	0.90	J cn	1.7	1.3	0.43	ng/L	1		EPA 533	Total/NA
Perfluorohexanoic acid (PFHxA)	0.73	J M cn	1.7	1.3	0.43	ng/L	1		EPA 533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.59	J M cn	1.7	1.3	0.43	ng/L	1		EPA 533	Total/NA

## Client Sample ID: W-MN-RIPL-005

## Lab Sample ID: 410-172417-2

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.9	M cn	2.4	1.6	0.80	ng/L	1		EPA 533	Total/NA
Perfluoropentanoic acid (PFPeA)	0.77	J M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluorohexanoic acid (PFHxA)	0.45	J M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluorooctanoic acid (PFOA)	0.46	J M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.90	J cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.9	M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.92	J M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.79	J M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA

## Client Sample ID: W-MN-RIPL-001

## Lab Sample ID: 410-172417-3

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.4		2.5	1.7	0.84	ng/L	1		EPA 533	Total/NA
Perfluoropentanoic acid (PFPeA)	1.5	J	1.7	1.3	0.42	ng/L	1		EPA 533	Total/NA
Perfluorohexanoic acid (PFHxA)	0.98	J	1.7	1.3	0.42	ng/L	1		EPA 533	Total/NA
Perfluorooctanoic acid (PFOA)	0.66	J	1.7	1.3	0.42	ng/L	1		EPA 533	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.9		1.7	1.3	0.42	ng/L	1		EPA 533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	24		1.7	1.3	0.42	ng/L	1		EPA 533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.8		1.7	1.3	0.42	ng/L	1		EPA 533	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	3.4		1.7	1.3	0.42	ng/L	1		EPA 533	Total/NA

## Client Sample ID: W-MN-RIPL-003

## Lab Sample ID: 410-172417-4

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.9	cn	2.6	1.7	0.85	ng/L	1		EPA 533	Total/NA
Perfluoropentanoic acid (PFPeA)	1.0	J cn	1.7	1.3	0.43	ng/L	1		EPA 533	Total/NA
Perfluorohexanoic acid (PFHxA)	0.72	J M cn	1.7	1.3	0.43	ng/L	1		EPA 533	Total/NA
Perfluorooctanoic acid (PFOA)	0.55	J M cn	1.7	1.3	0.43	ng/L	1		EPA 533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.60	J M cn	1.7	1.3	0.43	ng/L	1		EPA 533	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Environment Testing, LLC

# Detection Summary

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Client Sample ID: W-MN-RIPL-002

Lab Sample ID: 410-172417-5

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.6	cn	2.5	1.6	0.82	ng/L	1		EPA 533	Total/NA

## Client Sample ID: W-MN-RIPL-FB-001

Lab Sample ID: 410-172417-6

No Detections.

## Client Sample ID: W-MN-RIPL-017

Lab Sample ID: 410-172417-7

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.5	J	2.5	1.6	0.82	ng/L	1		EPA 533	Total/NA

## Client Sample ID: W-MN-RIPL-018

Lab Sample ID: 410-172417-8

No Detections.

## Client Sample ID: W-MN-RIPL-019

Lab Sample ID: 410-172417-9

No Detections.

## Client Sample ID: W-MN-RIPL-020

Lab Sample ID: 410-172417-10

No Detections.

## Client Sample ID: W-MN-RIPL-021

Lab Sample ID: 410-172417-11

No Detections.

## Client Sample ID: W-MN-RIPL-022

Lab Sample ID: 410-172417-12

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.4	cn	2.5	1.7	0.85	ng/L	1		EPA 533	Total/NA
Perfluorobutanoic acid (PFBA) - RA	4.5	M cn	2.5	1.7	0.85	ng/L	1		EPA 533	Total/NA

## Client Sample ID: W-MN-RIPL-FB-002

Lab Sample ID: 410-172417-13

No Detections.

## Client Sample ID: W-MN-RIPL-015

Lab Sample ID: 410-172417-14

No Detections.

## Client Sample ID: W-MN-RIPL-014

Lab Sample ID: 410-172417-15

No Detections.

## Client Sample ID: W-MN-RIPL-013

Lab Sample ID: 410-172417-16

No Detections.

## Client Sample ID: W-MN-RIPL-011

Lab Sample ID: 410-172417-17

No Detections.

## Client Sample ID: W-MN-RIPL-012

Lab Sample ID: 410-172417-18

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Environment Testing, LLC



# Detection Summary

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Client Sample ID: W-MN-RIPL-010

## Lab Sample ID: 410-172417-19

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.4	J	2.5	1.6	0.82	ng/L	1		EPA 533	Total/NA
Perfluorononanoic acid (PFNA)	1.1	J	1.6	1.2	0.41	ng/L	1		EPA 533	Total/NA

## Client Sample ID: W-MN-RIPL-007

## Lab Sample ID: 410-172417-20

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.98	J	2.4	1.6	0.81	ng/L	1		EPA 533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.9		1.6	1.2	0.41	ng/L	1		EPA 533	Total/NA

## Client Sample ID: W-MN-RIPL-008

## Lab Sample ID: 410-172417-21

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	1.0	J M cn	1.7	1.2	0.42	ng/L	1		EPA 533	Total/NA

## Client Sample ID: W-MN-RIPL-009

## Lab Sample ID: 410-172417-22

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.0		2.5	1.7	0.85	ng/L	1		EPA 533	Total/NA

## Client Sample ID: W-MN-RIPL-FD-01

## Lab Sample ID: 410-172417-23

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.7	M cn	2.4	1.6	0.81	ng/L	1		EPA 533	Total/NA
Hexafluoropropylene oxide dimer acid (HFPO DA)	0.68	J M cn	1.6	1.2	0.41	ng/L	1		EPA 533	Total/NA

## Client Sample ID: HASTINGS-FB-01

## Lab Sample ID: 410-172417-24

No Detections.

## Client Sample ID: HASTINGS-01

## Lab Sample ID: 410-172417-25

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	9.9	M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluorohexanoic acid (PFHxA)	4.7	cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.2	J cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluorooctanoic acid (PFOA)	12	M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.5	J M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.9	cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.7	M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.42	J M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluoro-3-methoxypropionic acid (PFMPA)	0.73	J M cn	1.6	1.2	0.40	ng/L	1		EPA 533	Total/NA
Perfluorobutanoic acid (PFBA) - DL	140	D M cn	24	16	8.0	ng/L	10		EPA 533	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Environment Testing, LLC

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-004**

**Lab Sample ID: 410-172417-1**

**Date Collected: 05/14/24 08:38**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.8	M cn	2.6	1.7	0.87	ng/L		06/07/24 02:37	1
Perfluoropentanoic acid (PFPeA)	0.90	J cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluorohexanoic acid (PFHxA)	0.73	J M cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluoroheptanoic acid (PFHpA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluorooctanoic acid (PFOA)	<1.3	M cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluorononanoic acid (PFNA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluorodecanoic acid (PFDA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluoroundecanoic acid (PFUnA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluorododecanoic acid (PFDoA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluorobutanesulfonic acid (PFBS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluorohexanesulfonic acid (PFHxS)	0.59	J M cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluorooctanesulfonic acid (PFOS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluoropentanesulfonic acid (PFPeS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
11Cl-PF3OUdS	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.7	cn	2.6	1.7	0.87	ng/L		06/07/24 02:37	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/07/24 02:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	121	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C4 PFBA	129	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C3 PFBS	128	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C5 PFPeA	148	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C5 PFHxA	128	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C4 PFHpA	131	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C8 PFOA	126	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C9 PFNA	124	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C6 PFDA	123	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C7 PFUnA	117	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C2 PFDoA	117	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C8 PFOS	132	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
M2-4:2 FTS	159	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
M2-6:2 FTS	167	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
M2-8:2 FTS	152	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1
13C3 PFHxS	132	cn	50 - 200	05/25/24 11:43	06/07/24 02:37	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-005**

**Lab Sample ID: 410-172417-2**

Date Collected: 05/14/24 08:40

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.9	M cn	2.4	1.6	0.80	ng/L		06/07/24 02:49	1
Perfluoropentanoic acid (PFPeA)	0.77	J M cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluorohexanoic acid (PFHxA)	0.45	J M cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluoroheptanoic acid (PFHpA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluorooctanoic acid (PFOA)	0.46	J M cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluorononanoic acid (PFNA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluorodecanoic acid (PFDA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluoroundecanoic acid (PFUnA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluorododecanoic acid (PFDoA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluorobutanesulfonic acid (PFBS)	0.90	J cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluorohexanesulfonic acid (PFHxS)	5.9	M cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluorooctanesulfonic acid (PFOS)	0.92	J M cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluoropentanesulfonic acid (PFPeS)	0.79	J M cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
11Cl-PF3OUdS	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6	cn	2.4	1.6	0.80	ng/L		06/07/24 02:49	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 02:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	113	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
13C4 PFBA	128	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
13C3 PFBS	122	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
13C5 PFPeA	148	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
13C5 PFHxA	122	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
13C4 PFHpA	124	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
13C8 PFOA	127	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
13C9 PFNA	138	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
13C6 PFDA	126	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
13C7 PFUnA	127	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
13C2 PFDoA	122	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
13C8 PFOS	131	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
M2-4:2 FTS	149	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
M2-6:2 FTS	145	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1
M2-8:2 FTS	143	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1

Eurofins Lancaster Laboratories Environment Testing, LLC

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Client Sample ID: W-MN-RIPL-005

Date Collected: 05/14/24 08:40

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-2

Matrix: Drinking Water

### Method: EPA 533 - EPA 533 Nov 2019 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 PFHxS	124	cn	50 - 200	05/25/24 11:43	06/07/24 02:49	1

## Client Sample ID: W-MN-RIPL-001

Date Collected: 05/14/24 08:53

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-3

Matrix: Drinking Water

### Method: EPA 533 - EPA 533 Nov 2019

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	8.4		2.5	1.7	0.84	ng/L		06/07/24 03:00	1
Perfluoropentanoic acid (PFPeA)	1.5	J	1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluorohexanoic acid (PFHxA)	0.98	J	1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluoroheptanoic acid (PFHpA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluorooctanoic acid (PFOA)	0.66	J	1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluorononanoic acid (PFNA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluorodecanoic acid (PFDA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluoroundecanoic acid (PFUnA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluorododecanoic acid (PFDoA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluorobutanesulfonic acid (PFBS)	2.9		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluorohexanesulfonic acid (PFHxS)	24		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluorooctanesulfonic acid (PFOS)	3.8		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluoropentanesulfonic acid (PFPeS)	3.4		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
11Cl-PF3OUdS	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.7		2.5	1.7	0.84	ng/L		06/07/24 03:00	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEISA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 03:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	113		50 - 200	05/25/24 11:43	06/07/24 03:00	1
13C4 PFBA	129		50 - 200	05/25/24 11:43	06/07/24 03:00	1
13C3 PFBS	119		50 - 200	05/25/24 11:43	06/07/24 03:00	1
13C5 PFPeA	144		50 - 200	05/25/24 11:43	06/07/24 03:00	1
13C5 PFHxA	123		50 - 200	05/25/24 11:43	06/07/24 03:00	1
13C4 PFHpA	125		50 - 200	05/25/24 11:43	06/07/24 03:00	1
13C8 PFOA	124		50 - 200	05/25/24 11:43	06/07/24 03:00	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-001**

**Lab Sample ID: 410-172417-3**

Date Collected: 05/14/24 08:53

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019 (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C9 PFNA	124		50 - 200	05/25/24 11:43	06/07/24 03:00	1
13C6 PFDA	112		50 - 200	05/25/24 11:43	06/07/24 03:00	1
13C7 PFUnA	113		50 - 200	05/25/24 11:43	06/07/24 03:00	1
13C2 PFDoA	111		50 - 200	05/25/24 11:43	06/07/24 03:00	1
13C8 PFOS	122		50 - 200	05/25/24 11:43	06/07/24 03:00	1
M2-4:2 FTS	156		50 - 200	05/25/24 11:43	06/07/24 03:00	1
M2-6:2 FTS	146		50 - 200	05/25/24 11:43	06/07/24 03:00	1
M2-8:2 FTS	138		50 - 200	05/25/24 11:43	06/07/24 03:00	1
13C3 PFHxS	120		50 - 200	05/25/24 11:43	06/07/24 03:00	1

**Client Sample ID: W-MN-RIPL-003**

**Lab Sample ID: 410-172417-4**

Date Collected: 05/14/24 09:05

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.9	cn	2.6	1.7	0.85	ng/L		06/14/24 21:39	1
Perfluoropentanoic acid (PFPeA)	1.0	J cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluorohexanoic acid (PFHxA)	0.72	J M cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluoroheptanoic acid (PFHpA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluorooctanoic acid (PFOA)	0.55	J M cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluorononanoic acid (PFNA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluorodecanoic acid (PFDA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluoroundecanoic acid (PFUnA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluorododecanoic acid (PFDoA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluorobutanesulfonic acid (PFBS)	<1.3	M cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluorohexanesulfonic acid (PFHxS)	0.60	J M cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluorooctanesulfonic acid (PFOS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluoropentanesulfonic acid (PFPeS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
11Cl-PF3OUdS	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.7	cn	2.6	1.7	0.85	ng/L		06/14/24 21:39	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<1.3	cn	1.7	1.3	0.43	ng/L		06/14/24 21:39	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>		<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>		
13C3 HFPO-DA	77	cn	50 - 200		06/04/24 10:32	06/14/24 21:39	1		

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-003**

**Lab Sample ID: 410-172417-4**

**Date Collected: 05/14/24 09:05**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019 (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	95	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
13C3 PFBS	87	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
13C5 PFPeA	111	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
13C5 PFHxA	89	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
13C4 PFHpA	91	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
13C8 PFOA	58	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
13C9 PFNA	71	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
13C6 PFDA	74	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
13C7 PFUnA	83	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
13C2 PFDoA	91	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
13C8 PFOS	93	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
M2-4:2 FTS	113	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
M2-6:2 FTS	101	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
M2-8:2 FTS	102	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1
13C3 PFHxS	98	cn	50 - 200	06/04/24 10:32	06/14/24 21:39	1

**Client Sample ID: W-MN-RIPL-002**

**Lab Sample ID: 410-172417-5**

**Date Collected: 05/14/24 09:08**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
<b>Perfluorobutanoic acid (PFBA)</b>	<b>2.6</b>	<b>cn</b>	2.5	1.6	0.82	ng/L		06/14/24 22:02	1
Perfluoropentanoic acid (PFPeA)	<1.2	M cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluorohexanoic acid (PFHxA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluoroheptanoic acid (PFHpA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluorooctanoic acid (PFOA)	<1.2	M cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluorononanoic acid (PFNA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluorodecanoic acid (PFDA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluoroundecanoic acid (PFUnA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluorododecanoic acid (PFDoA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluorobutanesulfonic acid (PFBS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluorooctanesulfonic acid (PFOS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
11Cl-PF3OUdS	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6	cn	2.5	1.6	0.82	ng/L		06/14/24 22:02	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1

Eurofins Lancaster Laboratories Environment Testing, LLC



# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-002**

**Lab Sample ID: 410-172417-5**

Date Collected: 05/14/24 09:08

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019 (Continued)**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFESA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/14/24 22:02	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	77	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C4 PFBA	91	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C3 PFBS	84	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C5 PFPeA	107	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C5 PFHxA	89	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C4 PFHpA	92	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C8 PFOA	63	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C9 PFNA	79	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C6 PFDA	79	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C7 PFUnA	95	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C2 PFDoA	113	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C8 PFOS	86	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
M2-4:2 FTS	117	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
M2-6:2 FTS	95	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
M2-8:2 FTS	101	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1
13C3 PFHxS	91	cn	50 - 200				06/04/24 10:32	06/14/24 22:02	1

**Client Sample ID: W-MN-RIPL-FB-001**

**Lab Sample ID: 410-172417-6**

Date Collected: 05/14/24 09:10

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.6		2.4	1.6	0.82	ng/L		06/14/24 22:14	1
Perfluoropentanoic acid (PFPeA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluorohexanoic acid (PFHxA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluoroheptanoic acid (PFHpA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluorooctanoic acid (PFOA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluorononanoic acid (PFNA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluorodecanoic acid (PFDA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluoroundecanoic acid (PFUnA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluorododecanoic acid (PFDoA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluorobutanesulfonic acid (PFBS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluorooctanesulfonic acid (PFOS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
11Cl-PF3OUdS	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-FB-001**

**Lab Sample ID: 410-172417-6**

**Date Collected: 05/14/24 09:10**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019 (Continued)**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6		2.4	1.6	0.82	ng/L		06/14/24 22:14	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	82		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C4 PFBA	92		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C3 PFBS	89		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C5 PFPeA	89		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C5 PFHxA	89		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C4 PFHpA	95		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C8 PFOA	71		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C9 PFNA	86		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C6 PFDA	84		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C7 PFUnA	88		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C2 PFDoA	82		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C8 PFOS	87		50 - 200				06/04/24 10:32	06/14/24 22:14	1
M2-4:2 FTS	106		50 - 200				06/04/24 10:32	06/14/24 22:14	1
M2-6:2 FTS	91		50 - 200				06/04/24 10:32	06/14/24 22:14	1
M2-8:2 FTS	98		50 - 200				06/04/24 10:32	06/14/24 22:14	1
13C3 PFHxS	96		50 - 200				06/04/24 10:32	06/14/24 22:14	1

**Client Sample ID: W-MN-RIPL-017**

**Lab Sample ID: 410-172417-7**

**Date Collected: 05/14/24 10:05**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
<b>Perfluorobutanoic acid (PFBA)</b>	<b>1.5</b>	<b>J</b>	2.5	1.6	0.82	ng/L		06/14/24 22:25	1
Perfluoropentanoic acid (PFPeA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluorohexanoic acid (PFHxA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluoroheptanoic acid (PFHpA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluorooctanoic acid (PFOA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluorononanoic acid (PFNA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluorodecanoic acid (PFDA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluoroundecanoic acid (PFUnA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluorododecanoic acid (PFDoA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluorobutanesulfonic acid (PFBS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluorooctanesulfonic acid (PFOS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1



# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-017**

**Lab Sample ID: 410-172417-7**

**Date Collected: 05/14/24 10:05**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019 (Continued)**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
11CI-PF3OUdS	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
1H,1H,2H,2H-Perfluorohexane sulfonic aci (4:2 FTS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6		2.5	1.6	0.82	ng/L		06/14/24 22:25	1
1H,1H,2H,2H-Perfluorodecane sulfonic aci (8:2 FTS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEASA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 22:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	83		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C4 PFBA	93		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C3 PFBS	89		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C5 PFPeA	95		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C5 PFHxA	92		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C4 PFHpA	90		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C8 PFOA	66		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C9 PFNA	85		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C6 PFDA	80		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C7 PFUnA	83		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C2 PFDoA	84		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C8 PFOS	91		50 - 200	06/04/24 10:32	06/14/24 22:25	1
M2-4:2 FTS	113		50 - 200	06/04/24 10:32	06/14/24 22:25	1
M2-6:2 FTS	92		50 - 200	06/04/24 10:32	06/14/24 22:25	1
M2-8:2 FTS	100		50 - 200	06/04/24 10:32	06/14/24 22:25	1
13C3 PFHxS	96		50 - 200	06/04/24 10:32	06/14/24 22:25	1

**Client Sample ID: W-MN-RIPL-018**

**Lab Sample ID: 410-172417-8**

**Date Collected: 05/14/24 10:17**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.6		2.4	1.6	0.80	ng/L		06/14/24 22:37	1
Perfluoropentanoic acid (PFPeA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluorohexanoic acid (PFHxA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluoroheptanoic acid (PFHpA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluorooctanoic acid (PFOA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluorononanoic acid (PFNA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluorodecanoic acid (PFDA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluoroundecanoic acid (PFUnA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluorododecanoic acid (PFDoA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluorobutanesulfonic acid (PFBS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-018**

**Lab Sample ID: 410-172417-8**

Date Collected: 05/14/24 10:17

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019 (Continued)**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluorooctanesulfonic acid (PFOS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
11Cl-PF3OUdS	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6		2.4	1.6	0.80	ng/L		06/14/24 22:37	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEASA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 22:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	82		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C4 PFBA	94		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C3 PFBS	88		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C5 PFPeA	97		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C5 PFHxA	91		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C4 PFHpA	95		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C8 PFOA	70		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C9 PFNA	86		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C6 PFDA	83		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C7 PFUnA	92		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C2 PFDoA	90		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C8 PFOS	88		50 - 200	06/04/24 10:32	06/14/24 22:37	1
M2-4:2 FTS	110		50 - 200	06/04/24 10:32	06/14/24 22:37	1
M2-6:2 FTS	90		50 - 200	06/04/24 10:32	06/14/24 22:37	1
M2-8:2 FTS	95		50 - 200	06/04/24 10:32	06/14/24 22:37	1
13C3 PFHxS	93		50 - 200	06/04/24 10:32	06/14/24 22:37	1

**Client Sample ID: W-MN-RIPL-019**

**Lab Sample ID: 410-172417-9**

Date Collected: 05/14/24 10:32

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.0		2.9	2.0	0.98	ng/L		06/14/24 22:48	1
Perfluoropentanoic acid (PFPeA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluorohexanoic acid (PFHxA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluoroheptanoic acid (PFHpA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluorooctanoic acid (PFOA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1

Eurofins Lancaster Laboratories Environment Testing, LLC

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-019**

**Lab Sample ID: 410-172417-9**

Date Collected: 05/14/24 10:32

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019 (Continued)**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluorodecanoic acid (PFDA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluoroundecanoic acid (PFUnA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluorododecanoic acid (PFDoA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluorobutanesulfonic acid (PFBS)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluorohexanesulfonic acid (PFHxS)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluorooctanesulfonic acid (PFOS)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluoropentanesulfonic acid (PFPeS)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-st onic acid (9Cl-PF3ONS)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
11Cl-PF3OUdS	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
1H,1H,2H,2H-Perfluorohexane sulfonic aci (4:2 FTS)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<2.0		2.9	2.0	0.98	ng/L		06/14/24 22:48	1
1H,1H,2H,2H-Perfluorodecane sulfonic aci (8:2 FTS)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.5		2.0	1.5	0.49	ng/L		06/14/24 22:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	76		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C4 PFBA	96		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C3 PFBS	88		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C5 PFPeA	92		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C5 PFHxA	97		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C4 PFHpA	100		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C8 PFOA	71		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C9 PFNA	94		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C6 PFDA	89		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C7 PFUnA	94		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C2 PFDoA	95		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C8 PFOS	87		50 - 200	06/04/24 10:32	06/14/24 22:48	1
M2-4:2 FTS	138		50 - 200	06/04/24 10:32	06/14/24 22:48	1
M2-6:2 FTS	113		50 - 200	06/04/24 10:32	06/14/24 22:48	1
M2-8:2 FTS	132		50 - 200	06/04/24 10:32	06/14/24 22:48	1
13C3 PFHxS	93		50 - 200	06/04/24 10:32	06/14/24 22:48	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-020**

**Lab Sample ID: 410-172417-10**

**Date Collected: 05/14/24 10:42**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.7		2.6	1.7	0.85	ng/L		06/14/24 23:00	1
Perfluoropentanoic acid (PFPeA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluorohexanoic acid (PFHxA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluoroheptanoic acid (PFHpA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluorooctanoic acid (PFOA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluorononanoic acid (PFNA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluorodecanoic acid (PFDA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluoroundecanoic acid (PFUnA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluorododecanoic acid (PFDoA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluorobutanesulfonic acid (PFBS)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluorohexanesulfonic acid (PFHxS)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluorooctanesulfonic acid (PFOS)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluoropentanesulfonic acid (PFPeS)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
11Cl-PF3OUdS	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.7		2.6	1.7	0.85	ng/L		06/14/24 23:00	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.3		1.7	1.3	0.43	ng/L		06/14/24 23:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	84		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C4 PFBA	95		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C3 PFBS	93		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C5 PFPeA	96		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C5 PFHxA	94		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C4 PFHpA	96		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C8 PFOA	68		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C9 PFNA	86		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C6 PFDA	84		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C7 PFUnA	85		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C2 PFDoA	86		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C8 PFOS	94		50 - 200	06/04/24 10:32	06/14/24 23:00	1
M2-4:2 FTS	115		50 - 200	06/04/24 10:32	06/14/24 23:00	1
M2-6:2 FTS	96		50 - 200	06/04/24 10:32	06/14/24 23:00	1
M2-8:2 FTS	106		50 - 200	06/04/24 10:32	06/14/24 23:00	1
13C3 PFHxS	102		50 - 200	06/04/24 10:32	06/14/24 23:00	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-021**

**Lab Sample ID: 410-172417-11**

**Date Collected: 05/14/24 10:55**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.6		2.5	1.6	0.82	ng/L		06/14/24 23:12	1
Perfluoropentanoic acid (PFPeA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluorohexanoic acid (PFHxA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluoroheptanoic acid (PFHpA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluorooctanoic acid (PFOA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluorononanoic acid (PFNA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluorodecanoic acid (PFDA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluoroundecanoic acid (PFUnA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluorododecanoic acid (PFDoA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluorobutanesulfonic acid (PFBS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluorooctanesulfonic acid (PFOS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
11Cl-PF3OUdS	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6		2.5	1.6	0.82	ng/L		06/14/24 23:12	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2		1.6	1.2	0.41	ng/L		06/14/24 23:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	78		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C4 PFBA	92		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C3 PFBS	88		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C5 PFPeA	91		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C5 PFHxA	87		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C4 PFHpA	87		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C8 PFOA	61		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C9 PFNA	74		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C6 PFDA	76		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C7 PFUnA	81		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C2 PFDoA	84		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C8 PFOS	86		50 - 200	06/04/24 10:32	06/14/24 23:12	1
M2-4:2 FTS	104		50 - 200	06/04/24 10:32	06/14/24 23:12	1
M2-6:2 FTS	90		50 - 200	06/04/24 10:32	06/14/24 23:12	1
M2-8:2 FTS	91		50 - 200	06/04/24 10:32	06/14/24 23:12	1
13C3 PFHxS	96		50 - 200	06/04/24 10:32	06/14/24 23:12	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-022**

**Lab Sample ID: 410-172417-12**

**Date Collected: 05/14/24 11:45**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
<b>Perfluorobutanoic acid (PFBA)</b>	<b>4.4</b>	<b>cn</b>	2.5	1.7	0.85	ng/L		06/14/24 23:23	1
Perfluoropentanoic acid (PFPeA)	<1.3	M cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluorohexanoic acid (PFHxA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluoroheptanoic acid (PFHpA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluorooctanoic acid (PFOA)	<1.3	M cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluorononanoic acid (PFNA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluorodecanoic acid (PFDA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluoroundecanoic acid (PFUnA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluorododecanoic acid (PFDoA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluorobutanesulfonic acid (PFBS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluorohexanesulfonic acid (PFHxS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluorooctanesulfonic acid (PFOS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluoropentanesulfonic acid (PFPeS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
11Cl-PF3OUdS	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.7	cn	2.5	1.7	0.85	ng/L		06/14/24 23:23	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/14/24 23:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	77	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C4 PFBA	94	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C3 PFBS	71	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C5 PFPeA	152	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C5 PFHxA	90	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C4 PFHpA	96	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C8 PFOA	67	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C9 PFNA	76	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C6 PFDA	72	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C7 PFUnA	79	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C2 PFDoA	83	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C8 PFOS	91	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
M2-4:2 FTS	105	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
M2-6:2 FTS	99	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
M2-8:2 FTS	98	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1
13C3 PFHxS	91	cn	50 - 200	06/04/24 10:32	06/14/24 23:23	1



# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-022**

**Lab Sample ID: 410-172417-12**

**Date Collected: 05/14/24 11:45**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019 - RA**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
<b>Perfluorobutanoic acid (PFBA)</b>	<b>4.5</b>	<b>M cn</b>	2.5	1.7	0.85	ng/L		06/17/24 18:22	1
Perfluoropentanoic acid (PFPeA)	<1.3	M cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluorohexanoic acid (PFHxA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluoroheptanoic acid (PFHpA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluorooctanoic acid (PFOA)	<1.3	M cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluorononanoic acid (PFNA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluorodecanoic acid (PFDA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluoroundecanoic acid (PFUnA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluorododecanoic acid (PFDoA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluorobutanesulfonic acid (PFBS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluorohexanesulfonic acid (PFHxS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluorooctanesulfonic acid (PFOS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluoropentanesulfonic acid (PFPeS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
11Cl-PF3OUdS	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.7	cn	2.5	1.7	0.85	ng/L		06/17/24 18:22	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.3	cn	1.7	1.3	0.42	ng/L		06/17/24 18:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	69	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C4 PFBA	95	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C3 PFBS	63	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C5 PFPeA	147	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C5 PFHxA	83	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C4 PFHpA	95	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C8 PFOA	65	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C9 PFNA	80	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C6 PFDA	79	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C7 PFUnA	87	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C2 PFDoA	84	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C8 PFOS	94	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
M2-4:2 FTS	99	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
M2-6:2 FTS	94	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
M2-8:2 FTS	102	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1
13C3 PFHxS	88	cn	50 - 200	06/04/24 10:32	06/17/24 18:22	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-FB-002**

**Lab Sample ID: 410-172417-13**

**Date Collected: 05/14/24 11:50**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.7		2.5	1.7	0.84	ng/L		06/14/24 23:35	1
Perfluoropentanoic acid (PFPeA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluorohexanoic acid (PFHxA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluoroheptanoic acid (PFHpA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluorooctanoic acid (PFOA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluorononanoic acid (PFNA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluorodecanoic acid (PFDA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluoroundecanoic acid (PFUnA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluorododecanoic acid (PFDoA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluorobutanesulfonic acid (PFBS)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluorohexanesulfonic acid (PFHxS)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluorooctanesulfonic acid (PFOS)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluoropentanesulfonic acid (PFPeS)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
11Cl-PF3OUdS	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.7		2.5	1.7	0.84	ng/L		06/14/24 23:35	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.3		1.7	1.3	0.42	ng/L		06/14/24 23:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	87		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C4 PFBA	97		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C3 PFBS	93		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C5 PFPeA	94		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C5 PFHxA	95		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C4 PFHpA	94		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C8 PFOA	74		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C9 PFNA	90		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C6 PFDA	85		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C7 PFUnA	91		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C2 PFDoA	88		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C8 PFOS	96		50 - 200	06/04/24 10:32	06/14/24 23:35	1
M2-4:2 FTS	115		50 - 200	06/04/24 10:32	06/14/24 23:35	1
M2-6:2 FTS	96		50 - 200	06/04/24 10:32	06/14/24 23:35	1
M2-8:2 FTS	102		50 - 200	06/04/24 10:32	06/14/24 23:35	1
13C3 PFHxS	97		50 - 200	06/04/24 10:32	06/14/24 23:35	1



# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-015**

**Lab Sample ID: 410-172417-14**

**Date Collected: 05/14/24 12:22**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.6		2.4	1.6	0.81	ng/L		06/14/24 23:58	1
Perfluoropentanoic acid (PFPeA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluorohexanoic acid (PFHxA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluoroheptanoic acid (PFHpA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluorooctanoic acid (PFOA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluorononanoic acid (PFNA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluorodecanoic acid (PFDA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluoroundecanoic acid (PFUnA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluorododecanoic acid (PFDoA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluorobutanesulfonic acid (PFBS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluorooctanesulfonic acid (PFOS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
11Cl-PF3OUdS	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6		2.4	1.6	0.81	ng/L		06/14/24 23:58	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2		1.6	1.2	0.40	ng/L		06/14/24 23:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	82		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C4 PFBA	93		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C3 PFBS	84		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C5 PFPeA	112		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C5 PFHxA	94		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C4 PFHpA	98		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C8 PFOA	70		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C9 PFNA	86		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C6 PFDA	92		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C7 PFUnA	86		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C2 PFDoA	83		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C8 PFOS	89		50 - 200	06/04/24 10:32	06/14/24 23:58	1
M2-4:2 FTS	111		50 - 200	06/04/24 10:32	06/14/24 23:58	1
M2-6:2 FTS	94		50 - 200	06/04/24 10:32	06/14/24 23:58	1
M2-8:2 FTS	151		50 - 200	06/04/24 10:32	06/14/24 23:58	1
13C3 PFHxS	92		50 - 200	06/04/24 10:32	06/14/24 23:58	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-014**

**Lab Sample ID: 410-172417-15**

**Date Collected: 05/14/24 12:52**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.6		2.4	1.6	0.80	ng/L		06/15/24 00:10	1
Perfluoropentanoic acid (PFPeA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluorohexanoic acid (PFHxA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluoroheptanoic acid (PFHpA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluorooctanoic acid (PFOA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluorononanoic acid (PFNA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluorodecanoic acid (PFDA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluoroundecanoic acid (PFUnA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluorododecanoic acid (PFDoA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluorobutanesulfonic acid (PFBS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluorooctanesulfonic acid (PFOS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
11Cl-PF3OUdS	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6		2.4	1.6	0.80	ng/L		06/15/24 00:10	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	80		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C4 PFBA	95		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C3 PFBS	89		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C5 PFPeA	101		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C5 PFHxA	91		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C4 PFHpA	96		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C8 PFOA	71		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C9 PFNA	90		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C6 PFDA	85		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C7 PFUnA	88		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C2 PFDoA	85		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C8 PFOS	94		50 - 200	06/04/24 10:32	06/15/24 00:10	1
M2-4:2 FTS	113		50 - 200	06/04/24 10:32	06/15/24 00:10	1
M2-6:2 FTS	102		50 - 200	06/04/24 10:32	06/15/24 00:10	1
M2-8:2 FTS	99		50 - 200	06/04/24 10:32	06/15/24 00:10	1
13C3 PFHxS	97		50 - 200	06/04/24 10:32	06/15/24 00:10	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-013**

**Lab Sample ID: 410-172417-16**

**Date Collected: 05/14/24 13:04**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.6		2.4	1.6	0.80	ng/L		06/15/24 00:21	1
Perfluoropentanoic acid (PFPeA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluorohexanoic acid (PFHxA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluoroheptanoic acid (PFHpA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluorooctanoic acid (PFOA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluorononanoic acid (PFNA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluorodecanoic acid (PFDA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluoroundecanoic acid (PFUnA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluorododecanoic acid (PFDoA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluorobutanesulfonic acid (PFBS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluorooctanesulfonic acid (PFOS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
11Cl-PF3OUdS	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6		2.4	1.6	0.80	ng/L		06/15/24 00:21	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	80		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C4 PFBA	94		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C3 PFBS	82		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C5 PFPeA	112		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C5 PFHxA	93		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C4 PFHpA	95		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C8 PFOA	68		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C9 PFNA	83		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C6 PFDA	79		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C7 PFUnA	81		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C2 PFDoA	80		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C8 PFOS	88		50 - 200	06/04/24 10:32	06/15/24 00:21	1
M2-4:2 FTS	117		50 - 200	06/04/24 10:32	06/15/24 00:21	1
M2-6:2 FTS	96		50 - 200	06/04/24 10:32	06/15/24 00:21	1
M2-8:2 FTS	100		50 - 200	06/04/24 10:32	06/15/24 00:21	1
13C3 PFHxS	91		50 - 200	06/04/24 10:32	06/15/24 00:21	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-011**

**Lab Sample ID: 410-172417-17**

**Date Collected: 05/14/24 13:22**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.7		2.5	1.7	0.83	ng/L		06/15/24 00:33	1
Perfluoropentanoic acid (PFPeA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluorohexanoic acid (PFHxA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluoroheptanoic acid (PFHpA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluorooctanoic acid (PFOA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluorononanoic acid (PFNA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluorodecanoic acid (PFDA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluoroundecanoic acid (PFUnA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluorododecanoic acid (PFDoA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluorobutanesulfonic acid (PFBS)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluorooctanesulfonic acid (PFOS)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
11Cl-PF3OUdS	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.7		2.5	1.7	0.83	ng/L		06/15/24 00:33	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2		1.7	1.2	0.41	ng/L		06/15/24 00:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	79		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C4 PFBA	94		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C3 PFBS	83		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C5 PFPeA	122		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C5 PFHxA	92		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C4 PFHpA	99		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C8 PFOA	69		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C9 PFNA	85		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C6 PFDA	82		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C7 PFUnA	84		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C2 PFDoA	86		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C8 PFOS	92		50 - 200	06/04/24 10:32	06/15/24 00:33	1
M2-4:2 FTS	116		50 - 200	06/04/24 10:32	06/15/24 00:33	1
M2-6:2 FTS	98		50 - 200	06/04/24 10:32	06/15/24 00:33	1
M2-8:2 FTS	99		50 - 200	06/04/24 10:32	06/15/24 00:33	1
13C3 PFHxS	96		50 - 200	06/04/24 10:32	06/15/24 00:33	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-012**

**Lab Sample ID: 410-172417-18**

**Date Collected: 05/14/24 13:35**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.6		2.4	1.6	0.79	ng/L		06/15/24 00:44	1
Perfluoropentanoic acid (PFPeA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluorohexanoic acid (PFHxA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluoroheptanoic acid (PFHpA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluorooctanoic acid (PFOA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluorononanoic acid (PFNA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluorodecanoic acid (PFDA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluoroundecanoic acid (PFUnA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluorododecanoic acid (PFDoA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluorobutanesulfonic acid (PFBS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluorooctanesulfonic acid (PFOS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
11Cl-PF3OUdS	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6		2.4	1.6	0.79	ng/L		06/15/24 00:44	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2		1.6	1.2	0.40	ng/L		06/15/24 00:44	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	73		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C4 PFBA	89		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C3 PFBS	80		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C5 PFPeA	110		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C5 PFHxA	86		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C4 PFHpA	87		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C8 PFOA	59		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C9 PFNA	68		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C6 PFDA	71		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C7 PFUnA	73		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C2 PFDoA	75		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C8 PFOS	81		50 - 200	06/04/24 10:32	06/15/24 00:44	1
M2-4:2 FTS	107		50 - 200	06/04/24 10:32	06/15/24 00:44	1
M2-6:2 FTS	91		50 - 200	06/04/24 10:32	06/15/24 00:44	1
M2-8:2 FTS	89		50 - 200	06/04/24 10:32	06/15/24 00:44	1
13C3 PFHxS	90		50 - 200	06/04/24 10:32	06/15/24 00:44	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-010**

**Lab Sample ID: 410-172417-19**

Date Collected: 05/14/24 14:03

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
<b>Perfluorobutanoic acid (PFBA)</b>	<b>2.4</b>	<b>J</b>	2.5	1.6	0.82	ng/L		06/15/24 00:56	1
Perfluoropentanoic acid (PFPeA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluorohexanoic acid (PFHxA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluoroheptanoic acid (PFHpA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluorooctanoic acid (PFOA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
<b>Perfluorononanoic acid (PFNA)</b>	<b>1.1</b>	<b>J</b>	1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluorodecanoic acid (PFDA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluoroundecanoic acid (PFUnA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluorododecanoic acid (PFDoA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluorobutanesulfonic acid (PFBS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluorooctanesulfonic acid (PFOS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
11Cl-PF3OUdS	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6		2.5	1.6	0.82	ng/L		06/15/24 00:56	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 00:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	79		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C4 PFBA	92		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C3 PFBS	86		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C5 PFPeA	93		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C5 PFHxA	88		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C4 PFHpA	92		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C8 PFOA	66		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C9 PFNA	81		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C6 PFDA	82		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C7 PFUnA	84		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C2 PFDoA	80		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C8 PFOS	85		50 - 200	06/04/24 10:32	06/15/24 00:56	1
M2-4:2 FTS	103		50 - 200	06/04/24 10:32	06/15/24 00:56	1
M2-6:2 FTS	87		50 - 200	06/04/24 10:32	06/15/24 00:56	1
M2-8:2 FTS	91		50 - 200	06/04/24 10:32	06/15/24 00:56	1
13C3 PFHxS	91		50 - 200	06/04/24 10:32	06/15/24 00:56	1



# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-007**

**Lab Sample ID: 410-172417-20**

**Date Collected: 05/14/24 15:18**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
<b>Perfluorobutanoic acid (PFBA)</b>	<b>0.98</b>	<b>J</b>	2.4	1.6	0.81	ng/L		06/15/24 01:08	1
Perfluoropentanoic acid (PFPeA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluorohexanoic acid (PFHxA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluoroheptanoic acid (PFHpA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluorooctanoic acid (PFOA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluorononanoic acid (PFNA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluorodecanoic acid (PFDA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluoroundecanoic acid (PFUnA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluorododecanoic acid (PFDoA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluorobutanesulfonic acid (PFBS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>3.9</b>		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
11Cl-PF3OUdS	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6		2.4	1.6	0.81	ng/L		06/15/24 01:08	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2		1.6	1.2	0.41	ng/L		06/15/24 01:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	80		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C4 PFBA	93		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C3 PFBS	81		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C5 PFPeA	119		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C5 PFHxA	95		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C4 PFHpA	99		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C8 PFOA	72		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C9 PFNA	90		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C6 PFDA	62		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C7 PFUnA	64		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C2 PFDoA	50		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C8 PFOS	81		50 - 200	06/04/24 10:32	06/15/24 01:08	1
M2-4:2 FTS	127		50 - 200	06/04/24 10:32	06/15/24 01:08	1
M2-6:2 FTS	110		50 - 200	06/04/24 10:32	06/15/24 01:08	1
M2-8:2 FTS	100		50 - 200	06/04/24 10:32	06/15/24 01:08	1
13C3 PFHxS	92		50 - 200	06/04/24 10:32	06/15/24 01:08	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-008**

**Lab Sample ID: 410-172417-21**

Date Collected: 05/14/24 15:31

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.7	cn	2.5	1.7	0.83	ng/L		06/15/24 01:19	1
Perfluoropentanoic acid (PFPeA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluorohexanoic acid (PFHxA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluoroheptanoic acid (PFHpA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluorooctanoic acid (PFOA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluorononanoic acid (PFNA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluorodecanoic acid (PFDA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluoroundecanoic acid (PFUnA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluorododecanoic acid (PFDoA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluorobutanesulfonic acid (PFBS)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.0</b>	<b>J M cn</b>	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
11Cl-PF3OUdS	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.7	cn	2.5	1.7	0.83	ng/L		06/15/24 01:19	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2	cn	1.7	1.2	0.42	ng/L		06/15/24 01:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	77	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C4 PFBA	93	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C3 PFBS	86	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C5 PFPeA	95	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C5 PFHxA	88	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C4 PFHpA	90	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C8 PFOA	68	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C9 PFNA	83	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C6 PFDA	79	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C7 PFUnA	79	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C2 PFDoA	72	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C8 PFOS	85	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
M2-4:2 FTS	105	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
M2-6:2 FTS	92	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
M2-8:2 FTS	93	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1
13C3 PFHxS	88	cn	50 - 200	06/04/24 10:32	06/15/24 01:19	1



# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-009**

**Lab Sample ID: 410-172417-22**

Date Collected: 05/14/24 17:23

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
<b>Perfluorobutanoic acid (PFBA)</b>	<b>3.0</b>		2.5	1.7	0.85	ng/L		06/07/24 04:21	1
Perfluoropentanoic acid (PFPeA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluorohexanoic acid (PFHxA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluoroheptanoic acid (PFHpA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluorooctanoic acid (PFOA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluorononanoic acid (PFNA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluorodecanoic acid (PFDA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluoroundecanoic acid (PFUnA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluorododecanoic acid (PFDoA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluorobutanesulfonic acid (PFBS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluorohexanesulfonic acid (PFHxS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluorooctanesulfonic acid (PFOS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluoropentanesulfonic acid (PFPeS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
11Cl-PF3OUdS	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.7		2.5	1.7	0.85	ng/L		06/07/24 04:21	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	96		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C4 PFBA	122		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C3 PFBS	109		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C5 PFPeA	140		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C5 PFHxA	112		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C4 PFHpA	115		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C8 PFOA	116		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C9 PFNA	123		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C6 PFDA	119		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C7 PFUnA	137		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C2 PFDoA	147		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C8 PFOS	116		50 - 200	06/04/24 13:12	06/07/24 04:21	1
M2-4:2 FTS	152		50 - 200	06/04/24 13:12	06/07/24 04:21	1
M2-6:2 FTS	157		50 - 200	06/04/24 13:12	06/07/24 04:21	1
M2-8:2 FTS	148		50 - 200	06/04/24 13:12	06/07/24 04:21	1
13C3 PFHxS	116		50 - 200	06/04/24 13:12	06/07/24 04:21	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: W-MN-RIPL-FD-01**

**Lab Sample ID: 410-172417-23**

**Date Collected: 05/14/24 00:00**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
<b>Perfluorobutanoic acid (PFBA)</b>	<b>4.7</b>	<b>M cn</b>	2.4	1.6	0.81	ng/L		06/08/24 14:07	1
Perfluoropentanoic acid (PFPeA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluorohexanoic acid (PFHxA)	<1.2	M cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluoroheptanoic acid (PFHpA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluorooctanoic acid (PFOA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluorononanoic acid (PFNA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluorodecanoic acid (PFDA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluoroundecanoic acid (PFUnA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluorododecanoic acid (PFDoA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluorobutanesulfonic acid (PFBS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluorohexanesulfonic acid (PFHxS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluorooctanesulfonic acid (PFOS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluoropentanesulfonic acid (PFPeS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
<b>Hexafluoropropylene oxide dimer acid (HFPO DA)</b>	<b>0.68</b>	<b>J M cn</b>	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
11Cl-PF3OUdS	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6	cn	2.4	1.6	0.81	ng/L		06/08/24 14:07	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2	cn	1.6	1.2	0.41	ng/L		06/08/24 14:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	113	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C4 PFBA	130	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C3 PFBS	108	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C5 PFPeA	148	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C5 PFHxA	121	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C4 PFHpA	126	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C8 PFOA	129	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C9 PFNA	130	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C6 PFDA	130	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C7 PFUnA	126	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C2 PFDoA	121	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C8 PFOS	120	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
M2-4:2 FTS	160	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
M2-6:2 FTS	173	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
M2-8:2 FTS	166	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1
13C3 PFHxS	122	cn	50 - 200	06/04/24 13:12	06/08/24 14:07	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: HASTINGS-FB-01**

**Lab Sample ID: 410-172417-24**

**Date Collected: 05/14/24 11:25**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<1.7		2.5	1.7	0.83	ng/L		06/07/24 04:56	1
Perfluoropentanoic acid (PFPeA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluorohexanoic acid (PFHxA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluoroheptanoic acid (PFHpA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluorooctanoic acid (PFOA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluorononanoic acid (PFNA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluorodecanoic acid (PFDA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluoroundecanoic acid (PFUnA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluorododecanoic acid (PFDoA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluorobutanesulfonic acid (PFBS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluorohexanesulfonic acid (PFHxS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluorooctanesulfonic acid (PFOS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluoropentanesulfonic acid (PFPeS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
11Cl-PF3OUdS	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.7		2.5	1.7	0.83	ng/L		06/07/24 04:56	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.3		1.7	1.3	0.42	ng/L		06/07/24 04:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	114		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C4 PFBA	128		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C3 PFBS	120		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C5 PFPeA	138		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C5 PFHxA	115		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C4 PFHpA	122		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C8 PFOA	128		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C9 PFNA	131		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C6 PFDA	126		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C7 PFUnA	126		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C2 PFDoA	124		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C8 PFOS	132		50 - 200	06/04/24 13:12	06/07/24 04:56	1
M2-4:2 FTS	150		50 - 200	06/04/24 13:12	06/07/24 04:56	1
M2-6:2 FTS	153		50 - 200	06/04/24 13:12	06/07/24 04:56	1
M2-8:2 FTS	142		50 - 200	06/04/24 13:12	06/07/24 04:56	1
13C3 PFHxS	128		50 - 200	06/04/24 13:12	06/07/24 04:56	1

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: HASTINGS-01**

**Lab Sample ID: 410-172417-25**

Date Collected: 05/14/24 11:15

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	9.9	M cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluorohexanoic acid (PFHxA)	4.7	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluoroheptanoic acid (PFHpA)	1.2	J cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluorooctanoic acid (PFOA)	12	M cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluorononanoic acid (PFNA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluorodecanoic acid (PFDA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluoroundecanoic acid (PFUnA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluorododecanoic acid (PFDoA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluorobutanesulfonic acid (PFBS)	1.5	J M cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluorooctanesulfonic acid (PFOS)	1.7	M cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluoropentanesulfonic acid (PFPeS)	0.42	J M cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
11Cl-PF3OUdS	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	<1.6	cn	2.4	1.6	0.80	ng/L		06/07/24 05:07	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.73	J M cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.2	cn	1.6	1.2	0.40	ng/L		06/07/24 05:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	105	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C4 PFBA	117	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C3 PFBS	117	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C5 PFPeA	134	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C5 PFHxA	113	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C4 PFHpA	117	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C8 PFOA	110	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C9 PFNA	114	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C6 PFDA	115	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C7 PFUnA	115	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C2 PFDoA	112	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C8 PFOS	117	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
M2-4:2 FTS	134	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
M2-6:2 FTS	138	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
M2-8:2 FTS	127	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1
13C3 PFHxS	117	cn	50 - 200	06/04/24 13:12	06/07/24 05:07	1

Eurofins Lancaster Laboratories Environment Testing, LLC

# Client Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: HASTINGS-01**

**Lab Sample ID: 410-172417-25**

Date Collected: 05/14/24 11:15

Matrix: Drinking Water

Date Received: 05/17/24 09:40

**Method: EPA 533 - EPA 533 Nov 2019 - DL**

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	140	D M cn	24	16	8.0	ng/L		06/08/24 16:03	10
Isotope Dilution	%Recovery	Qualifier	Limits		Prepared		Analyzed		Dil Fac
<sup>13</sup> C4 PFBA	74	cn	50 - 200		06/04/24 13:12		06/08/24 16:03		10



# Isotope Dilution Summary

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Method: EPA 533 - EPA 533 Nov 2019**

**Matrix: Drinking Water**

**Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HFPODA (50-200)	PFBA (50-200)	C3PFBS (50-200)	PFPeA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)
410-172417-1	W-MN-RIPL-004	121 cn	129 cn	128 cn	148 cn	128 cn	131 cn	126 cn	124 cn
410-172417-2	W-MN-RIPL-005	113 cn	128 cn	122 cn	148 cn	122 cn	124 cn	127 cn	138 cn
410-172417-3	W-MN-RIPL-001	113	129	119	144	123	125	124	124
410-172417-4	W-MN-RIPL-003	77 cn	95 cn	87 cn	111 cn	89 cn	91 cn	58 cn	71 cn
410-172417-5	W-MN-RIPL-002	77 cn	91 cn	84 cn	107 cn	89 cn	92 cn	63 cn	79 cn
410-172417-6	W-MN-RIPL-FB-001	82	92	89	89	89	95	71	86
410-172417-7	W-MN-RIPL-017	83	93	89	95	92	90	66	85
410-172417-8	W-MN-RIPL-018	82	94	88	97	91	95	70	86
410-172417-9	W-MN-RIPL-019	76	96	88	92	97	100	71	94
410-172417-10	W-MN-RIPL-020	84	95	93	96	94	96	68	86
410-172417-11	W-MN-RIPL-021	78	92	88	91	87	87	61	74
410-172417-12	W-MN-RIPL-022	77 cn	94 cn	71 cn	152 cn	90 cn	96 cn	67 cn	76 cn
410-172417-12 - RA	W-MN-RIPL-022	69 cn	95 cn	63 cn	147 cn	83 cn	95 cn	65 cn	80 cn
410-172417-13	W-MN-RIPL-FB-002	87	97	93	94	95	94	74	90
410-172417-14	W-MN-RIPL-015	82	93	84	112	94	98	70	86
410-172417-15	W-MN-RIPL-014	80	95	89	101	91	96	71	90
410-172417-16	W-MN-RIPL-013	80	94	82	112	93	95	68	83
410-172417-17	W-MN-RIPL-011	79	94	83	122	92	99	69	85
410-172417-18	W-MN-RIPL-012	73	89	80	110	86	87	59	68
410-172417-19	W-MN-RIPL-010	79	92	86	93	88	92	66	81
410-172417-20	W-MN-RIPL-007	80	93	81	119	95	99	72	90
410-172417-21	W-MN-RIPL-008	77 cn	93 cn	86 cn	95 cn	88 cn	90 cn	68 cn	83 cn
410-172417-22	W-MN-RIPL-009	96	122	109	140	112	115	116	123
410-172417-23	W-MN-RIPL-FD-01	113 cn	130 cn	108 cn	148 cn	121 cn	126 cn	129 cn	130 cn
410-172417-24	HASTINGS-FB-01	114	128	120	138	115	122	128	131
410-172417-25	HASTINGS-01	105 cn	117 cn	117 cn	134 cn	113 cn	117 cn	110 cn	114 cn
410-172417-25 - DL	HASTINGS-01		74 cn						
LCS 410-513283/2-A	Lab Control Sample	130	134	125	150	132	135	145	147
LCS 410-513415/2-A	Lab Control Sample	90	94	95	91	96	97	72	94
LCS 410-515042/2-A	Lab Control Sample	117	127	127	133	123	124	133	132
LCSD 410-513283/3-A	Lab Control Sample Dup	125	134	125	147	127	130	142	143
LCSD 410-513415/3-A	Lab Control Sample Dup	87	94	92	90	91	95	69	87
MB 410-513283/1-A	Method Blank	114	132	124	146	121	128	135	141
MB 410-513415/1-A	Method Blank	89	98	95	98	93	94	73	89
MB 410-515042/1-A	Method Blank	114	125	122	138	117	121	123	126

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		C6PFDA (50-200)	13C7PUA (50-200)	PFDoA (50-200)	C8PFOS (50-200)	M242FTS (50-200)	M262FTS (50-200)	M282FTS (50-200)	C3PFHS (50-200)
410-172417-1	W-MN-RIPL-004	123 cn	117 cn	117 cn	132 cn	159 cn	167 cn	152 cn	132 cn
410-172417-2	W-MN-RIPL-005	126 cn	127 cn	122 cn	131 cn	149 cn	145 cn	143 cn	124 cn
410-172417-3	W-MN-RIPL-001	112	113	111	122	156	146	138	120
410-172417-4	W-MN-RIPL-003	74 cn	83 cn	91 cn	93 cn	113 cn	101 cn	102 cn	98 cn
410-172417-5	W-MN-RIPL-002	79 cn	95 cn	113 cn	86 cn	117 cn	95 cn	101 cn	91 cn
410-172417-6	W-MN-RIPL-FB-001	84	88	82	87	106	91	98	96
410-172417-7	W-MN-RIPL-017	80	83	84	91	113	92	100	96
410-172417-8	W-MN-RIPL-018	83	92	90	88	110	90	95	93
410-172417-9	W-MN-RIPL-019	89	94	95	87	138	113	132	93
410-172417-10	W-MN-RIPL-020	84	85	86	94	115	96	106	102
410-172417-11	W-MN-RIPL-021	76	81	84	86	104	90	91	96

# Isotope Dilution Summary

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Method: EPA 533 - EPA 533 Nov 2019 (Continued)**

**Matrix: Drinking Water**

**Prep Type: Total/NA**

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		C6PFDA (50-200)	13C7PUA (50-200)	PFDoA (50-200)	C8PFOS (50-200)	M242FTS (50-200)	M262FTS (50-200)	M282FTS (50-200)	C3PFHS (50-200)
410-172417-12	W-MN-RIPL-022	72 cn	79 cn	83 cn	91 cn	105 cn	99 cn	98 cn	91 cn
410-172417-12 - RA	W-MN-RIPL-022	79 cn	87 cn	84 cn	94 cn	99 cn	94 cn	102 cn	88 cn
410-172417-13	W-MN-RIPL-FB-002	85	91	88	96	115	96	102	97
410-172417-14	W-MN-RIPL-015	92	86	83	89	111	94	151	92
410-172417-15	W-MN-RIPL-014	85	88	85	94	113	102	99	97
410-172417-16	W-MN-RIPL-013	79	81	80	88	117	96	100	91
410-172417-17	W-MN-RIPL-011	82	84	86	92	116	98	99	96
410-172417-18	W-MN-RIPL-012	71	73	75	81	107	91	89	90
410-172417-19	W-MN-RIPL-010	82	84	80	85	103	87	91	91
410-172417-20	W-MN-RIPL-007	62	64	50	81	127	110	100	92
410-172417-21	W-MN-RIPL-008	79 cn	79 cn	72 cn	85 cn	105 cn	92 cn	93 cn	88 cn
410-172417-22	W-MN-RIPL-009	119	137	147	116	152	157	148	116
410-172417-23	W-MN-RIPL-FD-01	130 cn	126 cn	121 cn	120 cn	160 cn	173 cn	166 cn	122 cn
410-172417-24	HASTINGS-FB-01	126	126	124	132	150	153	142	128
410-172417-25	HASTINGS-01	115 cn	115 cn	112 cn	117 cn	134 cn	138 cn	127 cn	117 cn
410-172417-25 - DL	HASTINGS-01								
LCS 410-513283/2-A	Lab Control Sample	138	140	137	134	138	148	136	131
LCS 410-513415/2-A	Lab Control Sample	90	91	90	91	116	95	102	98
LCS 410-515042/2-A	Lab Control Sample	128	128	127	131	142	150	146	127
LCSD 410-513283/3-A	Lab Control Sample Dup	141	138	137	127	136	144	129	124
LCSD 410-513415/3-A	Lab Control Sample Dup	85	91	87	94	116	97	104	99
MB 410-513283/1-A	Method Blank	134	128	128	123	138	143	136	121
MB 410-513415/1-A	Method Blank	89	91	87	95	110	93	104	100
MB 410-515042/1-A	Method Blank	123	123	116	122	141	144	147	122

**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
- PFDoA = 13C2 PFDoA
- C8PFOS = 13C8 PFOS
- M242FTS = M2-4:2 FTS
- M262FTS = M2-6:2 FTS
- M282FTS = M2-8:2 FTS
- C3PFHS = 13C3 PFHxS



# QC Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Method: EPA 533 - EPA 533 Nov 2019

**Lab Sample ID: MB 410-513283/1-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 514686**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 513283**

Analyte	MB	MB	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.0		3.0	2.0	1.0	ng/L		06/07/24 01:51	1
Perfluoropentanoic acid (PFPeA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluorohexanoic acid (PFHxA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluoroheptanoic acid (PFHpA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluorooctanoic acid (PFOA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluorononanoic acid (PFNA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluorodecanoic acid (PFDA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluoroundecanoic acid (PFUnA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluorododecanoic acid (PFDoA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluorobutanesulfonic acid (PFBS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluorohexanesulfonic acid (PFHxS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluorooctanesulfonic acid (PFOS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluoropentanesulfonic acid (PFPeS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	0.800	J M	2.0	1.5	0.50	ng/L		06/07/24 01:51	1
11Cl-PF3OUdS	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<2.0		3.0	2.0	1.0	ng/L		06/07/24 01:51	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 01:51	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 HFPO-DA	114		50 - 200	05/25/24 11:43	06/07/24 01:51	1
13C4 PFBA	132		50 - 200	05/25/24 11:43	06/07/24 01:51	1
13C3 PFBS	124		50 - 200	05/25/24 11:43	06/07/24 01:51	1
13C5 PFPeA	146		50 - 200	05/25/24 11:43	06/07/24 01:51	1
13C5 PFHxA	121		50 - 200	05/25/24 11:43	06/07/24 01:51	1
13C4 PFHpA	128		50 - 200	05/25/24 11:43	06/07/24 01:51	1
13C8 PFOA	135		50 - 200	05/25/24 11:43	06/07/24 01:51	1
13C9 PFNA	141		50 - 200	05/25/24 11:43	06/07/24 01:51	1
13C6 PFDA	134		50 - 200	05/25/24 11:43	06/07/24 01:51	1
13C7 PFUnA	128		50 - 200	05/25/24 11:43	06/07/24 01:51	1
13C2 PFDoA	128		50 - 200	05/25/24 11:43	06/07/24 01:51	1
13C8 PFOS	123		50 - 200	05/25/24 11:43	06/07/24 01:51	1
M2-4:2 FTS	138		50 - 200	05/25/24 11:43	06/07/24 01:51	1
M2-6:2 FTS	143		50 - 200	05/25/24 11:43	06/07/24 01:51	1
M2-8:2 FTS	136		50 - 200	05/25/24 11:43	06/07/24 01:51	1



# QC Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Method: EPA 533 - EPA 533 Nov 2019 (Continued)

**Lab Sample ID: MB 410-513283/1-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 514686**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 513283**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 PFHxS	121		50 - 200	05/25/24 11:43	06/07/24 01:51	1

**Lab Sample ID: LCS 410-513283/2-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 514686**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 513283**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	80.0	75.5		ng/L		94	70 - 130
Perfluorohexanoic acid (PFHxA)	80.0	80.6		ng/L		101	70 - 130
Perfluoroheptanoic acid (PFHpA)	80.0	83.9		ng/L		105	70 - 130
Perfluorooctanoic acid (PFOA)	80.0	75.2		ng/L		94	70 - 130
Perfluorononanoic acid (PFNA)	80.0	77.0		ng/L		96	70 - 130
Perfluorodecanoic acid (PFDA)	80.0	79.0		ng/L		99	70 - 130
Perfluoroundecanoic acid (PFUnA)	80.0	76.9		ng/L		96	70 - 130
Perfluorododecanoic acid (PFDoA)	80.0	77.9		ng/L		97	70 - 130
Perfluorobutanesulfonic acid (PFBS)	70.8	71.8		ng/L		101	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	73.0	71.0		ng/L		97	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	76.2	72.7		ng/L		95	70 - 130
Perfluorooctanesulfonic acid (PFOS)	74.0	70.7	M	ng/L		96	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	75.0	73.9		ng/L		98	70 - 130
9-Chlorohexadecafluoro-3-oxanon ne-1-sulfonic acid (9Cl-PF3ONS)	74.4	67.9		ng/L		91	70 - 130
Hexafluoropropylene oxide dimer acid (HFPO DA)	80.0	80.6		ng/L		101	70 - 130
11Cl-PF3OUdS	74.4	67.0		ng/L		90	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	75.6	80.0		ng/L		106	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	74.7	75.6		ng/L		101	70 - 130
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	75.8	75.1		ng/L		99	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	76.6	85.4		ng/L		111	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	80.0	81.3		ng/L		102	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	80.0	83.7		ng/L		105	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	80.0	77.8		ng/L		97	70 - 130
Perfluoro (2-ethoxyethane) sulfoni acid (PFEEESA)	71.2	68.8		ng/L		97	70 - 130

  

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	130		50 - 200
13C4 PFBA	134		50 - 200
13C3 PFBS	125		50 - 200
13C5 PFPeA	150		50 - 200
13C5 PFHxA	132		50 - 200
13C4 PFHpA	135		50 - 200

# QC Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Method: EPA 533 - EPA 533 Nov 2019 (Continued)

**Lab Sample ID: LCS 410-513283/2-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 514686**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 513283**

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C8 PFOA	145		50 - 200
13C9 PFNA	147		50 - 200
13C6 PFDA	138		50 - 200
13C7 PFUnA	140		50 - 200
13C2 PFDoA	137		50 - 200
13C8 PFOS	134		50 - 200
M2-4:2 FTS	138		50 - 200
M2-6:2 FTS	148		50 - 200
M2-8:2 FTS	136		50 - 200
13C3 PFHxS	131		50 - 200

**Lab Sample ID: LCSD 410-513283/3-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 514686**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 513283**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	
								RPD	Limit
Perfluorobutanoic acid (PFBA)	80.0	78.0		ng/L		97	70 - 130	3	30
Perfluoropentanoic acid (PFPeA)	80.0	74.9		ng/L		94	70 - 130	1	30
Perfluorohexanoic acid (PFHxA)	80.0	80.6		ng/L		101	70 - 130	0	30
Perfluoroheptanoic acid (PFHpA)	80.0	78.4		ng/L		98	70 - 130	7	30
Perfluorooctanoic acid (PFOA)	80.0	76.5		ng/L		96	70 - 130	2	30
Perfluorononanoic acid (PFNA)	80.0	74.2		ng/L		93	70 - 130	4	30
Perfluorodecanoic acid (PFDA)	80.0	69.4		ng/L		87	70 - 130	13	30
Perfluoroundecanoic acid (PFUnA)	80.0	73.5		ng/L		92	70 - 130	5	30
Perfluorododecanoic acid (PFDoA)	80.0	75.4		ng/L		94	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)	70.8	66.1		ng/L		93	70 - 130	8	30
Perfluorohexanesulfonic acid (PFHxS)	73.0	72.9		ng/L		100	70 - 130	3	30
Perfluoroheptanesulfonic acid (PFHpS)	76.2	73.1		ng/L		96	70 - 130	1	30
Perfluorooctanesulfonic acid (PFOS)	74.0	69.8	M	ng/L		94	70 - 130	1	30
Perfluoropentanesulfonic acid (PFPeS)	75.0	74.7		ng/L		100	70 - 130	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CI-PF3ONS)	74.4	69.6		ng/L		94	70 - 130	2	30
Hexafluoropropylene oxide dimer acid (HFPO DA)	80.0	78.0		ng/L		97	70 - 130	3	30
11CI-PF3OUdS	74.4	67.9		ng/L		91	70 - 130	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	75.6	76.7		ng/L		101	70 - 130	4	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	74.7	73.2		ng/L		98	70 - 130	3	30
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	75.8	72.8		ng/L		96	70 - 130	3	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	76.6	81.7		ng/L		107	70 - 130	4	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	80.0	80.4		ng/L		101	70 - 130	1	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	80.0	81.5		ng/L		102	70 - 130	3	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	80.0	76.4		ng/L		95	70 - 130	2	30

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# QC Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Method: EPA 533 - EPA 533 Nov 2019 (Continued)

**Lab Sample ID: LCSD 410-513283/3-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 514686**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 513283**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoro (2-ethoxyethane) sulfoni acid (PFEEESA)	71.2	64.9		ng/L		91	70 - 130	6	30
<b>LCSD LCSD</b>									
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>						
13C3 HFPO-DA	125		50 - 200						
13C4 PFBA	134		50 - 200						
13C3 PFBS	125		50 - 200						
13C5 PFPeA	147		50 - 200						
13C5 PFHxA	127		50 - 200						
13C4 PFHpA	130		50 - 200						
13C8 PFOA	142		50 - 200						
13C9 PFNA	143		50 - 200						
13C6 PFDA	141		50 - 200						
13C7 PFUnA	138		50 - 200						
13C2 PFDoA	137		50 - 200						
13C8 PFOS	127		50 - 200						
M2-4:2 FTS	136		50 - 200						
M2-6:2 FTS	144		50 - 200						
M2-8:2 FTS	129		50 - 200						
13C3 PFHxS	124		50 - 200						

**Lab Sample ID: MB 410-513415/1-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 517572**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 513415**

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.0		3.0	2.0	1.0	ng/L		06/14/24 20:53	1
Perfluoropentanoic acid (PFPeA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluorohexanoic acid (PFHxA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluoroheptanoic acid (PFHpA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluorooctanoic acid (PFOA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluorononanoic acid (PFNA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluorodecanoic acid (PFDA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluoroundecanoic acid (PFUnA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluorododecanoic acid (PFDoA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluorobutanesulfonic acid (PFBS)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluorohexanesulfonic acid (PFHxS)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluorooctanesulfonic acid (PFOS)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluoropentanesulfonic acid (PFPeS)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
11Cl-PF3OUdS	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<2.0		3.0	2.0	1.0	ng/L		06/14/24 20:53	1

Eurofins Lancaster Laboratories Environment Testing, LLC

# QC Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Method: EPA 533 - EPA 533 Nov 2019 (Continued)

**Lab Sample ID: MB 410-513415/1-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 517572**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 513415**

Analyte	MB	MB	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
	Result	Qualifier							
1H,1H,2H,2H-Perfluorodecane sulfonic aci (8:2 FTS)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEA)	<1.5		2.0	1.5	0.50	ng/L		06/14/24 20:53	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 HFPO-DA	89		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C4 PFBA	98		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C3 PFBS	95		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C5 PFPeA	98		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C5 PFHxA	93		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C4 PFHpA	94		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C8 PFOA	73		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C9 PFNA	89		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C6 PFDA	89		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C7 PFUnA	91		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C2 PFDoA	87		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C8 PFOS	95		50 - 200	06/04/24 10:32	06/14/24 20:53	1
M2-4:2 FTS	110		50 - 200	06/04/24 10:32	06/14/24 20:53	1
M2-6:2 FTS	93		50 - 200	06/04/24 10:32	06/14/24 20:53	1
M2-8:2 FTS	104		50 - 200	06/04/24 10:32	06/14/24 20:53	1
13C3 PFHxS	100		50 - 200	06/04/24 10:32	06/14/24 20:53	1

**Lab Sample ID: LCS 410-513415/2-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 517572**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 513415**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Perfluorobutanoic acid (PFBA)	10.0	9.91		ng/L		99	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	10.6		ng/L		106	70 - 130
Perfluorohexanoic acid (PFHxA)	10.0	9.66	M	ng/L		97	70 - 130
Perfluoroheptanoic acid (PFHpA)	10.0	9.80		ng/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	10.0	13.0		ng/L		130	70 - 130
Perfluorononanoic acid (PFNA)	10.0	9.31		ng/L		93	70 - 130
Perfluorodecanoic acid (PFDA)	10.0	10.1		ng/L		101	70 - 130
Perfluoroundecanoic acid (PFUnA)	10.0	9.96		ng/L		100	70 - 130
Perfluorododecanoic acid (PFDoA)	10.0	10.1		ng/L		101	70 - 130
Perfluorobutanesulfonic acid (PFBS)	8.85	8.60		ng/L		97	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.12	9.04	M	ng/L		99	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	9.52	10.1		ng/L		106	70 - 130
Perfluorooctanesulfonic acid (PFOS)	9.26	9.27	M	ng/L		100	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	9.38	9.35		ng/L		100	70 - 130

Eurofins Lancaster Laboratories Environment Testing, LLC

# QC Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Method: EPA 533 - EPA 533 Nov 2019 (Continued)

**Lab Sample ID: LCS 410-513415/2-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 517572**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 513415**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
9-Chlorohexadecafluoro-3-oxanon ne-1-sulfonic acid (9Cl-PF3ONS)	9.30	8.97		ng/L		96	70 - 130
Hexafluoropropylene oxide dimer acid (HFPO DA)	10.0	10.0	M	ng/L		100	70 - 130
11Cl-PF3OUdS	9.30	9.26		ng/L		100	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.45	9.27		ng/L		98	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	9.34	10.1	M	ng/L		108	70 - 130
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	9.48	10.6		ng/L		112	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	9.58	9.58		ng/L		100	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.0	9.37		ng/L		94	70 - 130
Perfluoro-3-methoxypropanoic aci (PFMPA)	10.0	10.0		ng/L		100	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	10.0	10.3		ng/L		103	70 - 130
Perfluoro (2-ethoxyethane) sulfoni acid (PFEESA)	8.90	8.71		ng/L		98	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	90		50 - 200
13C4 PFBA	94		50 - 200
13C3 PFBS	95		50 - 200
13C5 PFPeA	91		50 - 200
13C5 PFHxA	96		50 - 200
13C4 PFHpA	97		50 - 200
13C8 PFOA	72		50 - 200
13C9 PFNA	94		50 - 200
13C6 PFDA	90		50 - 200
13C7 PFUnA	91		50 - 200
13C2 PFDoA	90		50 - 200
13C8 PFOS	91		50 - 200
M2-4:2 FTS	116		50 - 200
M2-6:2 FTS	95		50 - 200
M2-8:2 FTS	102		50 - 200
13C3 PFHxS	98		50 - 200

**Lab Sample ID: LCSD 410-513415/3-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 517572**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 513415**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	
								RPD	Limit
Perfluorobutanoic acid (PFBA)	10.0	10.1		ng/L		101	70 - 130	2	30
Perfluoropentanoic acid (PFPeA)	10.0	10.8		ng/L		108	70 - 130	1	30
Perfluorohexanoic acid (PFHxA)	10.0	10.1		ng/L		101	70 - 130	5	30
Perfluoroheptanoic acid (PFHpA)	10.0	9.73	M	ng/L		97	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	10.0	12.5	M	ng/L		125	70 - 130	4	30
Perfluorononanoic acid (PFNA)	10.0	9.99		ng/L		100	70 - 130	7	30
Perfluorodecanoic acid (PFDA)	10.0	10.2		ng/L		102	70 - 130	1	30
Perfluoroundecanoic acid (PFUnA)	10.0	9.69		ng/L		97	70 - 130	3	30

Eurofins Lancaster Laboratories Environment Testing, LLC

# QC Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Method: EPA 533 - EPA 533 Nov 2019 (Continued)

**Lab Sample ID: LCSD 410-513415/3-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 517572**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 513415**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorododecanoic acid (PFDoA)	10.0	10.6		ng/L		106	70 - 130	4	30
Perfluorobutanesulfonic acid (PFBS)	8.85	8.79		ng/L		99	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	9.12	8.90		ng/L		98	70 - 130	2	30
Perfluoroheptanesulfonic acid (PFHpS)	9.52	9.70		ng/L		102	70 - 130	4	30
Perfluorooctanesulfonic acid (PFOS)	9.26	9.47	M	ng/L		102	70 - 130	2	30
Perfluoropentanesulfonic acid (PFPeS)	9.38	9.62		ng/L		103	70 - 130	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	9.30	9.05		ng/L		97	70 - 130	1	30
Hexafluoropropylene oxide dimer acid (HFPO DA)	10.0	10.4		ng/L		104	70 - 130	4	30
11Cl-PF3OUdS	9.30	8.96		ng/L		96	70 - 130	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.45	9.30		ng/L		98	70 - 130	0	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	9.34	10.4	M	ng/L		112	70 - 130	3	30
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	9.48	10.3	M	ng/L		109	70 - 130	3	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	9.58	9.85		ng/L		103	70 - 130	3	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.0	9.65		ng/L		97	70 - 130	3	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	10.0	10.0		ng/L		100	70 - 130	0	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	10.0	10.3		ng/L		103	70 - 130	0	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	8.90	9.23		ng/L		104	70 - 130	6	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C3 HFPO-DA	87		50 - 200
13C4 PFBA	94		50 - 200
13C3 PFBS	92		50 - 200
13C5 PFPeA	90		50 - 200
13C5 PFHxA	91		50 - 200
13C4 PFHpA	95		50 - 200
13C8 PFOA	69		50 - 200
13C9 PFNA	87		50 - 200
13C6 PFDA	85		50 - 200
13C7 PFUnA	91		50 - 200
13C2 PFDoA	87		50 - 200
13C8 PFOS	94		50 - 200
M2-4:2 FTS	116		50 - 200
M2-6:2 FTS	97		50 - 200
M2-8:2 FTS	104		50 - 200
13C3 PFHxS	99		50 - 200

# QC Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Method: EPA 533 - EPA 533 Nov 2019 (Continued)

**Lab Sample ID: MB 410-515042/1-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 514686**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 515042**

Analyte	MB	MB	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.0		3.0	2.0	1.0	ng/L		06/07/24 03:23	1
Perfluoropentanoic acid (PFPeA)	<1.5	M	2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluorohexanoic acid (PFHxA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluoroheptanoic acid (PFHpA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluorooctanoic acid (PFOA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluorononanoic acid (PFNA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluorodecanoic acid (PFDA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluoroundecanoic acid (PFUnA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluorododecanoic acid (PFDoA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluorobutanesulfonic acid (PFBS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluorohexanesulfonic acid (PFHxS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluorooctanesulfonic acid (PFOS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluoropentanesulfonic acid (PFPeS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Hexafluoropropylene oxide dimer acid (HFPO DA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
11Cl-PF3OUdS	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	<2.0		3.0	2.0	1.0	ng/L		06/07/24 03:23	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<1.5		2.0	1.5	0.50	ng/L		06/07/24 03:23	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 HFPO-DA	114		50 - 200	06/04/24 13:12	06/07/24 03:23	1
13C4 PFBA	125		50 - 200	06/04/24 13:12	06/07/24 03:23	1
13C3 PFBS	122		50 - 200	06/04/24 13:12	06/07/24 03:23	1
13C5 PFPeA	138		50 - 200	06/04/24 13:12	06/07/24 03:23	1
13C5 PFHxA	117		50 - 200	06/04/24 13:12	06/07/24 03:23	1
13C4 PFHpA	121		50 - 200	06/04/24 13:12	06/07/24 03:23	1
13C8 PFOA	123		50 - 200	06/04/24 13:12	06/07/24 03:23	1
13C9 PFNA	126		50 - 200	06/04/24 13:12	06/07/24 03:23	1
13C6 PFDA	123		50 - 200	06/04/24 13:12	06/07/24 03:23	1
13C7 PFUnA	123		50 - 200	06/04/24 13:12	06/07/24 03:23	1
13C2 PFDoA	116		50 - 200	06/04/24 13:12	06/07/24 03:23	1
13C8 PFOS	122		50 - 200	06/04/24 13:12	06/07/24 03:23	1
M2-4:2 FTS	141		50 - 200	06/04/24 13:12	06/07/24 03:23	1
M2-6:2 FTS	144		50 - 200	06/04/24 13:12	06/07/24 03:23	1
M2-8:2 FTS	147		50 - 200	06/04/24 13:12	06/07/24 03:23	1



# QC Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Method: EPA 533 - EPA 533 Nov 2019 (Continued)

**Lab Sample ID: MB 410-515042/1-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 514686**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 515042**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 PFHxS	122		50 - 200	06/04/24 13:12	06/07/24 03:23	1

**Lab Sample ID: LCS 410-515042/2-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 514686**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 515042**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	80.0	82.3		ng/L		103	70 - 130
Perfluorohexanoic acid (PFHxA)	80.0	83.6		ng/L		105	70 - 130
Perfluoroheptanoic acid (PFHpA)	80.0	82.5		ng/L		103	70 - 130
Perfluorooctanoic acid (PFOA)	80.0	77.5	M	ng/L		97	70 - 130
Perfluorononanoic acid (PFNA)	80.0	80.1		ng/L		100	70 - 130
Perfluorodecanoic acid (PFDA)	80.0	83.8		ng/L		105	70 - 130
Perfluoroundecanoic acid (PFUnA)	80.0	78.1		ng/L		98	70 - 130
Perfluorododecanoic acid (PFDoA)	80.0	81.4		ng/L		102	70 - 130
Perfluorobutanesulfonic acid (PFBS)	70.8	70.8		ng/L		100	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	73.0	74.9		ng/L		103	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	76.2	77.0		ng/L		101	70 - 130
Perfluorooctanesulfonic acid (PFOS)	74.0	73.5		ng/L		99	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	75.0	75.7		ng/L		101	70 - 130
9-Chlorohexadecafluoro-3-oxanon ne-1-sulfonic acid (9Cl-PF3ONS)	74.4	70.7		ng/L		95	70 - 130
Hexafluoropropylene oxide dimer acid (HFPO DA)	80.0	82.8		ng/L		104	70 - 130
11Cl-PF3OUdS	74.4	71.4		ng/L		96	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	75.6	84.4		ng/L		112	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	74.7	76.4		ng/L		102	70 - 130
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	75.8	78.0		ng/L		103	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	76.6	78.6		ng/L		103	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	80.0	83.9		ng/L		105	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	80.0	87.9		ng/L		110	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	80.0	88.8		ng/L		111	70 - 130
Perfluoro (2-ethoxyethane) sulfoni acid (PFEEESA)	71.2	69.2		ng/L		97	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	117		50 - 200
13C4 PFBA	127		50 - 200
13C3 PFBS	127		50 - 200
13C5 PFPeA	133		50 - 200
13C5 PFHxA	123		50 - 200
13C4 PFHpA	124		50 - 200

# QC Sample Results

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Method: EPA 533 - EPA 533 Nov 2019 (Continued)

Lab Sample ID: LCS 410-515042/2-A  
Matrix: Drinking Water  
Analysis Batch: 514686

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 515042

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C8 PFOA	133		50 - 200
13C9 PFNA	132		50 - 200
13C6 PFDA	128		50 - 200
13C7 PFUnA	128		50 - 200
13C2 PFDoA	127		50 - 200
13C8 PFOS	131		50 - 200
M2-4:2 FTS	142		50 - 200
M2-6:2 FTS	150		50 - 200
M2-8:2 FTS	146		50 - 200
13C3 PFHxS	127		50 - 200



# QC Association Summary

Client: MN Dept of Military Affairs Facilities Management Office  
 Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## LCMS

### Prep Batch: 513283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-172417-1	W-MN-RIPL-004	Total/NA	Drinking Water	EPA 533	
410-172417-2	W-MN-RIPL-005	Total/NA	Drinking Water	EPA 533	
410-172417-3	W-MN-RIPL-001	Total/NA	Drinking Water	EPA 533	
MB 410-513283/1-A	Method Blank	Total/NA	Drinking Water	EPA 533	
LCS 410-513283/2-A	Lab Control Sample	Total/NA	Drinking Water	EPA 533	
LCSD 410-513283/3-A	Lab Control Sample Dup	Total/NA	Drinking Water	EPA 533	

### Prep Batch: 513415

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-172417-4	W-MN-RIPL-003	Total/NA	Drinking Water	EPA 533	
410-172417-5	W-MN-RIPL-002	Total/NA	Drinking Water	EPA 533	
410-172417-6	W-MN-RIPL-FB-001	Total/NA	Drinking Water	EPA 533	
410-172417-7	W-MN-RIPL-017	Total/NA	Drinking Water	EPA 533	
410-172417-8	W-MN-RIPL-018	Total/NA	Drinking Water	EPA 533	
410-172417-9	W-MN-RIPL-019	Total/NA	Drinking Water	EPA 533	
410-172417-10	W-MN-RIPL-020	Total/NA	Drinking Water	EPA 533	
410-172417-11	W-MN-RIPL-021	Total/NA	Drinking Water	EPA 533	
410-172417-12 - RA	W-MN-RIPL-022	Total/NA	Drinking Water	EPA 533	
410-172417-12	W-MN-RIPL-022	Total/NA	Drinking Water	EPA 533	
410-172417-13	W-MN-RIPL-FB-002	Total/NA	Drinking Water	EPA 533	
410-172417-14	W-MN-RIPL-015	Total/NA	Drinking Water	EPA 533	
410-172417-15	W-MN-RIPL-014	Total/NA	Drinking Water	EPA 533	
410-172417-16	W-MN-RIPL-013	Total/NA	Drinking Water	EPA 533	
410-172417-17	W-MN-RIPL-011	Total/NA	Drinking Water	EPA 533	
410-172417-18	W-MN-RIPL-012	Total/NA	Drinking Water	EPA 533	
410-172417-19	W-MN-RIPL-010	Total/NA	Drinking Water	EPA 533	
410-172417-20	W-MN-RIPL-007	Total/NA	Drinking Water	EPA 533	
410-172417-21	W-MN-RIPL-008	Total/NA	Drinking Water	EPA 533	
MB 410-513415/1-A	Method Blank	Total/NA	Drinking Water	EPA 533	
LCS 410-513415/2-A	Lab Control Sample	Total/NA	Drinking Water	EPA 533	
LCSD 410-513415/3-A	Lab Control Sample Dup	Total/NA	Drinking Water	EPA 533	

### Analysis Batch: 514686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-172417-1	W-MN-RIPL-004	Total/NA	Drinking Water	EPA 533	513283
410-172417-2	W-MN-RIPL-005	Total/NA	Drinking Water	EPA 533	513283
410-172417-3	W-MN-RIPL-001	Total/NA	Drinking Water	EPA 533	513283
410-172417-22	W-MN-RIPL-009	Total/NA	Drinking Water	EPA 533	515042
410-172417-24	HASTINGS-FB-01	Total/NA	Drinking Water	EPA 533	515042
410-172417-25	HASTINGS-01	Total/NA	Drinking Water	EPA 533	515042
MB 410-513283/1-A	Method Blank	Total/NA	Drinking Water	EPA 533	513283
MB 410-515042/1-A	Method Blank	Total/NA	Drinking Water	EPA 533	515042
LCS 410-513283/2-A	Lab Control Sample	Total/NA	Drinking Water	EPA 533	513283
LCS 410-515042/2-A	Lab Control Sample	Total/NA	Drinking Water	EPA 533	515042
LCSD 410-513283/3-A	Lab Control Sample Dup	Total/NA	Drinking Water	EPA 533	513283

### Prep Batch: 515042

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-172417-22	W-MN-RIPL-009	Total/NA	Drinking Water	EPA 533	
410-172417-23	W-MN-RIPL-FD-01	Total/NA	Drinking Water	EPA 533	
410-172417-24	HASTINGS-FB-01	Total/NA	Drinking Water	EPA 533	

# QC Association Summary

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## LCMS (Continued)

### Prep Batch: 515042 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-172417-25	HASTINGS-01	Total/NA	Drinking Water	EPA 533	
410-172417-25 - DL	HASTINGS-01	Total/NA	Drinking Water	EPA 533	
MB 410-515042/1-A	Method Blank	Total/NA	Drinking Water	EPA 533	
LCS 410-515042/2-A	Lab Control Sample	Total/NA	Drinking Water	EPA 533	

### Analysis Batch: 515084

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-172417-23	W-MN-RIPL-FD-01	Total/NA	Drinking Water	EPA 533	515042
410-172417-25 - DL	HASTINGS-01	Total/NA	Drinking Water	EPA 533	515042

### Analysis Batch: 517572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-172417-4	W-MN-RIPL-003	Total/NA	Drinking Water	EPA 533	513415
410-172417-5	W-MN-RIPL-002	Total/NA	Drinking Water	EPA 533	513415
410-172417-6	W-MN-RIPL-FB-001	Total/NA	Drinking Water	EPA 533	513415
410-172417-7	W-MN-RIPL-017	Total/NA	Drinking Water	EPA 533	513415
410-172417-8	W-MN-RIPL-018	Total/NA	Drinking Water	EPA 533	513415
410-172417-9	W-MN-RIPL-019	Total/NA	Drinking Water	EPA 533	513415
410-172417-10	W-MN-RIPL-020	Total/NA	Drinking Water	EPA 533	513415
410-172417-11	W-MN-RIPL-021	Total/NA	Drinking Water	EPA 533	513415
410-172417-12	W-MN-RIPL-022	Total/NA	Drinking Water	EPA 533	513415
410-172417-13	W-MN-RIPL-FB-002	Total/NA	Drinking Water	EPA 533	513415
410-172417-14	W-MN-RIPL-015	Total/NA	Drinking Water	EPA 533	513415
410-172417-15	W-MN-RIPL-014	Total/NA	Drinking Water	EPA 533	513415
410-172417-16	W-MN-RIPL-013	Total/NA	Drinking Water	EPA 533	513415
410-172417-17	W-MN-RIPL-011	Total/NA	Drinking Water	EPA 533	513415
410-172417-18	W-MN-RIPL-012	Total/NA	Drinking Water	EPA 533	513415
410-172417-19	W-MN-RIPL-010	Total/NA	Drinking Water	EPA 533	513415
410-172417-20	W-MN-RIPL-007	Total/NA	Drinking Water	EPA 533	513415
410-172417-21	W-MN-RIPL-008	Total/NA	Drinking Water	EPA 533	513415
MB 410-513415/1-A	Method Blank	Total/NA	Drinking Water	EPA 533	513415
LCS 410-513415/2-A	Lab Control Sample	Total/NA	Drinking Water	EPA 533	513415
LCSD 410-513415/3-A	Lab Control Sample Dup	Total/NA	Drinking Water	EPA 533	513415

### Analysis Batch: 518143

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-172417-12 - RA	W-MN-RIPL-022	Total/NA	Drinking Water	EPA 533	513415

# Lab Chronicle

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Client Sample ID: W-MN-RIPL-004

Date Collected: 05/14/24 08:38

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-1

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513283	Q5YX	ELLE	05/25/24 11:43
Total/NA	Analysis	EPA 533		1	514686	QD9Y	ELLE	06/07/24 02:37

## Client Sample ID: W-MN-RIPL-005

Date Collected: 05/14/24 08:40

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-2

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513283	Q5YX	ELLE	05/25/24 11:43
Total/NA	Analysis	EPA 533		1	514686	QD9Y	ELLE	06/07/24 02:49

## Client Sample ID: W-MN-RIPL-001

Date Collected: 05/14/24 08:53

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-3

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513283	Q5YX	ELLE	05/25/24 11:43
Total/NA	Analysis	EPA 533		1	514686	QD9Y	ELLE	06/07/24 03:00

## Client Sample ID: W-MN-RIPL-003

Date Collected: 05/14/24 09:05

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-4

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/14/24 21:39

## Client Sample ID: W-MN-RIPL-002

Date Collected: 05/14/24 09:08

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-5

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/14/24 22:02

## Client Sample ID: W-MN-RIPL-FB-001

Date Collected: 05/14/24 09:10

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-6

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/14/24 22:14

# Lab Chronicle

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Client Sample ID: W-MN-RIPL-017

Date Collected: 05/14/24 10:05

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-7

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/14/24 22:25

## Client Sample ID: W-MN-RIPL-018

Date Collected: 05/14/24 10:17

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-8

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/14/24 22:37

## Client Sample ID: W-MN-RIPL-019

Date Collected: 05/14/24 10:32

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-9

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/14/24 22:48

## Client Sample ID: W-MN-RIPL-020

Date Collected: 05/14/24 10:42

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-10

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/14/24 23:00

## Client Sample ID: W-MN-RIPL-021

Date Collected: 05/14/24 10:55

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-11

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/14/24 23:12

## Client Sample ID: W-MN-RIPL-022

Date Collected: 05/14/24 11:45

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-12

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/14/24 23:23
Total/NA	Prep	EPA 533	RA		513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533	RA	1	518143	QD9Y	ELLE	06/17/24 18:22

# Lab Chronicle

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Client Sample ID: W-MN-RIPL-FB-002

Date Collected: 05/14/24 11:50

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-13

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/14/24 23:35

## Client Sample ID: W-MN-RIPL-015

Date Collected: 05/14/24 12:22

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-14

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/14/24 23:58

## Client Sample ID: W-MN-RIPL-014

Date Collected: 05/14/24 12:52

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-15

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/15/24 00:10

## Client Sample ID: W-MN-RIPL-013

Date Collected: 05/14/24 13:04

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-16

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/15/24 00:21

## Client Sample ID: W-MN-RIPL-011

Date Collected: 05/14/24 13:22

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-17

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/15/24 00:33

## Client Sample ID: W-MN-RIPL-012

Date Collected: 05/14/24 13:35

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-18

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/15/24 00:44



# Lab Chronicle

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Client Sample ID: W-MN-RIPL-010

Date Collected: 05/14/24 14:03

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-19

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/15/24 00:56

## Client Sample ID: W-MN-RIPL-007

Date Collected: 05/14/24 15:18

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-20

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/15/24 01:08

## Client Sample ID: W-MN-RIPL-008

Date Collected: 05/14/24 15:31

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-21

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			513415	HQ8B	ELLE	06/04/24 10:32
Total/NA	Analysis	EPA 533		1	517572	QD9Y	ELLE	06/15/24 01:19

## Client Sample ID: W-MN-RIPL-009

Date Collected: 05/14/24 17:23

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-22

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			515042	Q5YX	ELLE	06/04/24 13:12
Total/NA	Analysis	EPA 533		1	514686	QD9Y	ELLE	06/07/24 04:21

## Client Sample ID: W-MN-RIPL-FD-01

Date Collected: 05/14/24 00:00

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-23

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			515042	Q5YX	ELLE	06/04/24 13:12
Total/NA	Analysis	EPA 533		1	515084	WR4P	ELLE	06/08/24 14:07

## Client Sample ID: HASTINGS-FB-01

Date Collected: 05/14/24 11:25

Date Received: 05/17/24 09:40

## Lab Sample ID: 410-172417-24

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA 533			515042	Q5YX	ELLE	06/04/24 13:12
Total/NA	Analysis	EPA 533		1	514686	QD9Y	ELLE	06/07/24 04:56

# Lab Chronicle

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

**Client Sample ID: HASTINGS-01**

**Lab Sample ID: 410-172417-25**

**Date Collected: 05/14/24 11:15**

**Matrix: Drinking Water**

**Date Received: 05/17/24 09:40**

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Analyst</u>	<u>Lab</u>	<u>Prepared or Analyzed</u>
Total/NA	Prep	EPA 533			515042	Q5YX	ELLE	06/04/24 13:12
Total/NA	Analysis	EPA 533		1	514686	QD9Y	ELLE	06/07/24 05:07
Total/NA	Prep	EPA 533	DL		515042	Q5YX	ELLE	06/04/24 13:12
Total/NA	Analysis	EPA 533	DL	10	515084	WR4P	ELLE	06/08/24 16:03

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



# Accreditation/Certification Summary

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

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

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24
Minnesota	NELAP	042-999-487	12-31-24

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# Method Summary

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

Method	Method Description	Protocol	Laboratory
EPA 533	EPA 533 Nov 2019	EPA	ELLE
EPA 533	EPA 533 Nov 2019	EPA	ELLE

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



# Sample Summary

Client: MN Dept of Military Affairs Facilities Management Office  
Project/Site: PFAS in DW by EPA 533

Job ID: 410-172417-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-172417-1	W-MN-RIPL-004	Drinking Water	05/14/24 08:38	05/17/24 09:40
410-172417-2	W-MN-RIPL-005	Drinking Water	05/14/24 08:40	05/17/24 09:40
410-172417-3	W-MN-RIPL-001	Drinking Water	05/14/24 08:53	05/17/24 09:40
410-172417-4	W-MN-RIPL-003	Drinking Water	05/14/24 09:05	05/17/24 09:40
410-172417-5	W-MN-RIPL-002	Drinking Water	05/14/24 09:08	05/17/24 09:40
410-172417-6	W-MN-RIPL-FB-001	Drinking Water	05/14/24 09:10	05/17/24 09:40
410-172417-7	W-MN-RIPL-017	Drinking Water	05/14/24 10:05	05/17/24 09:40
410-172417-8	W-MN-RIPL-018	Drinking Water	05/14/24 10:17	05/17/24 09:40
410-172417-9	W-MN-RIPL-019	Drinking Water	05/14/24 10:32	05/17/24 09:40
410-172417-10	W-MN-RIPL-020	Drinking Water	05/14/24 10:42	05/17/24 09:40
410-172417-11	W-MN-RIPL-021	Drinking Water	05/14/24 10:55	05/17/24 09:40
410-172417-12	W-MN-RIPL-022	Drinking Water	05/14/24 11:45	05/17/24 09:40
410-172417-13	W-MN-RIPL-FB-002	Drinking Water	05/14/24 11:50	05/17/24 09:40
410-172417-14	W-MN-RIPL-015	Drinking Water	05/14/24 12:22	05/17/24 09:40
410-172417-15	W-MN-RIPL-014	Drinking Water	05/14/24 12:52	05/17/24 09:40
410-172417-16	W-MN-RIPL-013	Drinking Water	05/14/24 13:04	05/17/24 09:40
410-172417-17	W-MN-RIPL-011	Drinking Water	05/14/24 13:22	05/17/24 09:40
410-172417-18	W-MN-RIPL-012	Drinking Water	05/14/24 13:35	05/17/24 09:40
410-172417-19	W-MN-RIPL-010	Drinking Water	05/14/24 14:03	05/17/24 09:40
410-172417-20	W-MN-RIPL-007	Drinking Water	05/14/24 15:18	05/17/24 09:40
410-172417-21	W-MN-RIPL-008	Drinking Water	05/14/24 15:31	05/17/24 09:40
410-172417-22	W-MN-RIPL-009	Drinking Water	05/14/24 17:23	05/17/24 09:40
410-172417-23	W-MN-RIPL-FD-01	Drinking Water	05/14/24 00:00	05/17/24 09:40
410-172417-24	HASTINGS-FB-01	Drinking Water	05/14/24 11:25	05/17/24 09:40
410-172417-25	HASTINGS-01	Drinking Water	05/14/24 11:15	05/17/24 09:40

eurofins Lancaster Laboratories Environmental	Document Title: Secure Storage Chain of Custody Original Sample	
	Eurofins Document Reference: Q-EQA-FRM6874	Revision: 2.1
	Historical Reference: 1-P-QM-FOR-9007782; Form 2016	
Effective date : 12 May 2017		Effective

Client/Project: MN Dept. of Military Affairs Facilities Management office

Sample # Range from Entry Group: 410-172417-1 → -3 SDG: N/A

Preservative: Amn. Acetate Matrix: --- Bottle Type: ---

Sample Number(s) in Custody	Released By	Received By	Date of Transfer	Time of Transfer	Reason for Change of Custody	Dist., Extr. or Digest Chain Created (X)
410-172417-1 → -3	DP 4033 Storage	TW594095	6/6/24	17:10 <sup>Ⓢ</sup>	Missing Samples	---
410-172417-1 → -3	TW594095	24743	6/6/24	21:08	PFAS Analysis	---
410-172417-1 → 3	24743	ABP 3310	06/07/2024	03:12	Analysis Complete	---
410-172417-1 → B	ABP 3310	Depot-4033 Storage	06/07/2024	13:56	Storage	X

Ⓢ Not recorded in real-time, TW594095 6/6/24





410-172417 Chain of Custody

es Environme

# Chain of Custody Record

eurofins Environment Testing America

Sample: <b>Russell Howard</b>	Lab PM: <b>Brown, Nicole</b>	Carrier Tracking No(s):	COC No: <b>410-66948-18289.4</b>
Phone: <b>214-300-5494</b>	E-Mail: <b>Nicole.Brown@et.eurofinsus.com</b>	State of Origin: <b>MN</b>	Page: <b>1 of 3</b>

Company: <b>Russell Howard</b>		PWSID:	Job #:
Address: <b>MN Dept of Military Affairs Facilities Management Office</b>		<b>Analysis Requested</b>	

Address: <b>15000 Highway 115 Camp Ripley Building 2-1</b>	Due Date Requested:	Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Y - Trizma Z - other (specify)
City: <b>Little Falls</b>	TAT Requested (days):	
State, Zip: <b>MN, 56345-4173</b>	Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Phone: <b>214-300-5496(Tel)</b>	PO #:	
Email: <b>russell.d.howard7 nfg@army.mil</b>	WO #:	
Project Name: <b>PFAS in DW by EPA 5673</b>	Project #: <b>41007393</b>	
Site:	SSOW#:	Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=soil, BT=Tissue, A=Air)	Analysis Requested	Special Instructions/Note:
W-MN-RIPL-004	5/14/24	0838	G	DW	X	
W-MN-RIPL-005		0840		DW		
W-MN-RIPL-001 <sup>5/14/24</sup>		0853		DW		
W-MN-RIPL-002 <sup>5/14/24</sup>		0905		DW		
W-MN-RIPL-003 <sup>5/14/24</sup>		0908		DW		
W-MN-RIPL-002 <sup>5/14/24</sup>		0910		DW		
W-MN-RIPL-FB-001		0910		DW		
W-MN-RIPL-017		1005		DW		
W-MN-RIPL-018		1017		DW		
W-MN-RIPL-019		1032		DW		
W-MN-RIPL-020		1042		DW		
W-MN-RIPL-021	5/14/24	1055	G	DW	X	

<b>Possible Hazard Identification</b> <input checked="" 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	<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b> <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months
--	---

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

Special Instructions/QC Requirements: \_\_\_\_\_

Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Method of Shipment: \_\_\_\_\_

Relinquished by: <b>[Signature]</b>	Date/Time: <b>5/16/24 12:19</b>	Company: _____	Received by: <b>Lozier/Fedex</b>	Date/Time: <b>5/16/24 12:19</b>	Company: _____
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Relinquished by: _____	Date/Time: _____	Company: _____	Received by: _____	Date/Time: _____	Company: _____
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Relinquished by: _____	Date/Time: _____	Company: _____	Received by: <b>[Signature]</b>	Date/Time: <b>5/17/24 9:40</b>	Company: <b>ECCET</b>
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Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.: _____	Cooler Temperature(s) °C and Other Remarks: <b>Raw 3-4- COR 3-4</b>
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Ver. 01/16/2019



Chain of Custody Record

<b>Client Information</b>		Sampler: Russell Howard	Lab PM: Brown, Nicole	Carrier Tracking No(s):	COC No: 410-66948-18289.4			
Client Contact: Russell Howard		Phone: 214-300-5496	E-Mail: Nicole.Brown@et.eurofinsus.com	State of Origin: MN	Page: 2 of 3			
Company: MN Dept of Military Affairs Facilities Management Office		PWSID:	<b>Analysis Requested</b>					
Address: 15000 Highway 115 Camp Ripley Building 2-1		Due Date Requested:	Preservation Codes: A - HCL                    M - Hexane B - NaOH                N - None C - Zn Acetate        O - AsNaO2 D - Nitric Acid        P - Na2O4S E - NaHSO4            Q - Na2SO3 F - MeOH                R - Na2S2O3 G - Amchlor            S - H2SO4 H - Ascorbic Acid    T - TSP Dodecahydrate I - Ice                    U - Acetone J - DI Water            V - MCAA K - EDTA                W - pH 4-5 L - EDA                 Y - Trizma Z - other (specify)					
City: Little Falls		TAT Requested (days):						
State, Zip: MN, 56345-4173		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No						
Phone: 214-300-5496(Tel)		PO #:						
Email: russell.d.howard7.nfg@army.mil		WO #:						
Project Name: PFAS in DW by EPA 6872		Project #: 41007393						
Site:		SSOW#:						
<b>Sample Identification</b>		Sample Date				Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Solid, Or waste/soil, BT=Tissue, AA=)
W-MN-RIPL-022		5/14/24				1145	G	DW
W-MN-RIPL-FB-002						1150		DW
W-MN-RIPL-015			1222		DW			
W-MN-RIPL-014			1252		DW			
W-MN-RIPL-013			1304		DW			
W-MN-RIPL-011			1322		DW			
W-MN-RIPL-012			1335		DW			
W-MN-RIPL-010			1403		DW			
W-MN-RIPL-007			1518		DW			
W-MN-RIPL-008			1531		DW			
W-MN-RIPL-009		5/14/24	1723	G	DW			
<b>Possible Hazard Identification</b>			<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>					
<input checked="" 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			<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)			Special Instructions/QC Requirements:					
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:				
Relinquished by: [Signature]		Date/Time: 5/16/24 1219	Company:	Received by: [Signature]	Date/Time: 5/16/24 1219			
Relinquished by:		Date/Time:	Company:	Received by:	Date/Time:			
Relinquished by:		Date/Time:	Company:	Received by: [Signature]	Date/Time: 5/17/24 9:40			
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: Raw 3.4 - cor 3.4						

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Chain of Custody Record

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<b>Client Information</b>		Sampler: <u>Russell Howard</u>	Lab PM: Brown, Nicole	Carrier Tracking No(s):	COC No: 410-66948-18289.4
Client Contact: Russell Howard		Phone: <u>214-300-5496</u>	E-Mail: Nicole.Brown@et.eurofinsus.com	State of Origin: MN	Page: 4 of 3053
Company: MN Dept of Military Affairs Facilities Management Office		PWSID:	<b>Analysis Requested</b>		Job #:
Address: 15000 Highway 115 Camp Ripley Building 2-1		Due Date Requested:	<p><i>ROH 5/14/24</i></p> <p><i>3571-DW-DW-EPA 517.1.1.1.1.1</i></p> <p><i>EPA 533</i></p> <p><i>Total Number of Containers</i></p>		<b>Preservation Codes:</b> A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchior S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Y - Trizma Z - other (specify)  Other:
City: Little Falls	TAT Requested (days):				
State, Zip: MN, 56345-4173	Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No				
Phone: 214-300-5496(Tel)	PO #:				
Email: russell.d.howard7.nfg@army.mil	WO #:				
Project Name: PFAS in DW by EPA 533	Project #: 41007393				
Site:	SSOW#:				
<b>Sample Identification</b>	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=water/oil, BT=Tissue, A=As)	Special Instructions/Note:
<u>W-MN-RIP-L-FD-001</u>	<u>5/14/24</u>		<u>G</u>	<u>DW</u>	<u>X</u>
<i>NO Further Entries</i>					
	<u>ROH</u>			<u>DW</u>	
	<u>5/16/24</u>			<u>DW</u>	
<b>Possible Hazard Identification</b>					
<input checked="" 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			<b>Sample Disposal</b> (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		
Deliverable Requested: I, II, III, IV, Other (specify)			Special Instructions/QC Requirements:		
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:	
Relinquished by: <u>[Signature]</u>	Date/Time: <u>5/16/24 1219</u>	Company:	Received by: <u>[Signature]</u>	Date/Time: <u>5/16/24 1219</u>	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by: <u>[Signature]</u>	Date/Time: <u>5/17/24 9:40</u>	Company: <u>ECET</u>
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: <u>Low 3-4 °C</u>			

mB

MR

# Login Sample Receipt Checklist

Client: MN Dept of Military Affairs Facilities Management Office

Job Number: 410-172417-1

**Login Number: 172417**

**List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**

**List Number: 1**

**Creator: Ballard, Megan**

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable, where thermal pres is required (<math>\leq 6C</math>, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temp acceptable, where thermal pres is required (<math>\leq 6C</math>, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to Job Narrative for details.
There are no discrepancies between the containers received and the COC.	False	Received extra samples not listed on COC.
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	True	
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	