



Northern Lake Service, Inc • 400 N Lake Ave • Crandon, WI 54520  
800-278-1254 • [www.nlslab.com](http://www.nlslab.com)

September 05, 2023

Mark Pauli  
Wisconsin Department of Natural Resources  
101 S Webster St  
Madison, WI 53707

Project: 2023 Drinking Water Testing - Starks Expanded Area  
Project Number: PFAS Private Wells  
Work Order: CB09956  
Received: 08/21/23

Enclosed are the results of analyses for samples received by our laboratory on 8/21/2023. If you have any questions concerning this report, please feel free to contact a client service representative at [clientservices@nlslab.com](mailto:clientservices@nlslab.com).

Sincerely,

A handwritten signature in black ink that reads "Tom Priebe".

Tom Priebe For Client Services  
Northern Lake Service, Inc.



Wisconsin Department of Natural Resources  
101 S Webster St  
Madison, WI 53707

Project: 2023 Drinking Water Testing - Starks Expanded Area  
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**Reported:**  
9/5/23 7:33

**Work Order:**  
CB09956

### Sample Summary

Descriptions of all qualifiers listed throughout this report can be found on the Qualifiers and Definitions Page.

| Lab ID     | Sample             | Matrix | Sample Type | Qualifiers | Date Sampled  | Date Received |
|------------|--------------------|--------|-------------|------------|---------------|---------------|
| CB09956-01 | AAX309             | DW     |             |            | 8/21/23 10:10 | 8/21/23 10:45 |
| CB09956-02 | AAX309 Field Blank | DW     |             |            | 8/21/23 10:10 | 8/21/23 10:45 |



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**Sample Results**

**Sample: AAX309**  
**CB09956-01 (DW) Sampled: 08/21/23 10:10**

| Analyte  | Result | Qualifier | LOD             | LOQ | MCL | Units | Date Prepared | Date Analyzed | Analyst | Method             | Lab Cert Code |
|--|--------|-----------|-----------------|-----|-----|-------|---------------|---------------|---------|--------------------|---------------|
| <b>Semi-Volatiles</b>  |        |           |                 |     |     |       |               |               |         |                    |               |
| 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) | ND     |           | 16              | 50  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)    | ND     |           | 17              | 55  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| 4,8-dioxa-3H-perfluorononanoic acid (ADONA)                        | ND     |           | 18              | 60  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| hexafluoropropylene oxide dimer acid (HFPO DA)                     | ND     |           | 20              | 70  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)           | ND     |           | 24              | 80  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)          | ND     |           | 20              | 65  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorobutanesulfonic acid (PFBS)                                | ND     |           | 15              | 50  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorodecanoic acid (PFDA)                                      | ND     |           | 16              | 55  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorododecanoic acid (PFDoA)                                   | ND     |           | 12              | 38  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluoroheptanoic acid (PFHpA)                                    | 1100   |           | 22              | 75  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorohexanoic acid (PFHxA)                                     | 920    |           | 24              | 80  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorohexanesulfonic acid (PFHxS)                               | 26     | J         | 17              | 55  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorononanoic acid (PFNA)                                      | ND     |           | 23              | 75  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorooctanoic acid (PFOA)                                      | 2500   |           | 24              | 80  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorooctanesulfonic acid (PFOS)                                | ND     |           | 16              | 50  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorotetradecanoic acid (PFTA)                                 | ND     | CCV%H     | 17              | 55  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorotridecanoic acid (PFTTrDA)                                | ND     |           | 22              | 70  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluoroundecanoic acid (PFUnA)                                   | ND     |           | 15              | 50  |     | ng/L  | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| Surrogate: (SURR) C13-PFHxA  | 78%    |           | Limits: 70-130% |     |     |       | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| Surrogate: (SURR) C13-HFPODA                                       | 72%    |           | Limits: 70-130% |     |     |       | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| Surrogate: (SURR) C13-PFDA   | 79%    |           | Limits: 70-130% |     |     |       | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |
| Surrogate: (SURR) d5-NEtFOSAA                                      | 83%    |           | Limits: 70-130% |     |     |       | 8/28/23 5:32  | 8/30/23 8:57  | RAW     | EPA 537.1, Rev 2.0 | 2             |



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**Sample: AAX309 Field Blank**

**CB09956-02 (DW) Sampled: 08/21/23 10:10**

| Analyte  | Result | Qualifier | LOD             | LOQ  | MCL | Units | Date Prepared | Date Analyzed | Analyst | Method             | Lab Cert Code |
|--|--------|-----------|-----------------|------|-----|-------|---------------|---------------|---------|--------------------|---------------|
| <b>Semi-Volatiles</b>  |        |           |                 |      |     |       |               |               |         |                    |               |
| 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) | ND     |           | 0.30            | 0.98 |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)    | ND     |           | 0.33            | 1.1  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| 4,8-dioxa-3H-perfluorononanoic acid (ADONA)                        | ND     |           | 0.36            | 1.2  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| hexafluoropropylene oxide dimer acid (HFPO DA)                     | ND     |           | 0.40            | 1.4  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)           | ND     |           | 0.46            | 1.6  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)          | ND     |           | 0.39            | 1.3  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorobutanesulfonic acid (PFBS)                                | ND     |           | 0.29            | 0.98 |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorodecanoic acid (PFDA)                                      | ND     |           | 0.32            | 1.1  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorododecanoic acid (PFDoA)                                   | ND     |           | 0.23            | 0.75 |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluoroheptanoic acid (PFHpA)                                    | ND     |           | 0.43            | 1.5  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorohexanoic acid (PFHxA)                                     | ND     |           | 0.46            | 1.6  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorohexanesulfonic acid (PFHxS)                               | ND     |           | 0.33            | 1.1  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorononanoic acid (PFNA)                                      | ND     |           | 0.45            | 1.5  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorooctanoic acid (PFOA)                                      | ND     |           | 0.48            | 1.6  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorooctanesulfonic acid (PFOS)                                | ND     |           | 0.30            | 0.98 |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorotetradecanoic acid (PFTA)                                 | ND     |           | 0.33            | 1.1  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluorotridecanoic acid (PFTrDA)                                 | ND     |           | 0.42            | 1.4  |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| perfluoroundecanoic acid (PFUnA)                                   | ND     |           | 0.29            | 0.98 |     | ng/L  | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| Surrogate: (SURR) C13-PFHxA  | 87%    |           | Limits: 70-130% |      |     |       | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| Surrogate: (SURR) C13-HFPODA                                       | 88%    |           | Limits: 70-130% |      |     |       | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| Surrogate: (SURR) C13-PFDA   | 98%    |           | Limits: 70-130% |      |     |       | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |
| Surrogate: (SURR) d5-NEtFOSAA                                      | 88%    |           | Limits: 70-130% |      |     |       | 8/30/23 9:03  | 8/31/23 10:54 | RAW     | EPA 537.1, Rev 2.0 | 2             |



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**List of Certifications**

| <b>Code</b> | <b>Description</b>                   | <b>Number</b> | <b>Expires</b> |
|-------------|--------------------------------------|---------------|----------------|
| 2           | NLS (Crandon) WDNR Laboratory ID No. | 721026460     | 8/31/24        |



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### Qualifiers and Definitions

| Item      | Definition   |
|-----------|--|
| CCV%H     | The continuing calibration verification standard recovery was above QC limits at 132%.           |
| J         | Result is between LOD and LOQ and considered to be within a region of less-certain quantitation. |
| ND        | Analyte NOT DETECTED at or above the LOD or MRL.   |
| LOD       | Limit of Detection.  |
| LOQ       | Limit of Quantitation.   |
| NA        | Not Applicable.  |
| Dry       | Dry Weight Basis.  |
| Wet       | Wet Weight Basis.  |
| % Dry     | Equal to: (mg/kg dry) / 10000.   |
| 1000 ug/L | Equal to: 1 mg/L.  |
| MCL       | Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.             |
| RPD       | Relative Percent Difference.   |
| %REC      | Percent Recovery.  |
| Source    | Sample that was matrix spiked or duplicated.   |

All LOD/LOQs adjusted to reflect preparation volumes, dilutions, and/or solids content.

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECC

CB09956

Wisconsin Lab Cert. No. 72  
WFL DATCP 105-000330



CLIENT: WISCONSIN DNR-DRINKING AND GROUNDWATER

ADDRESS: PO BOX 7921, D615

CITY: MADISON STATE: WI ZIP: 53707

PROJECT DESCRIPTION: PPS PRIVATE WELLS QUOTATION NO.

DNR FID # DNR LICENSE #

CONTACT: MARK PAULI PHONE: 765-499-0612

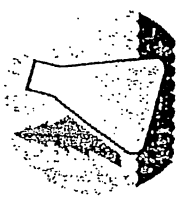
PURCHASE ORDER NO.: 000022899 FAX:

MATRIX:  
 SW = surface water  
 WW = waste water  
 GW = groundwater  
 DW = drinking water  
 TIS = tissue  
 AIR = air  
 SOIL = soil  
 SED = sediment  
 PROD = product  
 SL = sludge  
 OTHER

Indicate G or C if WW Sample is Grab or Composite.

| ITEM NO. | ANALYSIS | SAMPLE ID | COLLECTION |       | MATRIX (See above) | COLLECTION REMARKS (i.e. DNR Well ID #) |
|----------|----------|-----------|------------|-------|--------------------|---|
|          |          |           | DATE       | TIME  |                    |   |
| 1.       |          | AAX309    | 8/21/23    | 10:10 | GW                 | 10 SAMPLE (D)FB                         |
| 2.       |          |           |            |       |                    |   |
| 3.       |          |           |            |       |                    |   |
| 4.       |          |           |            |       |                    |   |
| 5.       |          |           |            |       |                    |   |
| 6.       |          |           |            |       |                    |   |
| 7.       |          |           |            |       |                    |   |
| 8.       |          |           |            |       |                    |   |
| 9.       |          |           |            |       |                    |   |
| 10.      |          |           |            |       |                    |   |

ANALYZE PER ORDER OF ANALYSIS: EPANET10 5371



COLLECTED BY (signature): *William Roberts*

RELINQUISHED BY (signature): *William Roberts*

DISPATCHED BY (signature):

CUSTOMY SEAL NO. (IF ANY): 8-21-23

DATE/TIME: 10:10

RECEIVED BY (signature):

DATE/TIME: 8-21-23 10:55

METHOD OF TRANSPORT: hand

RECEIVED AT NLS (signature): *William Roberts*

DATE/TIME: 8/21/23 10:15

COMPTON: DNR

TEMP: 10.9C

REMARKS & OTHER INFORMATION:

WDNR FACILITY NUMBER:

E-MAIL ADDRESS:

COOLER #

PRESERVATIVE: N = nitric acid OHT = sodium hydroxide  
 Z = zinc acetate HA = hydrochloric & ascorbic acid  
 M = methanol H = hydrochloric acid  
 S = sulfuric acid

1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE COOLER CONTAINING THE SAMPLES DESCRIBED.  
 2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.  
 3. RETURN THIS FORM WITH SAMPLES-CLIENT MAY KEEP PINK COPY.  
 4. PARTIES COLLECTING SAMPLE, LISTED AS REPORT TO AND LISTED AS INVOICED TO AGREE TO STANDARD TERMS & CONDITIONS ON REVERSE.

New well  
 bedrock corral  
 cement plugged  
 clean