

**Notice:** Use this form to request a **written response (on agency letterhead)** from the Department of Natural Resources (DNR) regarding technical assistance, a post-closure change to a site, a specialized agreement or liability clarification for Property with known or suspected environmental contamination. A fee will be required as is authorized by s. 292.55, Wis. Stats., and NR 749, Wis. Adm. Code., unless noted in the instructions below. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

## Definitions

**"Property"** refers to the subject Property that is perceived to have been or has been impacted by the discharge of hazardous substances.

**"Liability Clarification"** refers to a written determination by the Department provided in response to a request made on this form. The response clarifies whether a person is or may become liable for the environmental contamination of a Property, as provided in s. 292.55, Wis. Stats.

**"Technical Assistance"** refers to the Department's assistance or comments on the planning and implementation of an environmental investigation or environmental cleanup on a Property in response to a request made on this form as provided in s. 292.55, Wis. Stats.

**"Post-closure modification"** refers to changes to Property boundaries and/or continuing obligations for Properties or sites that received closure letters for which continuing obligations have been applied or where contamination remains. Many, but not all, of these sites are included on the GIS Registry layer of RR Sites Map to provide public notice of residual contamination and continuing obligations.

## Select the Correct Form

This form should be used to request the following from the DNR:

- Technical Assistance
- Liability Clarification
- Post-Closure Modifications
- Specialized Agreements (tax cancellation, negotiated agreements, etc.)

Do **not** use this form if one of the following applies:

- Request for an **off-site liability exemption or clarification** for Property that has been or is perceived to be contaminated by one or more hazardous substances that originated on another Property containing the source of the contamination. Use DNR's Off-Site Liability Exemption and Liability Clarification Application Form 4400-201.
- Submittal of an Environmental Assessment for the **Lender Liability Exemption**, s 292.21, Wis. Stats., **if no response or review by DNR is requested**. Use the Lender Liability Exemption Environmental Assessment Tracking Form 4400-196.
- Request for an **exemption to develop on a historic fill site** or licensed landfill. Use DNR's Form 4400-226 or 4400-226A.
- **Request for closure** for Property where the investigation and cleanup actions are completed. Use DNR's Case Closure - GIS Registry Form 4400-202.

All forms, publications and additional information are available on the internet at: [dnr.wi.gov/topic/Brownfields/Pubs.html](http://dnr.wi.gov/topic/Brownfields/Pubs.html).

## Instructions

1. Complete sections 1, 2, 6 and 7 for all requests. Be sure to provide adequate and complete information.
2. Select the type of assistance requested: Section 3 for technical assistance or post-closure modifications, Section 4 for a written determination or clarification of environmental liabilities; or Section 5 for a specialized agreement.
3. Include the fee payment that is listed in Section 3, 4, or 5, unless you are a "Voluntary Party" enrolled in the Voluntary Party Liability Exemption Program **and** the questions in Section 2 direct otherwise. Information on to whom and where to send the fee is found in Section 8 of this form.
4. Send the completed request, supporting materials and the fee to the appropriate DNR regional office where the Property is located. See the map on the last page of this form. A paper copy of the signed form and all reports and supporting materials shall be sent with an electronic copy of the form and supporting materials on a compact disk. For electronic document submittal requirements see: <http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf>

The time required for DNR's determination varies depending on the complexity of the site, and the clarity and completeness of the request and supporting documentation.

# Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

Form 4400-237 (R 12/18)

Page 2 of 5

## Section 1. Contact and Recipient Information

### Requester Information

This is the person requesting technical assistance or a post-closure modification review, that his or her liability be clarified or a specialized agreement and is identified as the requester in Section 7. DNR will address its response letter to this person.

Last Name Nelson	First Denice	MI	Organization/ Business Name Tyco Fire Products LP
Mailing Address 2700 Industrial Parkway South		City Marinette	State WI
		ZIP Code 54143	
Phone # (include area code)	Fax # (include area code)	Email	

The requester listed above: (select all that apply)

- Is currently the owner
  Is considering selling the Property  
 Is renting or leasing the Property
  Is considering acquiring the Property  
 Is a lender with a mortgagee interest in the Property  
 Other. Explain the status of the Property with respect to the applicant:

### Contact Information (to be contacted with questions about this request)

Select if same as requester

Contact Last Name Milionis	First Peter	MI	Organization/ Business Name Arcadis
Mailing Address 126 N Jefferson Street, Suite 400		City Milwaukee	State WI
		ZIP Code 53202	
Phone # (include area code) (267) 285-1815	Fax # (include area code)	Email peter.milionis@arcadis.com	

### Environmental Consultant (if applicable)

Contact Last Name Milionis	First Peter	MI	Organization/ Business Name Arcadis
Mailing Address 126 N Jefferson Street, Suite 400		City Milwaukee	State WI
		ZIP Code 53202	
Phone # (include area code) (267) 285-1815	Fax # (include area code)	Email peter.milionis@arcadis.com	

## Section 2. Property Information

Property Name Tyco Fire Technology Center - PFCs	FID No. (if known) 438005590
BRRTS No. (if known) 0238580694	Parcel Identification Number
Street Address 2700 Industrial Parkway South	City Marinette
	State WI
	ZIP Code 54143
County Marinette	Municipality where the Property is located <input checked="" type="radio"/> City <input type="radio"/> Town <input type="radio"/> Village of Marinette
	Property is composed of: <input type="radio"/> Single tax parcel <input type="radio"/> Multiple tax parcels
	Property Size Acres 380

# Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

Form 4400-237 (R 12/18)

Page 3 of 5

1. Is a response needed by a specific date? (e.g., Property closing date) Note: Most requests are completed within 60 days. Please plan accordingly.

No  Yes

Date requested by: \_\_\_\_\_

Reason: \_\_\_\_\_

2. Is the "Requester" enrolled as a Voluntary Party in the Voluntary Party Liability Exemption (VPLE) program?

No. **Include the fee that is required for your request in Section 3, 4 or 5.**

Yes. **Do not include a separate fee.** This request will be billed separately through the VPLE Program.

Fill out the information in Section 3, 4 or 5 which corresponds with the type of request:

**Section 3. Technical Assistance or Post-Closure Modifications;**

**Section 4. Liability Clarification; or Section 5. Specialized Agreement.**

## Section 3. Request for Technical Assistance or Post-Closure Modification

Select the type of technical assistance requested: [Numbers in brackets are for WI DNR Use]

- No Further Action Letter (NFA) (Immediate Actions) - NR 708.09, [183] - **Include a fee of \$350.** Use for a written response to an immediate action after a discharge of a hazardous substance occurs. Generally, these are for a one-time spill event.
- Review of Site Investigation Work Plan - NR 716.09, [135] - **Include a fee of \$700.**
- Review of Site Investigation Report - NR 716.15, [137] - **Include a fee of \$1050.**
- Approval of a Site-Specific Soil Cleanup Standard - NR 720.10 or 12, [67] - **Include a fee of \$1050.**
- Review of a Remedial Action Options Report - NR 722.13, [143] - **Include a fee of \$1050.**
- Review of a Remedial Action Design Report - NR 724.09, [148] - **Include a fee of \$1050.**
- Review of a Remedial Action Documentation Report - NR 724.15, [152] - **Include a fee of \$350**
- Review of a Long-term Monitoring Plan - NR 724.17, [25] - **Include a fee of \$425.**
- Review of an Operation and Maintenance Plan - NR 724.13, [192] - **Include a fee of \$425.**

Other Technical Assistance - s. 292.55, Wis. Stats. [97] (For request to build on an abandoned landfill use Form 4400-226)

- Schedule a Technical Assistance Meeting - **Include a fee of \$700.**
- Hazardous Waste Determination - **Include a fee of \$700.**
- Other Technical Assistance - **Include a fee of \$700.** Explain your request in an attachment.

Post-Closure Modifications - NR 727, [181]

- Post-Closure Modifications: Modification to Property boundaries and/or continuing obligations of a closed site or Property; sites may be on the GIS Registry. This also includes removal of a site or Property from the GIS Registry. **Include a fee of \$1050, and:**
  - Include a fee of \$300 for sites with residual soil contamination; and
  - Include a fee of \$350 for sites with residual groundwater contamination, monitoring wells or for vapor intrusion continuing obligations.

Attach a description of the changes you are proposing, and documentation as to why the changes are needed (if the change to a Property, site or continuing obligation will result in revised maps, maintenance plans or photographs, those documents may be submitted later in the approval process, on a case-by-case basis).

**Skip Sections 4 and 5 if the technical assistance you are requesting is listed above and complete Sections 6 and 7 of this form**

## Section 6. Other Information Submitted

Identify all materials that are included with this request.

**Send both a paper copy of the signed form and all reports and supporting materials, and an electronic copy of the form and all reports, including Environmental Site Assessment Reports, and supporting materials on a compact disk.**

**Include one copy of any document from any state agency files that you want the Department to review as part of this request. The person submitting this request is responsible for contacting other state agencies to obtain appropriate reports or information.**

Phase I Environmental Site Assessment Report - Date: \_\_\_\_\_

Phase II Environmental Site Assessment Report - Date: \_\_\_\_\_

# Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

Form 4400-237 (R 12/18)

Page 4 of 5

Legal Description of Property (required for all liability requests and specialized agreements)

Map of the Property (required for all liability requests and specialized agreements)

Analytical results of the following sampled media: Select all that apply and include date of collection.

Groundwater     Soil     Sediment     Other medium - Describe: \_\_\_\_\_

Date of Collection: \_\_\_\_\_

A copy of the closure letter and submittal materials

Draft tax cancellation agreement

Draft agreement for assignment of tax foreclosure judgment

Other report(s) or information - Describe: Deep Aquifer Bedrock Well Design & LTMWP-Interim Action Status Update

For Property with newly identified discharges of hazardous substances only: Has a notification of a discharge of a hazardous substance been sent to the DNR as required by s. NR 706.05(1)(b), Wis. Adm. Code?

Yes - Date (if known): \_\_\_\_\_

No

Note: The Notification for Hazardous Substance Discharge (non-emergency) form is available at:

[dnr.wi.gov/files/PDF/forms/4400/4400-225.pdf](http://dnr.wi.gov/files/PDF/forms/4400/4400-225.pdf).

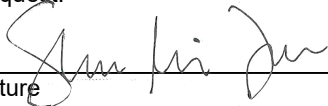
## Section 7. Certification by the Person who completed this form

I am the person submitting this request (requester)

I prepared this request for: Denice Nelson

Requester Name

I certify that I am familiar with the information submitted on this request, and that the information on and included with this request is true, accurate and complete to the best of my knowledge. I also certify I have the legal authority and the applicant's permission to make this request.

  
\_\_\_\_\_  
Signature

5/17/2024  
\_\_\_\_\_  
Date Signed

Senior Environmental Specialist  
\_\_\_\_\_  
Title

(312) 575-3732  
\_\_\_\_\_  
Telephone Number (include area code)

# Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

Form 4400-237 (R 12/18)

Page 5 of 5

## Section 8. DNR Contacts and Addresses for Request Submittals

Send or deliver one paper copy and one electronic copy on a compact disk of the completed request, supporting materials, and fee to the region where the property is located to the address below. Contact a [DNR regional brownfields specialist](#) with any questions about this form or a specific situation involving a contaminated property. For electronic document submittal requirements see: <http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf>.

### DNR NORTHERN REGION

Attn: RR Program Assistant  
Department of Natural Resources  
223 E Steinfest Rd Antigo, WI 54409

### DNR NORTHEAST REGION

Attn: RR Program Assistant  
Department of Natural Resources  
2984 Shawano Avenue  
Green Bay WI 54313

### DNR SOUTH CENTRAL REGION

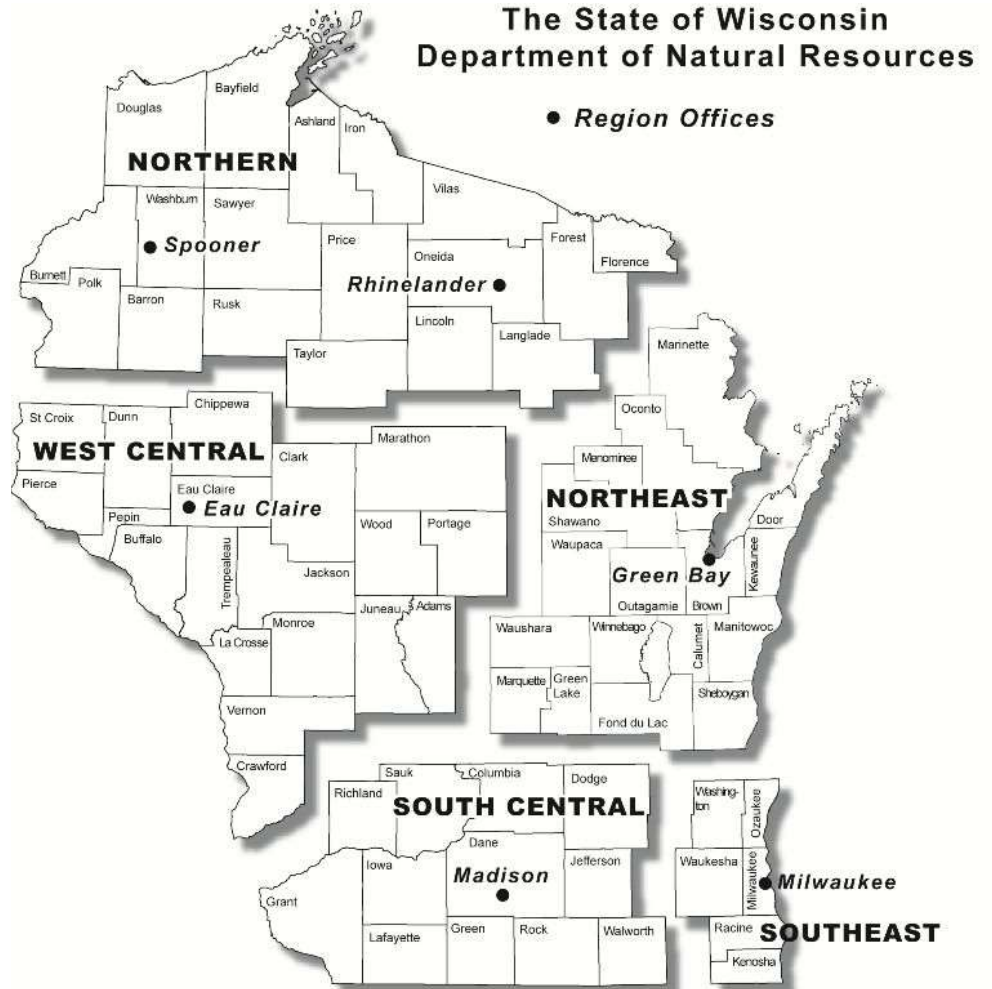
Attn: RR Program Assistant  
Department of Natural Resources  
3911 Fish Hatchery Road  
Fitchburg WI 53711

### DNR SOUTHEAST REGION

Attn: RR Program Assistant  
Department of Natural Resources  
2300 North Martin Luther King Drive  
Milwaukee WI 53212

### DNR WEST CENTRAL REGION

Attn: RR Program Assistant  
Department of Natural Resources  
1300 Clairemont Ave.  
Eau Claire WI 54702



Note: These are the Remediation and Redevelopment Program's designated regions. Other DNR program regional boundaries may be different.

DNR Use Only			
Date Received	Date Assigned	BRRTS Activity Code	BRRTS No. (if used)
DNR Reviewer		Comments	
Fee Enclosed? <input type="radio"/> Yes <input type="radio"/> No	Fee Amount \$	Date Additional Information Requested	Date Requested for DNR Response Letter
Date Approved	Final Determination		

Alyssa Sellwood  
Complex Sites Project Manager, Remediation and Redevelopment Program  
State of Wisconsin Department of Natural Resources  
101 South Webster Street  
Box 7921  
Madison, WI 53707-7921

Arcadis U.S., Inc.  
126 North Jefferson Street  
Suite 400  
Milwaukee  
Wisconsin 53202  
Phone: 414 276 7742  
Fax: 414 276 7603  
[www.arcadis.com](http://www.arcadis.com)

Date: May 17, 2024

Our Ref: 30219428

Subject: Deep Aquifer Bedrock Well Design and Long-Term Monitoring Work  
Plan – Interim Action Status Update  
Tyco Fire Technology Center, Marinette, WI  
BRRTS# 02-38-580694

Dear Ms. Sellwood,

On behalf of Tyco Fire Products LP (Tyco), Arcadis U.S., Inc. (Arcadis) prepared this Deep Aquifer Bedrock Well Design and Long-Term Monitoring Interim Action Status Update (Memo) as an update on the submittal of the Arcadis Deep Aquifer Bedrock Well Design and Long-Term Monitoring Work Plan (Work Plan), dated September 27, 2022. In fulfillment of the most recent Interim Action Status Update (Arcadis 2024) dated April 1, 2024, Arcadis is providing an update following recent sampling of the complete deep monitoring well network in the Potable Well Sampling Area (PWSA).

Tyco continues to investigate per- and poly-fluoroalkyl substances (PFAS) potentially related to the Tyco Fire Technology Center located at 2700 Industrial Parkway South in Marinette, Wisconsin (the Site; **Figure 1**).

## Objectives

The sampling of these deep monitoring wells is part of the long-term groundwater monitoring network. Additionally, investigation activities included collecting groundwater samples to define chemistry of the deep groundwater aquifer. This update also includes a request to reduce the proposed 5x volumetric purge approved by the Wisconsin Department of Natural Resources (WDNR) as part of the sampling activities to one pore volume. This request is supported by additional data collected during the March 2024 sampling event along with a statistical analysis of those data, as discussed in greater detail below.

## Monitoring Well Sampling Results

In March 2024, Arcadis on behalf of Tyco collected groundwater samples from four deep monitoring wells (DMW-01 and DMW-02; fourth quarterly samples), (DMW-03 and DMW-04; second quarterly samples) in the deep bedrock aquifer for analyses. Samples were taken from each well following purging at approximately 33%, 67%, and 100% well volumes. Sampling included the following analysis:

- PFAS (USEPA Method 537 Modified)
- Metals (USEPA Methods 6020 & 7470)

- Major Ions (USEPA Method 9056)
- Alkalinity (USEPA Method 2320)
- Hardness (USEPA Method SM2340)

Sample results are summarized on **Table 1**. Concentrations for the analytical suite were consistent with other analytical results across the aquifer regionally and with PFAS non-detect and below applicable screening levels at all locations. These results are similar to private deep well analytical results collected to date and demonstrate the deep monitoring wells are representative of deep groundwater conditions. Previous data collected at deep monitoring wells was reported within recent status updates (Arcadis 2023, 2024).

Appropriate QA/QC samples were collected in accordance with the project QAPP. Electronic copies of chain of custody forms and laboratory analytical reports generated as part of this sampling event are provided in **Attachment 1**.

## Purge Pore Volume Evaluation

While the Work Plan (Arcadis 2022) proposed a 5x volumetric purge, site sampling data indicates a reduced purge volume would be equally representative. To support reducing the volumetric purge, the first quarter 2024 sampling event consisted of analyzing water collected at approximately 33%, 67%, and 100% volumes for statistical comparison. Following receipt of this laboratory data, a geochemical statistical comparison from this sampling event confirmed the results for each well and analyte had minor variability in each of the different purge volumes.

A summary of the water chemistry is provided in **Table 2**. **Table 2** shows that water chemistry in each well was unchanged between each sample, i.e., the water quality in the first sample was nearly identical to the water quality in the final sample. Three quantities were considered to compare the variation in water chemistry between each pore water interval: the percent difference between the maximum and minimum value for each analyte, calculated as the difference divided by the minimum value, the sample standard deviation (SD), and the coefficient of variation (CV) calculated as the standard deviation divided by the average.

$$\% \text{ Difference} = \frac{\text{maximum value (analyte)} - \text{minimum value (analyte)}}{\text{minimum value (analyte)}} * 100$$

$$SD_{\text{sample}}: \sqrt{\frac{\sum(\text{analyte value} - \text{average value})^2}{\text{total number of samples} - 1}}$$

$$CV = \frac{SD_{\text{sample}}}{\text{average value (analyte)}} * 100$$

The average percent difference between the respective maximum and minimum result was less than 5% for any analyte considered. This establishes little variability in the results of sampling at different purge volume intervals. The average CV was less than 3% for any analyte considered, further demonstrating low variability. These findings indicate that it is unnecessary to purge more than one pore volume to obtain a representative sample of water quality from the deep bedrock aquifer. Based on this, it is recommended that future water samples be collected from the deep monitoring wells after a single pore flush.

Memo

Deep Aquifer Bedrock Well Design and Long-Term Monitoring Work Plan – Status Update

May 17, 2024

## Conclusion and Next Steps

The results in this Memo support deep wells as a permanent drinking water solution in the PWSA. The monitoring well sampling results continue to support the verification process that PFAS associated with the Site is not present in deep groundwater. Tyco continues to install private deep bedrock wells as a drinking water solution for neighbors that request to participate in the program.

The additional sampling performed in March 2024 and associated statistical evaluation indicates purging one pore volume of groundwater from the deep monitoring wells will obtain a statistically representative sample of water quality from the deep bedrock aquifer compared to five pore volumes. With WDNR approval, future water samples, beginning in June 2024, will be collected from the deep monitoring wells after a single pore flush.

If you have any questions regarding this Memo, please contact the undersigned.

Sincerely,  
Arcadis U.S., Inc.



Scott T. Potter, PhD  
Chief Hydrogeologist

Email: [Scott.Potter@arcadis.com](mailto:Scott.Potter@arcadis.com)

Direct Line: (267) 685-1800

CC. Denice Nelson, JCI  
Scott Wahl, JCI

Enclosures:

Tables

Figure

Attachment 1 – Laboratory Report



# Tables

Table 1  
Sample Results



Analyte	Wisconsin DHS Recommended Standards (not adopted) <sup>1</sup>	Other Standards <sup>2,3</sup>	Location Sample ID Sample Date Sample Type	DMW-01	DMW-01	DMW-01	DMW-02	DMW-02	DMW-02	DMW-02
				DMW-01_1X (031224) 03/12/2024 N	DMW-01_3X (031224) 03/12/2024 N	DMW-01_5X (031224) 03/12/2024 N	DMW-02_1X (031324) 03/13/2024 N	DMW-02_3X (031324) 03/13/2024 N	DMW-02_5X (031324) 03/13/2024 N	DMW-02 DUP-006 (031324) 03/13/2024 FD
Units										
Alkalinity	--	--	mg/L	110	110	110	97	100	100	95
Alkalinity, Carbonate	--	--	mg/L	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Alkalinity, Bicarbonate	--	--	mg/L	110	110	110	97	100	100	95
Hardness (as CaCO3)	--	180 <sup>(3)</sup>	mg/L	400	400	390	1500	1500	1500	1500
Aluminum	--	--	ug/L	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Iron	--	300 <sup>(3)</sup>	ug/L	1900	600	330	1600	550	480	460
Lead	--	--	ug/L	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Magnesium	--	--	ug/L	38000	38000	37000	120000	120000	120000	120000
Manganese	--	--	ug/L	27	19	17	47	43	43	41
Nickel	--	--	ug/L	0.89 J	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Potassium	--	--	ug/L	5500	5400	5200	5900	6200	6200	5900
Silver	--	--	ug/L	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Sodium	--	--	ug/L	46000	43000	41000	61000	63000	64000	61000
Thallium	--	--	ug/L	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Antimony	--	--	ug/L	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U
Barium	--	--	ug/L	9.8	9.8	10	3.7	4.1	4.2	4.0
Beryllium	--	--	ug/L	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Cadmium	--	--	ug/L	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Chromium	--	--	ug/L	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Cobalt	--	--	ug/L	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Copper	--	--	ug/L	1.3 J	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Zinc	--	--	ug/L	56	26	22	36	18 J	20	23
Calcium	--	--	ug/L	99000	97000	96000	390000	400000	410000	390000
Selenium	--	--	ug/L	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U
Arsenic	--	--	ug/L	< 1.0 U	< 1.0 U	< 1.0 U	0.75 J	0.71 J	0.72 J	1.2
Vanadium	--	--	ug/L	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Boron	--	--	ug/L	290	270	250	260	250	270	260
Strontium	--	1,500	ug/L	4100	4100	4200	9800	10000	10000	10000
Mercury	--	--	ug/L	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
Nitrate-N	--	--	mg/L	< 1.0 UJ-	< 1.0 U	< 1.0 U	0.38 J-	< 1.0 U	< 1.0 U	< 1.0 U
Bromide	--	--	mg/L	0.42 J	0.44 J	0.38 J	0.77 J	0.59 J	0.72 J	0.64 J
ortho-Phosphate (As P)	--	--	mg/L	< 1.0 UJ-	< 1.0 U	< 1.0 U	0.26 J-	< 1.0 U	0.22 J	0.22 J
Nitrite	--	--	mg/L	< 1.0 UJ-	< 1.0 U	< 1.0 U	< 1.0 UJ-	< 1.0 U	< 1.0 U	< 1.0 U
Chloride	--	--	mg/L	50	47	46	67	66	67	67
Fluoride (F-, Anion)	--	--	mg/L	1.5	1.6	1.5	2.7	2.7	2.7	2.5
Sulfate	--	250	mg/L	320	310	310	1400	1400	1400	1400

Table 1  
Sample Results



Analyte	Wisconsin DHS Recommended Standards (not adopted) <sup>1</sup>	Other Standards <sup>2,3</sup>	Location Sample ID Sample Date Sample Type	DMW-01	DMW-01	DMW-01	DMW-02	DMW-02	DMW-02	DMW-02
				DMW-01_1X (031224) 03/12/2024 N	DMW-01_3X (031224) 03/12/2024 N	DMW-01_5X (031224) 03/12/2024 N	DMW-02_1X (031324) 03/13/2024 N	DMW-02_3X (031324) 03/13/2024 N	DMW-02_5X (031324) 03/13/2024 N	DMW-02 DUP-006 (031324) 03/13/2024 FD
Units										
PFOA	20	4 <sup>(2)</sup>	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFOS	20	4 <sup>(2)</sup>	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFBS	450,000	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFHpA	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFHxS	40	10 <sup>(2)</sup>	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFNA	30	10 <sup>(2)</sup>	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFDA	300	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFDoA	500	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFHxA	150,000	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFTeA	10,000	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFTriA	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFUnA	3,000	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
NEtFOSAA	20	--	ng/L	NS	NS	< 4.0 U	NS	NS	< 4.3 U	< 4.3 U
NMeFOSAA	--	--	ng/L	NS	NS	< 4.0 U	NS	NS	< 4.3 U	< 4.3 U
PFBA	10,000	--	ng/L	NS	NS	< 4.0 U	NS	NS	< 4.3 U	< 4.3 U
PFPeA	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFHxDA	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFODA	400,000	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 UJ-	< 1.7 U
PFPeS	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFHpS	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFNS	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFDS	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
PFDoS	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
FOSA	20	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
NEtFOSA	20	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
NMeFOSA	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
NMeFOSE	--	--	ng/L	NS	NS	< 3.2 U	NS	NS	< 3.4 U	< 3.4 U
NEtFOSE	20	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
4:2 FTS	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
6:2 FTS	--	--	ng/L	NS	NS	< 4.0 U	NS	NS	< 4.3 U	< 4.3 U
8:2 FTS	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
10:2 FTS	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
ADONA	3,000	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
HFPO-DA (GenX)	300	10 <sup>(2)</sup>	ng/L	NS	NS	< 3.2 U	NS	NS	< 3.4 U	< 3.4 U
F-53B Major	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U
F-53B Minor	--	--	ng/L	NS	NS	< 1.6 U	NS	NS	< 1.7 U	< 1.7 U

Table 1  
Sample Results



Analyte	Wisconsin DHS Recommended Standards (not adopted) <sup>1</sup>	Other Standards <sup>2,3</sup>	Location Sample ID Sample Date Sample Type	DMW-03	DMW-03	DMW-03	DMW-03	DMW-04	DMW-04	DMW-04
				DMW-03_1X (030724) N	DMW-03_3X (030724) N	DMW-03_5X (030724) N	DUP-005 (030724) FD	DMW-04_1X (030524) N	DMW-04_2X (030524) N	DMW-04_3X (030624) N
Units										
Alkalinity	--	--	mg/L	100	100	98	100	100	110	110
Alkalinity, Carbonate	--	--	mg/L	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Alkalinity, Bicarbonate	--	--	mg/L	100	100	98	100	100	110	110
Hardness (as CaCO3)	--	180 <sup>(3)</sup>	mg/L	410	400	400	390	450	460	460
Aluminum	--	--	ug/L	< 100 U	< 100 U	< 100 U	< 100 U	28 J	< 100 U	< 100 U
Iron	--	300 <sup>(3)</sup>	ug/L	240	130	230	150	2100	540	1700
Lead	--	--	ug/L	< 0.50 U	< 0.50 U	0.51	< 0.50 U	0.20 J	< 0.50 U	< 0.50 U
Magnesium	--	--	ug/L	56000	55000	56000	54000	43000	44000	44000
Manganese	--	--	ug/L	8.3	6.5	7.8	6.4	30	16	24
Nickel	--	--	ug/L	1.9 J	< 2.0 U	0.97 J	< 2.0 U	2.7	0.86 J	0.97 J
Potassium	--	--	ug/L	6000	5800	5800	5800	6300	6400	6300
Silver	--	--	ug/L	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Sodium	--	--	ug/L	49000	48000	48000	46000	47000	50000	50000
Thallium	--	--	ug/L	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Antimony	--	--	ug/L	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U
Barium	--	--	ug/L	16	16	16	16	17	17	17
Beryllium	--	--	ug/L	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Cadmium	--	--	ug/L	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Chromium	--	--	ug/L	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Cobalt	--	--	ug/L	0.55 J	< 1.0 U	< 1.0 U	< 1.0 U	0.57 J	< 1.0 U	< 1.0 U
Copper	--	--	ug/L	0.73 J	0.66 J	0.71 J	< 2.0 U	1.9 J	1.7 J	0.94 J
Zinc	--	--	ug/L	48 J	73 J	120 J	15 J	67	56	50
Calcium	--	--	ug/L	74000	69000	70000	68000	110000	110000	110000
Selenium	--	--	ug/L	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U
Arsenic	--	--	ug/L	0.43 J	< 1.0 U	0.86 J	< 1.0 U	0.62 J	0.63 J	0.69 J
Vanadium	--	--	ug/L	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Boron	--	--	ug/L	260	270	270	260	230	250	250
Strontium	--	1,500	ug/L	13000	14000	13000	14000	12000	11000	12000
Mercury	--	--	ug/L	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
Nitrate-N	--	--	mg/L	< 1.0 UJ-	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ-	< 1.0 U	< 1.0 U
Bromide	--	--	mg/L	0.45 J	0.40 J	0.43 J	0.45 J	0.34 J	0.27 J	0.24 J
ortho-Phosphate (As P)	--	--	mg/L	< 1.0 UJ-	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ-	< 1.0 U	< 1.0 U
Nitrite	--	--	mg/L	< 1.0 UJ-	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ-	< 1.0 U	< 1.0 U
Chloride	--	--	mg/L	72	75	75	76	56	47	47
Fluoride (F-, Anion)	--	--	mg/L	1.5	1.6	1.7	1.5	1.3	1.0	1.0
Sulfate	--	250	mg/L	450	430	430	470	370	370	340

Table 1  
Sample Results



Analyte	Wisconsin DHS Recommended Standards (not adopted) <sup>1</sup>	Other Standards <sup>2,3</sup>	Location Sample ID Sample Date Sample Type	DMW-03	DMW-03	DMW-03	DMW-03	DMW-04	DMW-04	DMW-04
				DMW-03_1X (030724) N	DMW-03_3X (030724) N	DMW-03_5X (030724) N	DUP-005 (030724) FD	DMW-04_1X (030524) N	DMW-04_2X (030524) N	DMW-04_3X (030624) N
Units										
PFOA	20	4 <sup>(2)</sup>	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFOS	20	4 <sup>(2)</sup>	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFBS	450,000	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFHpA	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFHxS	40	10 <sup>(2)</sup>	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFNA	30	10 <sup>(2)</sup>	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFDA	300	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFDoA	500	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFHxA	150,000	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFTeA	10,000	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFTriA	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFUnA	3,000	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
NEtFOSAA	20	--	ng/L	NS	NS	< 4.4 U	< 4.3 U	NS	NS	< 4.6 U
NMeFOSAA	--	--	ng/L	NS	NS	< 4.4 U	< 4.3 U	NS	NS	< 4.6 U
PFBA	10,000	--	ng/L	NS	NS	< 4.4 U	< 4.3 U	NS	NS	< 4.6 U
PFPeA	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFHxDA	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFODA	400,000	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFPeS	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFHpS	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFNS	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFDS	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
PFDoS	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
FOSA	20	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
NEtFOSA	20	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
NMeFOSA	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
NMeFOSE	--	--	ng/L	NS	NS	< 3.5 U	< 3.5 U	NS	NS	< 3.7 U
NEtFOSE	20	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
4:2 FTS	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
6:2 FTS	--	--	ng/L	NS	NS	< 4.4 U	< 4.3 U	NS	NS	< 4.6 U
8:2 FTS	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
10:2 FTS	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
ADONA	3,000	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
HFPO-DA (GenX)	300	10 <sup>(2)</sup>	ng/L	NS	NS	< 3.5 U	< 3.5 U	NS	NS	< 3.7 U
F-53B Major	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U
F-53B Minor	--	--	ng/L	NS	NS	< 1.8 U	< 1.7 U	NS	NS	< 1.8 U

**Table 1**  
**Sampling Results**



Notes:  
 < = Compound not detected at reporting detection limit.  
 (1) = In June 2019, WDHS recommended individual groundwater standards of 20 ng/L for PFOA and PFOS. The WDNR proposed those standards through the state rulemaking process. In February 2022, the Wisconsin Natural Resource Board did not approve the proposed rulemaking for groundwater. In November 2020 the Wisconsin DHS recommended a combined groundwater standard of 20 ng/L for: FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFOS and PFOA. DHS also recommended individual standards for FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFBS, PFHxS, PFNA, PFDA, PFDoA, PFHxA, PFTeA, PFUnA, PFBA, PFODA, DONA, and GenX. The agency's authority under the scope statement expired in September 2023. In September 2022, the Governor approved a Statement of Scope to establish groundwater standards for PFOA, PFOS, PFBS and GenX (referred to as the "Four PFAS"). The Statement of Scope was approved by the Natural Resources Board in December 2022. Pursuant to state law, the WDNR has stopped work on the proposed rule and notified the state legislature that, following economic analysis, the proposed costs would exceed statutory thresholds. As a result, the WDNR cannot continue the rulemaking without authorization from the state legislature.  
 (2) = In August 2022, WDNR promulgated a drinking water standard of 70 ng/L for PFOA and PFOS, individually and combined, for public water systems. US EPA has established individual Maximum Contaminant Levels in drinking water for a number of substances, including PFOA, PFOS, PFHxS, PFNA, and HFPO-DA; and for mixtures containing two or more of PFHxS, PFNA, HFPO-DA and PFBS. These standards do not apply to private drinking water wells.  
 (3) = Wis. Admin. Code ch. NR 809 Maximum Contaminant Level in drinking water for Radium-226,228 combined, this standard does not apply to private drinking water wells; Hardness as calcium carbonate - very hard defined as > 180 ppm; Iron under Wis. Admin Code ch. NR 140 Enforcement Standard.

-- = No standard  
 N = Normal sample  
 ng/L = nanograms per liter  
 mg/L = milligrams per liter  
 ug/L = micrograms per liter  
 pCi/L = picocuries per liter  
 FD = Field duplicate sample  
 NS = Not sampled

UJ- = The analyte was analyzed for but was not detected. The reported reporting limit (RL) is approximate and may be inaccurate or imprecise  
 U = The analyte was analyzed for but the result was not detected above the method detection limit.  
 J = The analyte was positively identified; however the associated numerical value is an estimated concentration only  
 J- = The result is an estimated quantity; the result may be biased low.

**Chemical Abbreviation:**

PFOA = Perfluorooctanoic acid	PFPeS = Perfluoropentanesulfonic acid
PFOS = Perfluorooctanesulfonic acid	PFHpS = Perfluoroheptanesulfonic acid
PFBS = Perfluorobutanesulfonic acid	PFNS = Perfluorononanesulfonic acid
PFHpA = Perfluoroheptanoic acid	PFDS = Perfluorodecanesulfonic acid
PFHxS = Perfluorohexanesulfonic acid	PFDoS = Perfluorododecanesulfonic acid
PFNA = Perfluorononanoic acid	FOSA = Perfluorooctane sulfonamide
PFDA = Perfluorodecanoic acid	NEtFOSA = N-Ethyl perfluorooctane sulfonamide
PFDoA = Perfluorododecanoic acid	NMeFOSA = N-Methyl perfluorooctane sulfonamide
PFHxA = Perfluorohexanoic acid	NMeFOSE = N-Methyl perfluorooctane sulfonamidoethanol
PFTeA = Perfluorotetradecanoic acid	NEtFOSE = N-Ethyl perfluorooctane sulfonamidoethanol
PFTriA = Perfluorotridecanoic acid	4:2 FTS = 4:2 Fluorotelomer sulfonic acid
PFUnA = Perfluoroundecanoic acid	6:2 FTS = 6:2 Fluorotelomer sulfonic acid
NEtFOSAA = N-Ethyl perfluorooctane sulfonamidoacetic acid	8:2 FTS = 8:2 Fluorotelomer sulfonic acid
NMeFOSAA = N-Methyl perfluorooctane sulfonamidoacetic acid	10:2 FTS = 10:2 Fluorotelomer sulfonic acid
PFBA = Perfluorobutanoic acid	ADONA = 4,8-Dioxa-3H-perfluorononanoic acid
PFPeA = Perfluoropentanoic acid	HFPO-DA (GenX) = Hexafluoropropylene oxide dimer acid
PFHxDA = Perfluorohexadecanoic acid	F-53B Major = 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
PFODA = Perfluorooctadecanoic acid	F-53B Minor = 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid

**Table 2**  
**Geochemical Statistical Analysis**

Well Location	Sample ID	Purge Volume	Ca <sup>2+</sup>	Mg <sup>2+</sup>	Na <sup>+</sup>	K <sup>+</sup>	HCO <sub>3</sub> <sup>-</sup>	CO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>2-</sup>	F <sup>-</sup>
DMW-01	DMW-01_1X (031224)	1	99	38	46	5.5	110	5	50	320	1.5
	DMW-01_3X (031224)	3	97	38	43	5.4	110	5	47	310	1.6
	DMW-01_5X (031224)	5	96	37	41	5.2	110	5	46	310	1.5
	<b>AVG</b>		97.33	37.67	43.33	5.37	110.00	5.00	47.67	313.33	1.53
	<b>STD DEV</b>		1.53	0.58	2.52	0.15	0.00	0.00	2.08	5.77	0.06
	<b>CV<sup>1</sup></b>		1.57%	1.53%	5.81%	2.85%	0.00%	0.00%	4.37%	1.84%	3.77%
		<b>% diff<sup>2</sup></b>	3.13%	2.70%	12.20%	5.77%	0.00%	0.00%	8.70%	3.23%	6.67%
DMW-02	DMW-02_1X (031324)	1	390	120	61	5.99	97	5	67	1400	2.7
	DMW-02_3X (031324)	3	400	120	63	6.2	100	5	66	1400	2.7
	DMW-02_5X (031324)	5	410	120	64	6.2	100	5	67	1400	2.7
	<b>AVG</b>		400.00	120.00	62.67	6.13	99.00	5.00	66.67	1400.00	2.70
	<b>STD DEV</b>		10.00	0.00	1.53	0.12	1.73	0.00	0.58	0.00	0.00
	<b>CV<sup>1</sup></b>		2.50%	0.00%	2.44%	1.98%	1.75%	0.00%	0.87%	0.00%	0.00%
		<b>% diff<sup>2</sup></b>	5.13%	0.00%	4.92%	3.51%	3.09%	0.00%	1.52%	0.00%	0.00%
DMW-03	DMW-03_1X (030724)	1	74	56	49	6	100	5	72	450	1.5
	DMW-03_3X (030724)	3	69	55	48	5.8	100	5	75	430	1.5
	DMW-03_5X (030724)	5	70	56	48	5.8	98	5	75	430	1.6
	<b>AVG</b>		71.00	55.67	48.33	5.87	99.33	5.00	74.00	436.67	1.53
	<b>STD DEV</b>		2.65	0.58	0.58	0.12	1.15	0.00	1.73	11.55	0.06
	<b>CV<sup>1</sup></b>		3.73%	1.04%	1.19%	1.97%	1.16%	0.00%	2.34%	2.64%	3.77%
		<b>% diff<sup>2</sup></b>	7.25%	1.82%	2.08%	3.45%	2.04%	0.00%	4.17%	4.65%	6.67%
DMW-04	DMW-04_1X (030524)	1	110	43	47	6.3	100	5	56	370	1.3
	DMW-04_2X (030524)	2	110	44	50	6.4	110	5	47	370	1
	DMW-04_3X (030624)	3	110	44	50	6.3	110	5	47	340	1
	<b>AVG</b>		110.00	43.67	49.00	6.33	106.67	5.00	50.00	360.00	1.10
	<b>STD DEV</b>		0.00	0.58	1.73	0.06	5.77	0.00	5.20	17.32	0.17
	<b>CV<sup>1</sup></b>		0.00%	1.32%	3.53%	0.91%	5.41%	0.00%	10.39%	4.81%	15.75%
		<b>% diff<sup>2</sup></b>	0.00%	2.33%	6.38%	1.59%	10.00%	0.00%	19.15%	8.82%	30.00%

**Notes:**

All analytical results are presented in milligrams per liter

1. CV calculated as the the standard deviation divided by the average of the respective dataset. Low percentages indicate that the variation among purge volumes is low relative to the magnitude of result values.

2. Percent difference calculated as the difference between the maximum and minimum value, divided by the minimum value of the respective dataset.

Low percentages indicate that results are relatively similar among different purge volume intervals.

**Acronyms and Abbreviations**

% diff = percent difference

AVG = average

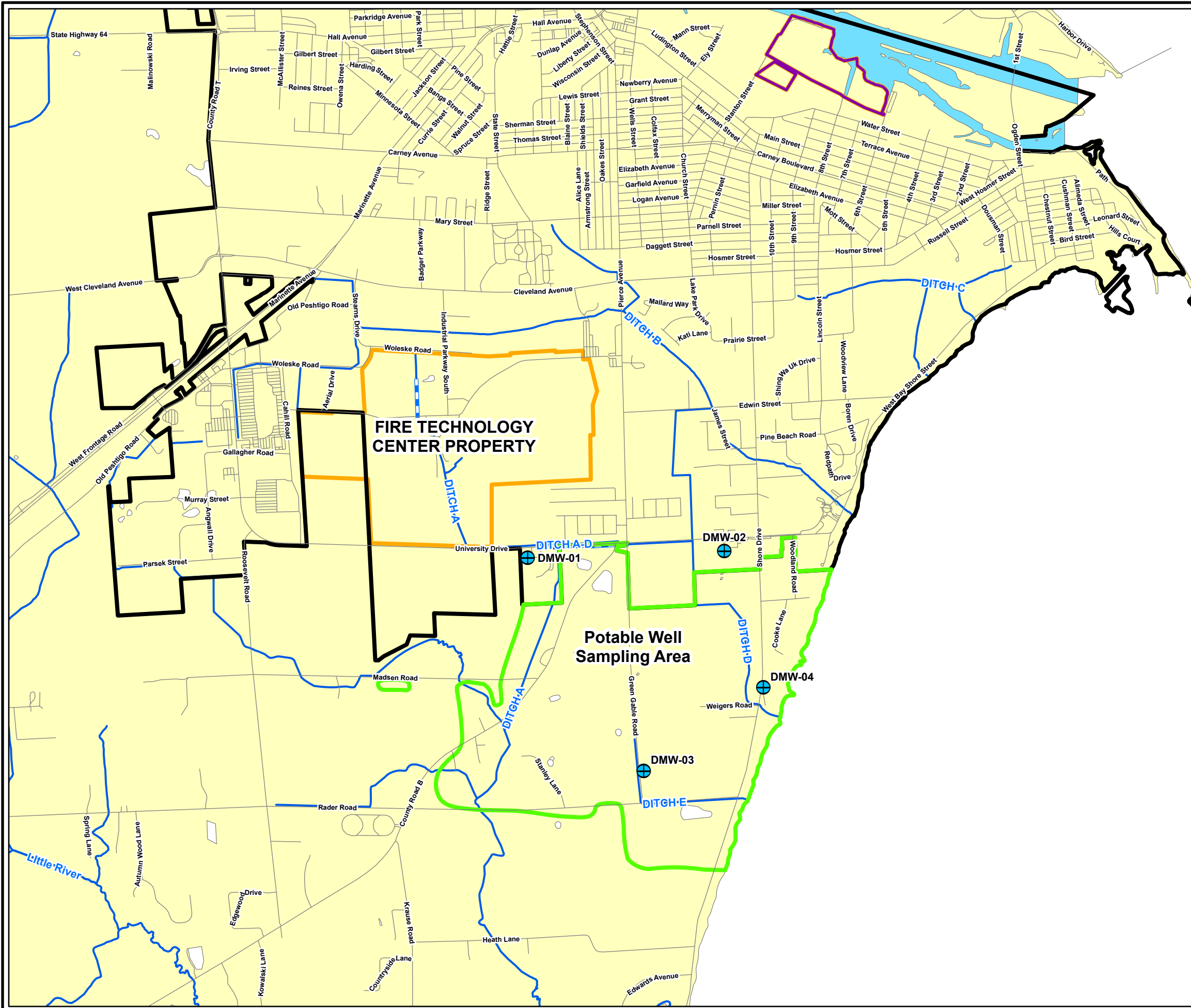
CV = coefficient of variation

STD DEV = standard deviation

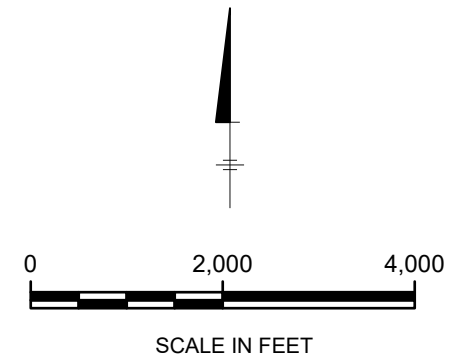
# Figure



TY\_ENVTYCO\_PRO\_REPORT\_FIGURES/FTCD/Deep\_Monitoring\_Well.aprx 12/21/2023 5:51 PM



- LEGEND:**
- DEEP MONITORING WELL LOCATION
  - POTABLE WELL SAMPLING AREA
  - STANTON STREET FACILITY BOUNDARY
  - APPROXIMATE SITE PROPERTY BOUNDARY
  - APPROXIMATE MARINETTE CITY BOUNDARY
  - WATERBODY
  - DITCH OR STREAM
  - ROAD



TYCO FIRE PRODUCTS LP  
MARINETTE, WISCONSIN

---

**DEEP MONITORING WELL LOCATIONS**

---

**ARCADIS** | **FIGURE 1**

# Attachments

# **Attachment 1**

## **Laboratory Reports**



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Lisa Rutkowski  
Arcadis U.S., Inc.  
126 North Jefferson Street  
Suite 400  
Milwaukee, Wisconsin 53202

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## JOB DESCRIPTION

Marinette, WI Deep Well 30219428.1.4.1

## JOB NUMBER

500-247438-1

# Eurofins Chicago

## Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

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

## Compliance Statement

The LOD and LOQ reported are adjusted by the dilution factor when a dilution factor greater than 1 is needed. Additionally, where results are indicated as being reported on a dry weight basis, the LOD and LOQ are adjusted for moisture content as well.

### Definitions of Limits

- LOD = Limit of Detection = MDL as defined by 40 CFR part 136 Appendix B
- LOQ = Limit of Quantitation = 3.33 x LOD as defined by Wisconsin
- RL = Report Limit = a concentration supported by a standard in the calibration curves

## Authorization



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Authorized for release by  
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# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Case Narrative . . . . .	4
Method Summary . . . . .	5
Sample Summary . . . . .	6
Client Sample Results . . . . .	7
Definitions . . . . .	14
QC Sample Results . . . . .	15
Chronicle . . . . .	23
Certification Summary . . . . .	25
Chain of Custody . . . . .	26
Receipt Checklists . . . . .	27
Isotope Dilution Summary . . . . .	29

# Case Narrative

Client: Arcadis U.S., Inc.  
Project: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

**Job ID: 500-247438-1**

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## Job Narrative 500-247438-1

### Receipt

The samples were received on 3/14/2024 9:55 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 was 1.6° C.

### Receipt Exceptions

The following sample was received with insufficient time remaining on holding time of 48 hours or less. Sample #2 sampled 3/12 1020 received 3/14 0955 for IC-N2,N3,OP04.

### Metals

Method 6020B: The initial low level calibration verification (ICVL) result for batch 500-759758 was above the upper control limit. The affected analytes are: Antimony and Beryllium. Sample results were below the reporting limit, and have been reported as qualified data.

Method 6020B: The initial low level calibration verification (ICVL) result for batch 500-760160 was above the upper control limit. The affected analytes are: Antimony. Sample results were non-detects, and have been reported as qualified data.

Method 6020B: The method blank for preparation batch 500-758911 and analytical batch 500-760160 contained Boron above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

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

### LCMS

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-748491 recovered above the upper control limit for Perfluoro-n-octadecanoic acid (PFODA). The laboratory control sample and laboratory control sample duplicate recoveries were all in control, and the method blank and client samples associated with this CCV were non-detect for the affected analyte. PFODA is not a state regulated analyte, therefore, the data have been reported. The associated samples are impacted: 500-247438-1, 500-247438-4, CCV 320-748491/13, LLCS 320-748243/2-A, LLCSD 320-748243/3-A and MB 320-748243/1-A.

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

### General Chemistry

Method 9056A: The following sample was received with insufficient time remaining to perform the analysis within holding time: 500-247438-2.

Method 9056A: The method blank for analytical batch 500-760073 contained Chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

Method SM 2320B: The method blank for analytical batch 500-760208 contained Alkalinity above the reporting limit (RL). Associated sample(s) were not re-analyzed because results were greater than 10X the value found in the method blank.

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

### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-748243.

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

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# Method Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
6020B	Metals (ICP/MS)	SW846	EET CHI
7470A	Mercury (CVAA)	SW846	EET CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	EET CHI
9056A	Anions, Ion Chromatography	SW846	EET CHI
SM 2320B	Alkalinity	SM	EET CHI
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET CHI
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC
7470A	Preparation, Mercury	SW846	EET CHI

#### Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-247438-1	Field Blank-03-12-2024-DW	Water	03/12/24 16:30	03/14/24 09:55
500-247438-2	DMW-01_1X	Water	03/12/24 10:20	03/14/24 09:55
500-247438-3	DMW-01_3X	Water	03/12/24 13:21	03/14/24 09:55
500-247438-4	DMW-01_5X	Water	03/12/24 16:25	03/14/24 09:55

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

**Client Sample ID: Field Blank-03-12-2024-DW**

**Lab Sample ID: 500-247438-1**

**Date Collected: 03/12/24 16:30**

**Matrix: Water**

**Date Received: 03/14/24 09:55**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.7		4.7	2.3	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluoropentanoic acid (PFPeA)	<1.9		1.9	0.47	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9	0.55	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9	0.24	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9	0.81	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorononanoic acid (PFNA)	<1.9		1.9	0.26	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9	0.29	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9	1.0	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9	0.52	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorotridecanoic acid (PFTrDA)	<1.9		1.9	1.2	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorotetradecanoic acid (PFTeA)	<1.9		1.9	0.69	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.9		1.9	0.84	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.9		1.9	0.89	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9	0.19	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9	0.28	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9	0.54	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.9		1.9	0.18	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorooctanesulfonic acid (PFOS)	<1.9		1.9	0.51	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorononanesulfonic acid (PFNS)	<1.9		1.9	0.35	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorodecanesulfonic acid (PFDS)	<1.9		1.9	0.30	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorododecanesulfonic acid (PFDoS)	<1.9		1.9	0.92	ng/L		03/18/24 13:00	03/19/24 18:34	1
Perfluorooctanesulfonamide (FOSA)	<1.9		1.9	0.93	ng/L		03/18/24 13:00	03/19/24 18:34	1
NEtFOSA	<1.9		1.9	0.83	ng/L		03/18/24 13:00	03/19/24 18:34	1
NMeFOSA	<1.9		1.9	0.41	ng/L		03/18/24 13:00	03/19/24 18:34	1
NMeFOSAA	<4.7		4.7	1.1	ng/L		03/18/24 13:00	03/19/24 18:34	1
NEtFOSAA	<4.7		4.7	1.2	ng/L		03/18/24 13:00	03/19/24 18:34	1
NMeFOSE	<3.8		3.8	1.3	ng/L		03/18/24 13:00	03/19/24 18:34	1
NEtFOSE	<1.9		1.9	0.81	ng/L		03/18/24 13:00	03/19/24 18:34	1
4:2 FTS	<1.9		1.9	0.23	ng/L		03/18/24 13:00	03/19/24 18:34	1
6:2 FTS	<4.7		4.7	2.4	ng/L		03/18/24 13:00	03/19/24 18:34	1
8:2 FTS	<1.9		1.9	0.44	ng/L		03/18/24 13:00	03/19/24 18:34	1
10:2 FTS	<1.9		1.9	0.64	ng/L		03/18/24 13:00	03/19/24 18:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9	0.38	ng/L		03/18/24 13:00	03/19/24 18:34	1
HFPO-DA (GenX)	<3.8		3.8	1.4	ng/L		03/18/24 13:00	03/19/24 18:34	1
9Cl-PF3ONS	<1.9		1.9	0.23	ng/L		03/18/24 13:00	03/19/24 18:34	1
11Cl-PF3OUdS	<1.9		1.9	0.30	ng/L		03/18/24 13:00	03/19/24 18:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	109		25 - 150				03/18/24 13:00	03/19/24 18:34	1
13C5 PFPeA	104		25 - 150				03/18/24 13:00	03/19/24 18:34	1
13C2 PFHxA	104		25 - 150				03/18/24 13:00	03/19/24 18:34	1
13C4 PFHpA	108		25 - 150				03/18/24 13:00	03/19/24 18:34	1
13C4 PFOA	93		25 - 150				03/18/24 13:00	03/19/24 18:34	1
13C5 PFNA	94		25 - 150				03/18/24 13:00	03/19/24 18:34	1
13C2 PFDA	99		25 - 150				03/18/24 13:00	03/19/24 18:34	1
13C2 PFUnA	88		25 - 150				03/18/24 13:00	03/19/24 18:34	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

**Client Sample ID: Field Blank-03-12-2024-DW**

**Lab Sample ID: 500-247438-1**

**Date Collected: 03/12/24 16:30**

**Matrix: Water**

**Date Received: 03/14/24 09:55**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFDoA	88		25 - 150	03/18/24 13:00	03/19/24 18:34	1
13C2 PFTeDA	81		25 - 150	03/18/24 13:00	03/19/24 18:34	1
13C2 PFHxDA	70		25 - 150	03/18/24 13:00	03/19/24 18:34	1
13C3 PFBS	95		25 - 150	03/18/24 13:00	03/19/24 18:34	1
18O2 PFHxS	98		25 - 150	03/18/24 13:00	03/19/24 18:34	1
13C4 PFOS	92		25 - 150	03/18/24 13:00	03/19/24 18:34	1
13C8 FOSA	95		10 - 150	03/18/24 13:00	03/19/24 18:34	1
d3-NMeFOSAA	88		25 - 150	03/18/24 13:00	03/19/24 18:34	1
d5-NEtFOSAA	91		25 - 150	03/18/24 13:00	03/19/24 18:34	1
d-N-MeFOSA-M	84		10 - 150	03/18/24 13:00	03/19/24 18:34	1
d-N-EtFOSA-M	85		10 - 150	03/18/24 13:00	03/19/24 18:34	1
d7-N-MeFOSE-M	70		10 - 150	03/18/24 13:00	03/19/24 18:34	1
d9-N-EtFOSE-M	68		10 - 150	03/18/24 13:00	03/19/24 18:34	1
M2-4:2 FTS	133		25 - 150	03/18/24 13:00	03/19/24 18:34	1
M2-6:2 FTS	114		25 - 150	03/18/24 13:00	03/19/24 18:34	1
M2-8:2 FTS	103		25 - 150	03/18/24 13:00	03/19/24 18:34	1
13C3 HFPO-DA	98		25 - 150	03/18/24 13:00	03/19/24 18:34	1
13C2 10:2 FTS	90		25 - 150	03/18/24 13:00	03/19/24 18:34	1

# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

**Client Sample ID: DMW-01\_1X**

**Lab Sample ID: 500-247438-2**

Date Collected: 03/12/24 10:20

Matrix: Water

Date Received: 03/14/24 09:55

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/19/24 09:04	03/22/24 19:06	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/19/24 09:04	03/26/24 13:37	1
Arsenic	<1.0		1.0	0.23	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Barium</b>	<b>9.8</b>		2.5	0.73	ug/L		03/19/24 09:04	03/22/24 19:06	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Boron</b>	<b>290 B</b>		50	13	ug/L		03/19/24 09:04	03/26/24 13:37	1
Cadmium	<0.50		0.50	0.17	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Calcium</b>	<b>99000 B</b>		200	44	ug/L		03/19/24 09:04	03/22/24 19:06	1
Chromium	<5.0		5.0	1.1	ug/L		03/19/24 09:04	03/22/24 19:06	1
Cobalt	<1.0		1.0	0.40	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Copper</b>	<b>1.3 J</b>		2.0	0.50	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Iron</b>	<b>1900</b>		100	47	ug/L		03/19/24 09:04	03/22/24 19:06	1
Lead	<0.50		0.50	0.19	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Magnesium</b>	<b>38000</b>		200	49	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Manganese</b>	<b>27 B</b>		2.5	0.79	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Nickel</b>	<b>0.89 J</b>		2.0	0.63	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Potassium</b>	<b>5500</b>		500	110	ug/L		03/19/24 09:04	03/22/24 19:06	1
Selenium	<2.5		2.5	0.98	ug/L		03/19/24 09:04	03/22/24 19:06	1
Silver	<0.50		0.50	0.12	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Sodium</b>	<b>46000</b>		200	77	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Strontium</b>	<b>4100</b>		4.0	0.64	ug/L		03/19/24 09:04	03/22/24 19:06	1
Thallium	<2.0		2.0	0.57	ug/L		03/19/24 09:04	03/22/24 19:06	1
Vanadium	<5.0		5.0	2.2	ug/L		03/19/24 09:04	03/22/24 19:06	1
<b>Zinc</b>	<b>56</b>		20	6.9	ug/L		03/19/24 09:04	03/22/24 19:06	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		04/02/24 10:55	04/03/24 09:29	1

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Hardness as calcium carbonate</b>	<b>400</b>		0.91	0.46	mg/L		03/19/24 09:04	03/26/24 11:58	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.42 J</b>		1.0	0.18	mg/L			03/14/24 12:48	1
Nitrate as N (SW846 9056A)	<1.0	H	1.0	0.043	mg/L			03/14/24 12:48	1
<b>Chloride (SW846 9056A)</b>	<b>50 B</b>		10	1.2	mg/L			03/27/24 01:28	10
Nitrite as N (SW846 9056A)	<1.0	H	1.0	0.070	mg/L			03/14/24 12:48	1
<b>Fluoride (SW846 9056A)</b>	<b>1.5</b>		1.0	0.19	mg/L			03/14/24 12:48	1
Orthophosphate as P (SW846 9056A)	<1.0	H	1.0	0.13	mg/L			03/14/24 12:48	1
<b>Sulfate (SW846 9056A)</b>	<b>320</b>		10	2.1	mg/L			03/27/24 01:28	10
<b>Alkalinity, Total (SM 2320B)</b>	<b>110 B</b>		5.0	3.7	mg/L			03/26/24 19:06	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>110 B</b>		5.0	3.7	mg/L			03/26/24 19:06	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/26/24 19:06	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

**Client Sample ID: DMW-01\_3X**

**Lab Sample ID: 500-247438-3**

Date Collected: 03/12/24 13:21

Matrix: Water

Date Received: 03/14/24 09:55

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/19/24 09:04	03/22/24 19:10	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/19/24 09:04	03/26/24 13:40	1
Arsenic	<1.0		1.0	0.23	ug/L		03/19/24 09:04	03/22/24 19:10	1
<b>Barium</b>	<b>9.8</b>		2.5	0.73	ug/L		03/19/24 09:04	03/22/24 19:10	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/19/24 09:04	03/22/24 19:10	1
<b>Boron</b>	<b>270 B</b>		50	13	ug/L		03/19/24 09:04	03/26/24 13:40	1
Cadmium	<0.50		0.50	0.17	ug/L		03/19/24 09:04	03/22/24 19:10	1
<b>Calcium</b>	<b>97000 B</b>		200	44	ug/L		03/19/24 09:04	03/22/24 19:10	1
Chromium	<5.0		5.0	1.1	ug/L		03/19/24 09:04	03/22/24 19:10	1
Cobalt	<1.0		1.0	0.40	ug/L		03/19/24 09:04	03/22/24 19:10	1
Copper	<2.0		2.0	0.50	ug/L		03/19/24 09:04	03/22/24 19:10	1
<b>Iron</b>	<b>600</b>		100	47	ug/L		03/19/24 09:04	03/22/24 19:10	1
Lead	<0.50		0.50	0.19	ug/L		03/19/24 09:04	03/22/24 19:10	1
<b>Magnesium</b>	<b>38000</b>		200	49	ug/L		03/19/24 09:04	03/22/24 19:10	1
<b>Manganese</b>	<b>19 B</b>		2.5	0.79	ug/L		03/19/24 09:04	03/22/24 19:10	1
Nickel	<2.0		2.0	0.63	ug/L		03/19/24 09:04	03/22/24 19:10	1
<b>Potassium</b>	<b>5400</b>		500	110	ug/L		03/19/24 09:04	03/22/24 19:10	1
Selenium	<2.5		2.5	0.98	ug/L		03/19/24 09:04	03/22/24 19:10	1
Silver	<0.50		0.50	0.12	ug/L		03/19/24 09:04	03/22/24 19:10	1
<b>Sodium</b>	<b>43000</b>		200	77	ug/L		03/19/24 09:04	03/22/24 19:10	1
<b>Strontium</b>	<b>4100</b>		4.0	0.64	ug/L		03/19/24 09:04	03/22/24 19:10	1
Thallium	<2.0		2.0	0.57	ug/L		03/19/24 09:04	03/22/24 19:10	1
Vanadium	<5.0		5.0	2.2	ug/L		03/19/24 09:04	03/22/24 19:10	1
<b>Zinc</b>	<b>26</b>		20	6.9	ug/L		03/19/24 09:04	03/22/24 19:10	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		04/02/24 10:55	04/03/24 09:31	1

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Hardness as calcium carbonate</b>	<b>400</b>		0.91	0.46	mg/L		03/19/24 09:04	03/26/24 11:58	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.44 J</b>		1.0	0.18	mg/L			03/14/24 12:18	1
Nitrate as N (SW846 9056A)	<1.0		1.0	0.043	mg/L			03/14/24 12:18	1
<b>Chloride (SW846 9056A)</b>	<b>47 B</b>		10	1.2	mg/L			03/27/24 01:43	10
Nitrite as N (SW846 9056A)	<1.0		1.0	0.070	mg/L			03/14/24 12:18	1
<b>Fluoride (SW846 9056A)</b>	<b>1.6</b>		1.0	0.19	mg/L			03/14/24 12:18	1
Orthophosphate as P (SW846 9056A)	<1.0		1.0	0.13	mg/L			03/14/24 12:18	1
<b>Sulfate (SW846 9056A)</b>	<b>310</b>		10	2.1	mg/L			03/27/24 01:43	10
<b>Alkalinity, Total (SM 2320B)</b>	<b>110 B</b>		5.0	3.7	mg/L			03/26/24 19:15	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>110 B</b>		5.0	3.7	mg/L			03/26/24 19:15	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/26/24 19:15	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

**Client Sample ID: DMW-01\_5X**

**Lab Sample ID: 500-247438-4**

**Date Collected: 03/12/24 16:25**

**Matrix: Water**

**Date Received: 03/14/24 09:55**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.0		4.0	1.9	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluoropentanoic acid (PFPeA)	<1.6		1.6	0.39	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorohexanoic acid (PFHxA)	<1.6		1.6	0.46	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluoroheptanoic acid (PFHpA)	<1.6		1.6	0.20	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorooctanoic acid (PFOA)	<1.6		1.6	0.68	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorononanoic acid (PFNA)	<1.6		1.6	0.22	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorodecanoic acid (PFDA)	<1.6		1.6	0.25	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluoroundecanoic acid (PFUnA)	<1.6		1.6	0.88	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorododecanoic acid (PFDoA)	<1.6		1.6	0.44	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorotridecanoic acid (PFTrDA)	<1.6		1.6	1.0	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorotetradecanoic acid (PFTeA)	<1.6		1.6	0.58	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.6		1.6	0.71	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.6		1.6	0.75	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorobutanesulfonic acid (PFBS)	<1.6		1.6	0.16	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluoropentanesulfonic acid (PFPeS)	<1.6		1.6	0.24	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorohexanesulfonic acid (PFHxS)	<1.6		1.6	0.46	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.6		1.6	0.15	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorooctanesulfonic acid (PFOS)	<1.6		1.6	0.43	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorononanesulfonic acid (PFNS)	<1.6		1.6	0.30	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorodecanesulfonic acid (PFDS)	<1.6		1.6	0.26	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorododecanesulfonic acid (PFDoS)	<1.6		1.6	0.78	ng/L		03/18/24 13:00	03/19/24 18:45	1
Perfluorooctanesulfonamide (FOSA)	<1.6		1.6	0.78	ng/L		03/18/24 13:00	03/19/24 18:45	1
NEtFOSA	<1.6		1.6	0.70	ng/L		03/18/24 13:00	03/19/24 18:45	1
NMeFOSA	<1.6		1.6	0.34	ng/L		03/18/24 13:00	03/19/24 18:45	1
NMeFOSAA	<4.0		4.0	0.96	ng/L		03/18/24 13:00	03/19/24 18:45	1
NEtFOSAA	<4.0		4.0	1.0	ng/L		03/18/24 13:00	03/19/24 18:45	1
NMeFOSE	<3.2		3.2	1.1	ng/L		03/18/24 13:00	03/19/24 18:45	1
NEtFOSE	<1.6		1.6	0.68	ng/L		03/18/24 13:00	03/19/24 18:45	1
4:2 FTS	<1.6		1.6	0.19	ng/L		03/18/24 13:00	03/19/24 18:45	1
6:2 FTS	<4.0		4.0	2.0	ng/L		03/18/24 13:00	03/19/24 18:45	1
8:2 FTS	<1.6		1.6	0.37	ng/L		03/18/24 13:00	03/19/24 18:45	1
10:2 FTS	<1.6		1.6	0.54	ng/L		03/18/24 13:00	03/19/24 18:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.6		1.6	0.32	ng/L		03/18/24 13:00	03/19/24 18:45	1
HFPO-DA (GenX)	<3.2		3.2	1.2	ng/L		03/18/24 13:00	03/19/24 18:45	1
9Cl-PF3ONS	<1.6		1.6	0.19	ng/L		03/18/24 13:00	03/19/24 18:45	1
11Cl-PF3OUdS	<1.6		1.6	0.26	ng/L		03/18/24 13:00	03/19/24 18:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	107		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C5 PFPeA	105		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C2 PFHxA	101		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C4 PFHpA	103		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C4 PFOA	99		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C5 PFNA	91		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C2 PFDA	87		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C2 PFUnA	90		25 - 150	03/18/24 13:00	03/19/24 18:45	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

**Client Sample ID: DMW-01\_5X**

**Lab Sample ID: 500-247438-4**

**Date Collected: 03/12/24 16:25**

**Matrix: Water**

**Date Received: 03/14/24 09:55**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	86		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C2 PFTeDA	83		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C2 PFHxDA	75		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C3 PFBS	92		25 - 150	03/18/24 13:00	03/19/24 18:45	1
18O2 PFHxS	93		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C4 PFOS	93		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C8 FOSA	99		10 - 150	03/18/24 13:00	03/19/24 18:45	1
d3-NMeFOSAA	87		25 - 150	03/18/24 13:00	03/19/24 18:45	1
d5-NEtFOSAA	92		25 - 150	03/18/24 13:00	03/19/24 18:45	1
d-N-MeFOSA-M	84		10 - 150	03/18/24 13:00	03/19/24 18:45	1
d-N-EtFOSA-M	85		10 - 150	03/18/24 13:00	03/19/24 18:45	1
d7-N-MeFOSE-M	69		10 - 150	03/18/24 13:00	03/19/24 18:45	1
d9-N-EtFOSE-M	68		10 - 150	03/18/24 13:00	03/19/24 18:45	1
M2-4:2 FTS	126		25 - 150	03/18/24 13:00	03/19/24 18:45	1
M2-6:2 FTS	108		25 - 150	03/18/24 13:00	03/19/24 18:45	1
M2-8:2 FTS	105		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C3 HFPO-DA	97		25 - 150	03/18/24 13:00	03/19/24 18:45	1
13C2 10:2 FTS	90		25 - 150	03/18/24 13:00	03/19/24 18:45	1

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/19/24 09:04	03/22/24 19:13	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/19/24 09:04	03/26/24 13:51	1
Arsenic	<1.0		1.0	0.23	ug/L		03/19/24 09:04	03/22/24 19:13	1
<b>Barium</b>	<b>10</b>		2.5	0.73	ug/L		03/19/24 09:04	03/22/24 19:13	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/19/24 09:04	03/22/24 19:13	1
<b>Boron</b>	<b>250</b>	<b>B</b>	50	13	ug/L		03/19/24 09:04	03/26/24 13:51	1
Cadmium	<0.50		0.50	0.17	ug/L		03/19/24 09:04	03/22/24 19:13	1
<b>Calcium</b>	<b>96000</b>	<b>B</b>	200	44	ug/L		03/19/24 09:04	03/22/24 19:13	1
Chromium	<5.0		5.0	1.1	ug/L		03/19/24 09:04	03/22/24 19:13	1
Cobalt	<1.0		1.0	0.40	ug/L		03/19/24 09:04	03/22/24 19:13	1
Copper	<2.0		2.0	0.50	ug/L		03/19/24 09:04	03/22/24 19:13	1
<b>Iron</b>	<b>330</b>		100	47	ug/L		03/19/24 09:04	03/22/24 19:13	1
Lead	<0.50		0.50	0.19	ug/L		03/19/24 09:04	03/22/24 19:13	1
<b>Magnesium</b>	<b>37000</b>		200	49	ug/L		03/19/24 09:04	03/22/24 19:13	1
<b>Manganese</b>	<b>17</b>	<b>B</b>	2.5	0.79	ug/L		03/19/24 09:04	03/22/24 19:13	1
Nickel	<2.0		2.0	0.63	ug/L		03/19/24 09:04	03/22/24 19:13	1
<b>Potassium</b>	<b>5200</b>		500	110	ug/L		03/19/24 09:04	03/22/24 19:13	1
Selenium	<2.5		2.5	0.98	ug/L		03/19/24 09:04	03/22/24 19:13	1
Silver	<0.50		0.50	0.12	ug/L		03/19/24 09:04	03/22/24 19:13	1
<b>Sodium</b>	<b>41000</b>		200	77	ug/L		03/19/24 09:04	03/22/24 19:13	1
<b>Strontium</b>	<b>4200</b>		4.0	0.64	ug/L		03/19/24 09:04	03/22/24 19:13	1
Thallium	<2.0		2.0	0.57	ug/L		03/19/24 09:04	03/22/24 19:13	1
Vanadium	<5.0		5.0	2.2	ug/L		03/19/24 09:04	03/22/24 19:13	1
<b>Zinc</b>	<b>22</b>		20	6.9	ug/L		03/19/24 09:04	03/22/24 19:13	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		04/02/24 10:55	04/03/24 09:33	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

**Client Sample ID: DMW-01\_5X**

**Lab Sample ID: 500-247438-4**

Date Collected: 03/12/24 16:25

Matrix: Water

Date Received: 03/14/24 09:55

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	390		0.91	0.46	mg/L		03/19/24 09:04	03/26/24 11:58	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.38</b>	<b>J</b>	1.0	0.18	mg/L			03/14/24 12:33	1
Nitrate as N (SW846 9056A)	<1.0		1.0	0.043	mg/L			03/14/24 12:33	1
<b>Chloride (SW846 9056A)</b>	<b>46</b>	<b>B</b>	10	1.2	mg/L			03/27/24 01:58	10
Nitrite as N (SW846 9056A)	<1.0		1.0	0.070	mg/L			03/14/24 12:33	1
<b>Fluoride (SW846 9056A)</b>	<b>1.5</b>		1.0	0.19	mg/L			03/14/24 12:33	1
Orthophosphate as P (SW846 9056A)	<1.0		1.0	0.13	mg/L			03/14/24 12:33	1
<b>Sulfate (SW846 9056A)</b>	<b>310</b>		10	2.1	mg/L			03/27/24 01:58	10
<b>Alkalinity, Total (SM 2320B)</b>	<b>110</b>	<b>B</b>	5.0	3.7	mg/L			03/26/24 19:27	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>110</b>	<b>B</b>	5.0	3.7	mg/L			03/26/24 19:27	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/26/24 19:27	1



# Definitions/Glossary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
^1+	Initial Calibration Verification (ICV) is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Method: 537 (modified) - Fluorinated Alkyl Substances

**Lab Sample ID: MB 320-748243/1-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	1.3	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		03/18/24 13:00	03/19/24 17:14	1
NEtFOSA	<2.0		2.0	0.87	ng/L		03/18/24 13:00	03/19/24 17:14	1
NMeFOSA	<2.0		2.0	0.43	ng/L		03/18/24 13:00	03/19/24 17:14	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		03/18/24 13:00	03/19/24 17:14	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		03/18/24 13:00	03/19/24 17:14	1
NMeFOSE	<4.0		4.0	1.4	ng/L		03/18/24 13:00	03/19/24 17:14	1
NEtFOSE	<2.0		2.0	0.85	ng/L		03/18/24 13:00	03/19/24 17:14	1
4:2 FTS	<2.0		2.0	0.24	ng/L		03/18/24 13:00	03/19/24 17:14	1
6:2 FTS	<5.0		5.0	2.5	ng/L		03/18/24 13:00	03/19/24 17:14	1
8:2 FTS	<2.0		2.0	0.46	ng/L		03/18/24 13:00	03/19/24 17:14	1
10:2 FTS	<2.0		2.0	0.67	ng/L		03/18/24 13:00	03/19/24 17:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		03/18/24 13:00	03/19/24 17:14	1
HFPO-DA (GenX)	<4.0		4.0	1.5	ng/L		03/18/24 13:00	03/19/24 17:14	1
9Cl-PF3ONS	<2.0		2.0	0.24	ng/L		03/18/24 13:00	03/19/24 17:14	1
11Cl-PF3OUdS	<2.0		2.0	0.32	ng/L		03/18/24 13:00	03/19/24 17:14	1
Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac			
	%Recovery	Qualifier							
13C4 PFBA	105		25 - 150	03/18/24 13:00	03/19/24 17:14	1			
13C5 PFPeA	98		25 - 150	03/18/24 13:00	03/19/24 17:14	1			
13C2 PFHxA	97		25 - 150	03/18/24 13:00	03/19/24 17:14	1			
13C4 PFHpA	107		25 - 150	03/18/24 13:00	03/19/24 17:14	1			
13C4 PFOA	96		25 - 150	03/18/24 13:00	03/19/24 17:14	1			
13C5 PFNA	89		25 - 150	03/18/24 13:00	03/19/24 17:14	1			

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# QC Sample Results

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: MB 320-748243/1-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFDA	95		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C2 PFUnA	87		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C2 PFDoA	85		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C2 PFTeDA	74		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C2 PFHxDA	73		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C3 PFBS	93		25 - 150	03/18/24 13:00	03/19/24 17:14	1
18O2 PFHxS	90		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C4 PFOS	88		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C8 FOSA	85		10 - 150	03/18/24 13:00	03/19/24 17:14	1
d3-NMeFOSAA	92		25 - 150	03/18/24 13:00	03/19/24 17:14	1
d5-NEtFOSAA	88		25 - 150	03/18/24 13:00	03/19/24 17:14	1
d-N-MeFOSA-M	71		10 - 150	03/18/24 13:00	03/19/24 17:14	1
d-N-EtFOSA-M	68		10 - 150	03/18/24 13:00	03/19/24 17:14	1
d7-N-MeFOSE-M	64		10 - 150	03/18/24 13:00	03/19/24 17:14	1
d9-N-EtFOSE-M	61		10 - 150	03/18/24 13:00	03/19/24 17:14	1
M2-4:2 FTS	131		25 - 150	03/18/24 13:00	03/19/24 17:14	1
M2-6:2 FTS	109		25 - 150	03/18/24 13:00	03/19/24 17:14	1
M2-8:2 FTS	90		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C3 HFPO-DA	93		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C2 10:2 FTS	79		25 - 150	03/18/24 13:00	03/19/24 17:14	1

**Lab Sample ID: LLCS 320-748243/2-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	8.00	8.30		ng/L		104	50 - 150
Perfluorohexanoic acid (PFHxA)	8.00	8.10		ng/L		101	50 - 150
Perfluoroheptanoic acid (PFHpA)	8.00	7.81		ng/L		98	50 - 150
Perfluorooctanoic acid (PFOA)	8.00	7.92		ng/L		99	50 - 150
Perfluorononanoic acid (PFNA)	8.00	7.67		ng/L		96	50 - 150
Perfluorodecanoic acid (PFDA)	8.00	7.89		ng/L		99	50 - 150
Perfluoroundecanoic acid (PFUnA)	8.00	8.99		ng/L		112	50 - 150
Perfluorododecanoic acid (PFDoA)	8.00	7.90		ng/L		99	50 - 150
Perfluorotridecanoic acid (PFTTrDA)	8.00	7.89		ng/L		99	50 - 150
Perfluorotetradecanoic acid (PFTeA)	8.00	8.59		ng/L		107	50 - 150
Perfluoro-n-hexadecanoic acid (PFHxDA)	8.00	8.91		ng/L		111	50 - 150
Perfluoro-n-octadecanoic acid (PFODA)	8.00	5.87		ng/L		73	50 - 150
Perfluorobutanesulfonic acid (PFBS)	7.10	7.28		ng/L		102	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	7.52	8.33		ng/L		111	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	7.30	7.46		ng/L		102	50 - 150

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LLCS 320-748243/2-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanesulfonic acid (PFHpS)	7.63	7.71		ng/L		101	50 - 150
Perfluorooctanesulfonic acid (PFOS)	7.44	7.23		ng/L		97	50 - 150
Perfluorononanesulfonic acid (PFNS)	7.70	7.19		ng/L		93	50 - 150
Perfluorodecanesulfonic acid (PFDS)	7.71	7.52		ng/L		98	50 - 150
Perfluorododecanesulfonic acid (PFDoS)	7.76	7.31		ng/L		94	50 - 150
Perfluorooctanesulfonamide (FOSA)	8.00	7.85		ng/L		98	50 - 150
NEtFOSA	8.00	7.93		ng/L		99	50 - 150
NMeFOSA	8.00	7.39		ng/L		92	50 - 150
NMeFOSAA	8.00	8.08		ng/L		101	50 - 150
NEtFOSAA	8.00	7.91		ng/L		99	50 - 150
NMeFOSE	8.00	8.32		ng/L		104	50 - 150
NEtFOSE	8.00	7.93		ng/L		99	50 - 150
4:2 FTS	7.50	8.79		ng/L		117	50 - 150
6:2 FTS	7.62	9.45		ng/L		124	50 - 150
8:2 FTS	7.68	9.25		ng/L		120	50 - 150
10:2 FTS	7.73	6.41		ng/L		83	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.57	8.80		ng/L		116	50 - 150
HFPO-DA (GenX)	8.00	7.88		ng/L		98	50 - 150
9Cl-PF3ONS	7.47	7.97		ng/L		107	50 - 150
11Cl-PF3OUdS	7.55	7.60		ng/L		101	50 - 150

Isotope Dilution	LLCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	113		25 - 150
13C5 PFPeA	110		25 - 150
13C2 PFHxA	106		25 - 150
13C4 PFHpA	107		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	105		25 - 150
13C2 PFDA	108		25 - 150
13C2 PFUnA	93		25 - 150
13C2 PFDoA	92		25 - 150
13C2 PFTeDA	84		25 - 150
13C2 PFHxDA	79		25 - 150
13C3 PFBS	99		25 - 150
18O2 PFHxS	98		25 - 150
13C4 PFOS	97		25 - 150
13C8 FOSA	98		10 - 150
d3-NMeFOSAA	86		25 - 150
d5-NEtFOSAA	97		25 - 150
d-N-MeFOSA-M	81		10 - 150
d-N-EtFOSA-M	84		10 - 150
d7-N-MeFOSE-M	73		10 - 150
d9-N-EtFOSE-M	75		10 - 150

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LLCS 320-748243/2-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Isotope Dilution	LLCS LLCS		Limits
	%Recovery	Qualifier	
M2-4:2 FTS	117		25 - 150
M2-6:2 FTS	110		25 - 150
M2-8:2 FTS	97		25 - 150
13C3 HFPO-DA	101		25 - 150
13C2 10:2 FTS	99		25 - 150

**Lab Sample ID: LLCSD 320-748243/3-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Analyte	Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	8.00	8.80		ng/L		110	50 - 150	9	30	
Perfluoropentanoic acid (PFPeA)	8.00	9.26		ng/L		116	50 - 150	11	30	
Perfluorohexanoic acid (PFHxA)	8.00	8.29		ng/L		104	50 - 150	2	30	
Perfluoroheptanoic acid (PFHpA)	8.00	8.92		ng/L		111	50 - 150	13	30	
Perfluorooctanoic acid (PFOA)	8.00	8.27		ng/L		103	50 - 150	4	30	
Perfluorononanoic acid (PFNA)	8.00	8.57		ng/L		107	50 - 150	11	30	
Perfluorodecanoic acid (PFDA)	8.00	8.91		ng/L		111	50 - 150	12	30	
Perfluoroundecanoic acid (PFUnA)	8.00	9.26		ng/L		116	50 - 150	3	30	
Perfluorododecanoic acid (PFDoA)	8.00	8.10		ng/L		101	50 - 150	3	30	
Perfluorotridecanoic acid (PFTrDA)	8.00	7.74		ng/L		97	50 - 150	2	30	
Perfluorotetradecanoic acid (PFTeA)	8.00	7.88		ng/L		99	50 - 150	9	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	8.00	8.22		ng/L		103	50 - 150	8	30	
Perfluoro-n-octadecanoic acid (PFODA)	8.00	6.76		ng/L		84	50 - 150	14	30	
Perfluorobutanesulfonic acid (PFBS)	7.10	7.33		ng/L		103	50 - 150	0.7	30	
Perfluoropentanesulfonic acid (PFPeS)	7.52	8.17		ng/L		109	50 - 150	2	30	
Perfluorohexanesulfonic acid (PFHxS)	7.30	7.80		ng/L		107	50 - 150	4	30	
Perfluoroheptanesulfonic acid (PFHpS)	7.63	8.22		ng/L		108	50 - 150	6	30	
Perfluorooctanesulfonic acid (PFOS)	7.44	7.60		ng/L		102	50 - 150	5	30	
Perfluorononanesulfonic acid (PFNS)	7.70	7.48		ng/L		97	50 - 150	4	30	
Perfluorodecanesulfonic acid (PFDS)	7.71	7.29		ng/L		95	50 - 150	3	30	
Perfluorododecanesulfonic acid (PFDoS)	7.76	7.03		ng/L		91	50 - 150	4	30	
Perfluorooctanesulfonamide (FOSA)	8.00	8.49		ng/L		106	50 - 150	8	30	
NEtFOSA	8.00	7.94		ng/L		99	50 - 150	0.1	30	
NMeFOSA	8.00	7.68		ng/L		96	50 - 150	4	30	
NMeFOSAA	8.00	7.44		ng/L		93	50 - 150	8	30	
NEtFOSAA	8.00	7.74		ng/L		97	50 - 150	2	30	
NMeFOSE	8.00	8.46		ng/L		106	50 - 150	2	30	

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LLCSD 320-748243/3-A  
 Matrix: Water  
 Analysis Batch: 748491

Client Sample ID: Lab Control Sample Dup  
 Prep Type: Total/NA  
 Prep Batch: 748243

Analyte	Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NETFOSE	8.00	8.30		ng/L		104	50 - 150	5	30
4:2 FTS	7.50	8.35		ng/L		111	50 - 150	5	30
6:2 FTS	7.62	8.51		ng/L		112	50 - 150	10	30
8:2 FTS	7.68	9.16		ng/L		119	50 - 150	1	30
10:2 FTS	7.73	8.22		ng/L		106	50 - 150	25	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.57	9.57		ng/L		126	50 - 150	8	30
HFPO-DA (GenX)	8.00	8.37		ng/L		105	50 - 150	6	30
9CI-PF3ONS	7.47	8.82		ng/L		118	50 - 150	10	30
11CI-PF3OUdS	7.55	7.39		ng/L		98	50 - 150	3	30

Isotope Dilution	LLCSD %Recovery	LLCSD Qualifier	LLCSD Limits
13C4 PFBA	104		25 - 150
13C5 PFPeA	96		25 - 150
13C2 PFHxA	104		25 - 150
13C4 PFHpA	95		25 - 150
13C4 PFOA	97		25 - 150
13C5 PFNA	89		25 - 150
13C2 PFDA	91		25 - 150
13C2 PFUnA	80		25 - 150
13C2 PFDoA	82		25 - 150
13C2 PFTeDA	81		25 - 150
13C2 PFHxDA	77		25 - 150
13C3 PFBS	94		25 - 150
18O2 PFHxS	90		25 - 150
13C4 PFOS	86		25 - 150
13C8 FOSA	86		10 - 150
d3-NMeFOSAA	90		25 - 150
d5-NEtFOSAA	78		25 - 150
d-N-MeFOSA-M	75		10 - 150
d-N-EtFOSA-M	78		10 - 150
d7-N-MeFOSE-M	66		10 - 150
d9-N-EtFOSE-M	67		10 - 150
M2-4:2 FTS	130		25 - 150
M2-6:2 FTS	111		25 - 150
M2-8:2 FTS	87		25 - 150
13C3 HFPO-DA	95		25 - 150
13C2 10:2 FTS	82		25 - 150

## Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 500-758911/1-A  
 Matrix: Water  
 Analysis Batch: 759758

Client Sample ID: Method Blank  
 Prep Type: Total Recoverable  
 Prep Batch: 758911

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/19/24 09:04	03/22/24 18:08	1
Arsenic	<1.0		1.0	0.23	ug/L		03/19/24 09:04	03/22/24 18:08	1
Barium	<2.5		2.5	0.73	ug/L		03/19/24 09:04	03/22/24 18:08	1

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Method: 6020B - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 500-758911/1-A**  
**Matrix: Water**  
**Analysis Batch: 759758**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 758911**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/19/24 09:04	03/22/24 18:08	1
Cadmium	<0.50		0.50	0.17	ug/L		03/19/24 09:04	03/22/24 18:08	1
Calcium	59.9	J	200	44	ug/L		03/19/24 09:04	03/22/24 18:08	1
Chromium	<5.0		5.0	1.1	ug/L		03/19/24 09:04	03/22/24 18:08	1
Cobalt	<1.0		1.0	0.40	ug/L		03/19/24 09:04	03/22/24 18:08	1
Copper	<2.0		2.0	0.50	ug/L		03/19/24 09:04	03/22/24 18:08	1
Iron	<100		100	47	ug/L		03/19/24 09:04	03/22/24 18:08	1
Lead	<0.50		0.50	0.19	ug/L		03/19/24 09:04	03/22/24 18:08	1
Magnesium	<200		200	49	ug/L		03/19/24 09:04	03/22/24 18:08	1
Manganese	0.833	J	2.5	0.79	ug/L		03/19/24 09:04	03/22/24 18:08	1
Nickel	<2.0		2.0	0.63	ug/L		03/19/24 09:04	03/22/24 18:08	1
Potassium	<500		500	110	ug/L		03/19/24 09:04	03/22/24 18:08	1
Selenium	<2.5		2.5	0.98	ug/L		03/19/24 09:04	03/22/24 18:08	1
Silver	<0.50		0.50	0.12	ug/L		03/19/24 09:04	03/22/24 18:08	1
Sodium	<200		200	77	ug/L		03/19/24 09:04	03/22/24 18:08	1
Strontium	<4.0		4.0	0.64	ug/L		03/19/24 09:04	03/22/24 18:08	1
Thallium	<2.0		2.0	0.57	ug/L		03/19/24 09:04	03/22/24 18:08	1
Vanadium	<5.0		5.0	2.2	ug/L		03/19/24 09:04	03/22/24 18:08	1
Zinc	<20		20	6.9	ug/L		03/19/24 09:04	03/22/24 18:08	1

**Lab Sample ID: MB 500-758911/1-A**  
**Matrix: Water**  
**Analysis Batch: 760160**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 758911**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/19/24 09:04	03/26/24 13:08	1
Boron	22.8	J	50	13	ug/L		03/19/24 09:04	03/26/24 13:08	1

**Lab Sample ID: LCS 500-758911/2-A**  
**Matrix: Water**  
**Analysis Batch: 759758**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 758911**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	100	88.0		ug/L		88	80 - 120
Barium	500	450		ug/L		90	80 - 120
Beryllium	50.0	44.4	^1+	ug/L		89	80 - 120
Cadmium	50.0	46.4		ug/L		93	80 - 120
Calcium	10000	9100		ug/L		91	80 - 120
Chromium	200	177		ug/L		88	80 - 120
Cobalt	500	437		ug/L		87	80 - 120
Copper	250	241		ug/L		96	80 - 120
Iron	1000	879		ug/L		88	80 - 120
Lead	100	92.8		ug/L		93	80 - 120
Magnesium	10000	9040		ug/L		90	80 - 120
Manganese	500	437		ug/L		87	80 - 120
Nickel	500	457		ug/L		91	80 - 120
Potassium	10000	9010		ug/L		90	80 - 120
Selenium	100	89.7		ug/L		90	80 - 120

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 500-758911/2-A  
 Matrix: Water  
 Analysis Batch: 759758

Client Sample ID: Lab Control Sample  
 Prep Type: Total Recoverable  
 Prep Batch: 758911

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Silver	50.0	46.0		ug/L		92	80 - 120
Sodium	10000	8910		ug/L		89	80 - 120
Strontium	1000	872		ug/L		87	80 - 120
Thallium	100	89.6		ug/L		90	80 - 120
Vanadium	500	421		ug/L		84	80 - 120
Zinc	500	482		ug/L		96	80 - 120

Lab Sample ID: LCS 500-758911/2-A  
 Matrix: Water  
 Analysis Batch: 760160

Client Sample ID: Lab Control Sample  
 Prep Type: Total Recoverable  
 Prep Batch: 758911

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	500	463	^1+	ug/L		93	80 - 120
Boron	1000	884		ug/L		88	80 - 120

## Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 500-761081/12-A  
 Matrix: Water  
 Analysis Batch: 761342

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 761081

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		04/02/24 10:55	04/03/24 08:59	1

Lab Sample ID: LCS 500-761081/13-A  
 Matrix: Water  
 Analysis Batch: 761342

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 761081

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	2.01	1.70		ug/L		85	80 - 120

## Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 500-758324/3  
 Matrix: Water  
 Analysis Batch: 758324

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	<1.0		1.0	0.18	mg/L			03/14/24 11:47	1
Fluoride	<1.0		1.0	0.19	mg/L			03/14/24 11:47	1

Lab Sample ID: LCS 500-758324/4  
 Matrix: Water  
 Analysis Batch: 758324

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromide	20.0	18.6		mg/L		93	80 - 120
Fluoride	20.0	19.8		mg/L		99	80 - 120



# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Method: 9056A - Anions, Ion Chromatography (Continued)

**Lab Sample ID: MB 500-758325/3**  
**Matrix: Water**  
**Analysis Batch: 758325**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<1.0		1.0	0.043	mg/L			03/14/24 11:47	1
Nitrite as N	<1.0		1.0	0.070	mg/L			03/14/24 11:47	1
Orthophosphate as P	<1.0		1.0	0.13	mg/L			03/14/24 11:47	1

**Lab Sample ID: LCS 500-758325/4**  
**Matrix: Water**  
**Analysis Batch: 758325**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	20.0	19.0		mg/L		95	80 - 120
Nitrite as N	20.0	19.9		mg/L		99	80 - 120
Orthophosphate as P	20.0	18.8		mg/L		94	80 - 120

**Lab Sample ID: MB 500-760073/3**  
**Matrix: Water**  
**Analysis Batch: 760073**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.153	J	1.0	0.12	mg/L			03/26/24 23:41	1
Sulfate	<1.0		1.0	0.21	mg/L			03/26/24 23:41	1

**Lab Sample ID: LCS 500-760073/4**  
**Matrix: Water**  
**Analysis Batch: 760073**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	20.0	21.7		mg/L		109	80 - 120
Sulfate	20.0	20.8		mg/L		104	80 - 120

## Method: SM 2320B - Alkalinity

**Lab Sample ID: MB 500-760208/28**  
**Matrix: Water**  
**Analysis Batch: 760208**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Total	5.13		5.0	3.7	mg/L			03/26/24 19:53	1
Bicarbonate Alkalinity as CaCO3	5.13		5.0	3.7	mg/L			03/26/24 19:53	1
Carbonate Alkalinity as CaCO3	<5.0		5.0	3.7	mg/L			03/26/24 19:53	1

**Lab Sample ID: LCS 500-760208/4**  
**Matrix: Water**  
**Analysis Batch: 760208**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity, Total	100	110		mg/L		110	95 - 121

# Lab Chronicle

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Client Sample ID: Field Blank-03-12-2024-DW

## Lab Sample ID: 500-247438-1

Date Collected: 03/12/24 16:30

Matrix: Water

Date Received: 03/14/24 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			748243	MKC	EET SAC	03/18/24 13:00
Total/NA	Analysis	537 (modified)		1	748491	K1S	EET SAC	03/19/24 18:34

## Client Sample ID: DMW-01\_1X

## Lab Sample ID: 500-247438-2

Date Collected: 03/12/24 10:20

Matrix: Water

Date Received: 03/14/24 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	759758	RN	EET CHI	03/22/24 19:06
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760160	RN	EET CHI	03/26/24 13:37
Total/NA	Prep	7470A			761081	MJG	EET CHI	04/02/24 10:55 - 04/02/24 12:55 <sup>1</sup>
Total/NA	Analysis	7470A		1	761342	MJG	EET CHI	04/03/24 09:29
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	760019	RN	EET CHI	03/26/24 11:58
Total/NA	Analysis	9056A		1	758324	W1T	EET CHI	03/14/24 12:48
Total/NA	Analysis	9056A		1	758325	W1T	EET CHI	03/14/24 12:48
Total/NA	Analysis	9056A		10	760073	NMB	EET CHI	03/27/24 01:28
Total/NA	Analysis	SM 2320B		1	760208	SO	EET CHI	03/26/24 19:06

## Client Sample ID: DMW-01\_3X

## Lab Sample ID: 500-247438-3

Date Collected: 03/12/24 13:21

Matrix: Water

Date Received: 03/14/24 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	759758	RN	EET CHI	03/22/24 19:10
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760160	RN	EET CHI	03/26/24 13:40
Total/NA	Prep	7470A			761081	MJG	EET CHI	04/02/24 10:55 - 04/02/24 12:55 <sup>1</sup>
Total/NA	Analysis	7470A		1	761342	MJG	EET CHI	04/03/24 09:31
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	760019	RN	EET CHI	03/26/24 11:58
Total/NA	Analysis	9056A		1	758324	W1T	EET CHI	03/14/24 12:18
Total/NA	Analysis	9056A		1	758325	W1T	EET CHI	03/14/24 12:18
Total/NA	Analysis	9056A		10	760073	NMB	EET CHI	03/27/24 01:43
Total/NA	Analysis	SM 2320B		1	760208	SO	EET CHI	03/26/24 19:15

# Lab Chronicle

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

**Client Sample ID: DMW-01\_5X**

**Lab Sample ID: 500-247438-4**

**Date Collected: 03/12/24 16:25**

**Matrix: Water**

**Date Received: 03/14/24 09:55**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			748243	MKC	EET SAC	03/18/24 13:00
Total/NA	Analysis	537 (modified)		1	748491	K1S	EET SAC	03/19/24 18:45
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	759758	RN	EET CHI	03/22/24 19:13
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760160	RN	EET CHI	03/26/24 13:51
Total/NA	Prep	7470A			761081	MJG	EET CHI	04/02/24 10:55 - 04/02/24 12:55 <sup>1</sup>
Total/NA	Analysis	7470A		1	761342	MJG	EET CHI	04/03/24 09:33
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	760019	RN	EET CHI	03/26/24 11:58
Total/NA	Analysis	9056A		1	758324	W1T	EET CHI	03/14/24 12:33
Total/NA	Analysis	9056A		1	758325	W1T	EET CHI	03/14/24 12:33
Total/NA	Analysis	9056A		10	760073	NMB	EET CHI	03/27/24 01:58
Total/NA	Analysis	SM 2320B		1	760208	SO	EET CHI	03/26/24 19:27

<sup>1</sup> This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

**Laboratory References:**

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Laboratory: Eurofins Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-24

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-24

- 1
- 2
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- 11
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- 13


# Chain of Custody Record

University Park, IL 60484-3101  
phone 708 534 5200 fax 708 534 5211

Regulatory Program:  DW  NPDES  RCRA  Other

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Project Manager: Lisa Rutkowski

Client Contact		Email: N/A		Site Contact:		Date: 3/12/24		COC No	
Arcadis U S , Inc		Tel/Fax: N/A		Lab Contact: Sandie Fredrick		Carrier: FedEx		of COCs	
126 North Jefferson Street, Suite 400		Analysis Turnaround Time							
Milwaukee, WI 53202		<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below: <u>STANDARD</u> <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day							
Phone		 500-247438 COC							
FAX									
Project Name Marinette, WI									
Site Marinette, WI									
P O # 30168807.1.2.3- 30168809.1.4.1		Lab Project Number: <del>50020404</del> 50020408							

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 Modified (36 Compounds)	Rad 226 903	Rad 228 904	TAL Metals 6020A / 7470A	Hardness SM234B	Sulfur 6010D	Total Sulfide SM4500	Anions 9056A	Uranium 6020B	Alkalinity 2320B	Sample Specific Notes
<del>WS R</del>			G	W		N												
<del>WS- R-POST</del>			G	W		N												
<del>DUP-</del>			G	W		N												
1 Field Blank-03-12-2024-DW	3/12/24	1630	G	W	2	NW	X											
2 DMW-01-1X	↓	1020	↓	↓	3	NW					X	X		X	X			
3 DMW-01-3X	↓	1321	↓	↓	3	NW					X	X		X	X			
4 DMW-01-5X	X	1625	X	X	5	NW	X				X	X		X	X			

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other - Zn Acetate/NaOH; 7=None

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

Non Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:  
Level 4, Questions call L. Rutkowski  
TAT: Standard

Custody Seals Intact <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No	Cooler Temp (°C) Obs'd 1.1	Corr'd 1.6	Therm ID No
Relinquished by <i>[Signature]</i>	Company Arcadis	Date/Time 03/13/23 1400	Received by	Company:
Relinquished by	Company	Date/Time	Received by	Company:
Relinquished by:	Company	Date/Time	Received in Laboratory by <i>[Signature]</i>	Company EEIA

# Login Sample Receipt Checklist

Client: Arcadis U.S., Inc.

Job Number: 500-247438-1

**Login Number: 247438**

**List Source: Eurofins Chicago**

**List Number: 1**

**Creator: Hernandez, Stephanie**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are 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 is acceptable.	True	
Cooler Temperature is recorded.	True	1.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	False	
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	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Login Sample Receipt Checklist

Client: Arcadis U.S., Inc.

Job Number: 500-247438-1

**Login Number: 247438**

**List Number: 2**

**Creator: Simmons, Jason C**

**List Source: Eurofins Sacramento**

**List Creation: 03/15/24 03:53 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2370630
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.9c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Isotope Dilution Summary

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

## Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-247438-1	Field Blank-03-12-2024-DW	109	104	104	108	93	94	99	88
500-247438-4	DMW-01_5X	107	105	101	103	99	91	87	90
LLCS 320-748243/2-A	Lab Control Sample	113	110	106	107	103	105	108	93
LLCSD 320-748243/3-A	Lab Control Sample Dup	104	96	104	95	97	89	91	80
MB 320-748243/1-A	Method Blank	105	98	97	107	96	89	95	87

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-247438-1	Field Blank-03-12-2024-DW	88	81	70	95	98	92	95	88
500-247438-4	DMW-01_5X	86	83	75	92	93	93	99	87
LLCS 320-748243/2-A	Lab Control Sample	92	84	79	99	98	97	98	86
LLCSD 320-748243/3-A	Lab Control Sample Dup	82	81	77	94	90	86	86	90
MB 320-748243/1-A	Method Blank	85	74	73	93	90	88	85	92

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-247438-1	Field Blank-03-12-2024-DW	91	84	85	70	68	133	114	103
500-247438-4	DMW-01_5X	92	84	85	69	68	126	108	105
LLCS 320-748243/2-A	Lab Control Sample	97	81	84	73	75	117	110	97
LLCSD 320-748243/3-A	Lab Control Sample Dup	78	75	78	66	67	130	111	87
MB 320-748243/1-A	Method Blank	88	71	68	64	61	131	109	90

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-247438-1	Field Blank-03-12-2024-DW	98	90
500-247438-4	DMW-01_5X	97	90
LLCS 320-748243/2-A	Lab Control Sample	101	99
LLCSD 320-748243/3-A	Lab Control Sample Dup	95	82
MB 320-748243/1-A	Method Blank	93	79

#### Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M



# Isotope Dilution Summary

Client: Arcadis U.S., Inc.

Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247438-1

dEtFOSA = d-N-EtFOSA-M  
NMFM = d7-N-MeFOSE-M  
NEFM = d9-N-EtFOSE-M  
M242FTS = M2-4:2 FTS  
M262FTS = M2-6:2 FTS  
M282FTS = M2-8:2 FTS  
HFPODA = 13C3 HFPO-DA  
M102FTS = 13C2 10:2 FTS

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# ANALYTICAL REPORT

## PREPARED FOR

Attn: Lisa Rutkowski  
Arcadis U.S., Inc.  
126 North Jefferson Street  
Suite 400  
Milwaukee, Wisconsin 53202

Generated 4/2/2024 10:00:58 AM

## JOB DESCRIPTION

Marinette, WI Deep Well 30219428.1.4.1

## JOB NUMBER

500-247527-1

# Eurofins Chicago

## Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

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

## Compliance Statement

The LOD and LOQ reported are adjusted by the dilution factor when a dilution factor greater than 1 is needed. Additionally, where results are indicated as being reported on a dry weight basis, the LOD and LOQ are adjusted for moisture content as well.

### Definitions of Limits

- LOD = Limit of Detection = MDL as defined by 40 CFR part 136 Appendix B
- LOQ = Limit of Quantitation = 3.33 x LOD as defined by Wisconsin
- RL = Report Limit = a concentration supported by a standard in the calibration curves

## Authorization



Generated  
4/2/2024 10:00:58 AM

Authorized for release by  
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# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Case Narrative . . . . .	4
Method Summary . . . . .	5
Sample Summary . . . . .	6
Client Sample Results . . . . .	7
Definitions . . . . .	19
QC Sample Results . . . . .	20
Chronicle . . . . .	35
Certification Summary . . . . .	38
Chain of Custody . . . . .	39
Receipt Checklists . . . . .	42
Field Data Sheets . . . . .	44
Isotope Dilution Summary . . . . .	45

# Case Narrative

Client: Arcadis U.S., Inc.  
Project: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Job ID: 500-247527-1**

**Eurofins Chicago**

## Job Narrative 500-247527-1

### Receipt

The samples were received on 3/15/2024 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6° C.

### Receipt Exceptions

The following sample(s) was received with insufficient time remaining to perform the analysis within holding time: Sample #3 sampled 3/13 1030, received 3/15 1000.

### Metals

Method 6020B: The initial low level calibration verification (ICVL) result for batch 500-760160 was above the upper control limit. The affected analytes are: Antimony. Sample results were non-detects, and have been reported as qualified data.

Method 6020B: The method blank for preparation batch 500-758911 and analytical batch 500-760160 contained Boron above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

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

### LCMS

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-748491 recovered above the upper control limit for Perfluoro-n-octadecanoic acid (PFODA). The laboratory control sample and laboratory control sample duplicate recoveries were all in control, and the method blank and client samples associated with this CCV were non-detect for the affected analyte. PFODA is not a state regulated analyte, therefore, the data have been reported. The associated samples are impacted: 500-247527-1, 500-247527-2, 500-247527-6, CCV 320-748491/13, LLCS 320-748243/2-A, LLCSD 320-748243/3-A and MB 320-748243/1-A.

Method 537 (modified): The laboratory control sample duplicate (LCSD) for preparation batch 320-748430 and analytical batch 320-748744 recovered below the control limit for the following analyte: Perfluorooctadecanoic acid (PFODA). This is a legacy analyte for the method and the state of Wisconsin is no longer concerned with its recovery; therefore, the data have been reported.

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

### General Chemistry

Methods 300.0, 9056A: The method blank for analytical batch 500-759579 contained Chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

Method 9056A: The following sample was received with insufficient time remaining to perform the analysis within holding time: 500-247527-3.

Method 9056A: The following sample was received outside of holding time: 500-247527-1.

Method 9056A: The method blank for analytical batch 500-760013 contained Chloride and Sulfate above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

Method SM 2320B: The method blank for analytical batch 500-760351 contained Alkalinity above the reporting limit (RL). Associated sample(s) were not re-analyzed because results were greater than 10X the value found in the method blank.

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

### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-748243.

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

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# Method Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
6020B	Metals (ICP/MS)	SW846	EET CHI
7470A	Mercury (CVAA)	SW846	EET CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	EET CHI
9056A	Anions, Ion Chromatography	SW846	EET CHI
SM 2320B	Alkalinity	SM	EET CHI
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET CHI
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC
7470A	Preparation, Mercury	SW846	EET CHI

#### Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Sample Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-247527-1	DUP-006	Water	03/13/24 00:00	03/15/24 10:00
500-247527-2	Field Blank-03-13-2024-DW	Water	03/13/24 17:05	03/15/24 10:00
500-247527-3	DMW-02_1X	Water	03/13/24 10:30	03/15/24 10:00
500-247527-4	DMW-02_3X	Water	03/13/24 13:40	03/15/24 10:00
500-247527-5	DMW-02_5X	Water	03/13/24 16:52	03/15/24 10:00
500-247527-6	EB-006	Water	03/13/24 17:20	03/15/24 10:00

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

# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: DUP-006**

**Lab Sample ID: 500-247527-1**

**Date Collected: 03/13/24 00:00**

**Matrix: Water**

**Date Received: 03/15/24 10:00**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.3		4.3	2.1	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluoropentanoic acid (PFPeA)	<1.7		1.7	0.42	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorohexanoic acid (PFHxA)	<1.7		1.7	0.50	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluoroheptanoic acid (PFHpA)	<1.7		1.7	0.22	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorooctanoic acid (PFOA)	<1.7		1.7	0.73	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorononanoic acid (PFNA)	<1.7		1.7	0.23	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorodecanoic acid (PFDA)	<1.7		1.7	0.27	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluoroundecanoic acid (PFUnA)	<1.7		1.7	0.95	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.47	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorotridecanoic acid (PFTrDA)	<1.7		1.7	1.1	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.63	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.77	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7		1.7	0.81	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorobutanesulfonic acid (PFBS)	<1.7		1.7	0.17	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.26	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorohexanesulfonic acid (PFHxS)	<1.7		1.7	0.49	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.7		1.7	0.16	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorooctanesulfonic acid (PFOS)	<1.7		1.7	0.47	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorononanesulfonic acid (PFNS)	<1.7		1.7	0.32	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.28	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.84	ng/L		03/18/24 13:00	03/19/24 18:11	1
Perfluorooctanesulfonamide (FOSA)	<1.7		1.7	0.84	ng/L		03/18/24 13:00	03/19/24 18:11	1
NEtFOSA	<1.7		1.7	0.75	ng/L		03/18/24 13:00	03/19/24 18:11	1
NMeFOSA	<1.7		1.7	0.37	ng/L		03/18/24 13:00	03/19/24 18:11	1
NMeFOSAA	<4.3		4.3	1.0	ng/L		03/18/24 13:00	03/19/24 18:11	1
NEtFOSAA	<4.3		4.3	1.1	ng/L		03/18/24 13:00	03/19/24 18:11	1
NMeFOSE	<3.4		3.4	1.2	ng/L		03/18/24 13:00	03/19/24 18:11	1
NEtFOSE	<1.7		1.7	0.73	ng/L		03/18/24 13:00	03/19/24 18:11	1
4:2 FTS	<1.7		1.7	0.21	ng/L		03/18/24 13:00	03/19/24 18:11	1
6:2 FTS	<4.3		4.3	2.2	ng/L		03/18/24 13:00	03/19/24 18:11	1
8:2 FTS	<1.7		1.7	0.40	ng/L		03/18/24 13:00	03/19/24 18:11	1
10:2 FTS	<1.7		1.7	0.58	ng/L		03/18/24 13:00	03/19/24 18:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.34	ng/L		03/18/24 13:00	03/19/24 18:11	1
HFPO-DA (GenX)	<3.4		3.4	1.3	ng/L		03/18/24 13:00	03/19/24 18:11	1
9Cl-PF3ONS	<1.7		1.7	0.21	ng/L		03/18/24 13:00	03/19/24 18:11	1
11Cl-PF3OUdS	<1.7		1.7	0.28	ng/L		03/18/24 13:00	03/19/24 18:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	110		25 - 150				03/18/24 13:00	03/19/24 18:11	1
13C5 PFPeA	103		25 - 150				03/18/24 13:00	03/19/24 18:11	1
13C2 PFHxA	106		25 - 150				03/18/24 13:00	03/19/24 18:11	1
13C4 PFHpA	100		25 - 150				03/18/24 13:00	03/19/24 18:11	1
13C4 PFOA	96		25 - 150				03/18/24 13:00	03/19/24 18:11	1
13C5 PFNA	99		25 - 150				03/18/24 13:00	03/19/24 18:11	1
13C2 PFDA	104		25 - 150				03/18/24 13:00	03/19/24 18:11	1
13C2 PFUnA	91		25 - 150				03/18/24 13:00	03/19/24 18:11	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: DUP-006**

**Lab Sample ID: 500-247527-1**

**Date Collected: 03/13/24 00:00**

**Matrix: Water**

**Date Received: 03/15/24 10:00**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	94		25 - 150	03/18/24 13:00	03/19/24 18:11	1
13C2 PFTeDA	86		25 - 150	03/18/24 13:00	03/19/24 18:11	1
13C2 PFHxDA	78		25 - 150	03/18/24 13:00	03/19/24 18:11	1
13C3 PFBS	93		25 - 150	03/18/24 13:00	03/19/24 18:11	1
18O2 PFHxS	95		25 - 150	03/18/24 13:00	03/19/24 18:11	1
13C4 PFOS	94		25 - 150	03/18/24 13:00	03/19/24 18:11	1
13C8 FOSA	98		10 - 150	03/18/24 13:00	03/19/24 18:11	1
d3-NMeFOSAA	95		25 - 150	03/18/24 13:00	03/19/24 18:11	1
d5-NEtFOSAA	103		25 - 150	03/18/24 13:00	03/19/24 18:11	1
d-N-MeFOSA-M	87		10 - 150	03/18/24 13:00	03/19/24 18:11	1
d-N-EtFOSA-M	90		10 - 150	03/18/24 13:00	03/19/24 18:11	1
d7-N-MeFOSE-M	73		10 - 150	03/18/24 13:00	03/19/24 18:11	1
d9-N-EtFOSE-M	75		10 - 150	03/18/24 13:00	03/19/24 18:11	1
M2-4:2 FTS	122		25 - 150	03/18/24 13:00	03/19/24 18:11	1
M2-6:2 FTS	119		25 - 150	03/18/24 13:00	03/19/24 18:11	1
M2-8:2 FTS	102		25 - 150	03/18/24 13:00	03/19/24 18:11	1
13C3 HFPO-DA	96		25 - 150	03/18/24 13:00	03/19/24 18:11	1
13C2 10:2 FTS	99		25 - 150	03/18/24 13:00	03/19/24 18:11	1

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/19/24 09:04	03/22/24 19:24	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/19/24 09:04	03/26/24 13:54	1
<b>Arsenic</b>	<b>1.2</b>		1.0	0.23	ug/L		03/19/24 09:04	03/22/24 19:24	1
<b>Barium</b>	<b>4.0</b>		2.5	0.73	ug/L		03/19/24 09:04	03/22/24 19:24	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/19/24 09:04	03/22/24 19:24	1
<b>Boron</b>	<b>260</b>	<b>B</b>	50	13	ug/L		03/19/24 09:04	03/26/24 13:54	1
Cadmium	<0.50		0.50	0.17	ug/L		03/19/24 09:04	03/22/24 19:24	1
<b>Calcium</b>	<b>390000</b>	<b>B</b>	200	44	ug/L		03/19/24 09:04	03/22/24 19:24	1
Chromium	<5.0		5.0	1.1	ug/L		03/19/24 09:04	03/22/24 19:24	1
Cobalt	<1.0		1.0	0.40	ug/L		03/19/24 09:04	03/22/24 19:24	1
Copper	<2.0		2.0	0.50	ug/L		03/19/24 09:04	03/22/24 19:24	1
<b>Iron</b>	<b>460</b>		100	47	ug/L		03/19/24 09:04	03/22/24 19:24	1
Lead	<0.50		0.50	0.19	ug/L		03/19/24 09:04	03/22/24 19:24	1
<b>Magnesium</b>	<b>120000</b>		200	49	ug/L		03/19/24 09:04	03/22/24 19:24	1
<b>Manganese</b>	<b>41</b>	<b>B</b>	2.5	0.79	ug/L		03/19/24 09:04	03/22/24 19:24	1
Nickel	<2.0		2.0	0.63	ug/L		03/19/24 09:04	03/22/24 19:24	1
<b>Potassium</b>	<b>5900</b>		500	110	ug/L		03/19/24 09:04	03/22/24 19:24	1
Selenium	<2.5		2.5	0.98	ug/L		03/19/24 09:04	03/22/24 19:24	1
Silver	<0.50		0.50	0.12	ug/L		03/19/24 09:04	03/22/24 19:24	1
<b>Sodium</b>	<b>61000</b>		200	77	ug/L		03/19/24 09:04	03/22/24 19:24	1
<b>Strontium</b>	<b>10000</b>		4.0	0.64	ug/L		03/19/24 09:04	03/22/24 19:24	1
Thallium	<2.0		2.0	0.57	ug/L		03/19/24 09:04	03/22/24 19:24	1
Vanadium	<5.0		5.0	2.2	ug/L		03/19/24 09:04	03/22/24 19:24	1
<b>Zinc</b>	<b>23</b>		20	6.9	ug/L		03/19/24 09:04	03/22/24 19:24	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/27/24 12:10	03/28/24 09:34	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: DUP-006**

**Lab Sample ID: 500-247527-1**

Date Collected: 03/13/24 00:00

Matrix: Water

Date Received: 03/15/24 10:00

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	1500		0.91	0.46	mg/L		03/19/24 09:04	03/26/24 11:58	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.64</b>	<b>J</b>	1.0	0.18	mg/L			03/15/24 12:08	1
Nitrate as N (SW846 9056A)	<1.0	H3	1.0	0.043	mg/L			03/15/24 12:08	1
<b>Chloride (SW846 9056A)</b>	<b>67</b>	<b>B</b>	10	1.2	mg/L			03/23/24 02:37	10
Nitrite as N (SW846 9056A)	<1.0	H3	1.0	0.070	mg/L			03/15/24 12:08	1
<b>Fluoride (SW846 9056A)</b>	<b>2.5</b>		1.0	0.19	mg/L			03/15/24 12:08	1
<b>Orthophosphate as P (SW846 9056A)</b>	<b>0.22</b>	<b>J H3</b>	1.0	0.13	mg/L			03/15/24 12:08	1
<b>Sulfate (SW846 9056A)</b>	<b>1400</b>	<b>B</b>	100	21	mg/L			03/26/24 20:55	100
<b>Alkalinity, Total (SM 2320B)</b>	<b>95</b>	<b>B</b>	5.0	3.7	mg/L			03/27/24 19:41	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>95</b>	<b>B</b>	5.0	3.7	mg/L			03/27/24 19:41	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/27/24 19:41	1

# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: Field Blank-03-13-2024-DW**

**Lab Sample ID: 500-247527-2**

**Date Collected: 03/13/24 17:05**

**Matrix: Water**

**Date Received: 03/15/24 10:00**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.8		4.8	2.3	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluoropentanoic acid (PFPeA)	<1.9		1.9	0.47	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9	0.56	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9	0.24	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9	0.82	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorononanoic acid (PFNA)	<1.9		1.9	0.26	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9	0.30	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9	1.1	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9	0.53	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorotridecanoic acid (PFTrDA)	<1.9		1.9	1.2	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorotetradecanoic acid (PFTeA)	<1.9		1.9	0.70	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.9		1.9	0.86	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.9		1.9	0.90	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9	0.19	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9	0.29	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9	0.55	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.9		1.9	0.18	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorooctanesulfonic acid (PFOS)	<1.9		1.9	0.52	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorononanesulfonic acid (PFNS)	<1.9		1.9	0.36	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorodecanesulfonic acid (PFDS)	<1.9		1.9	0.31	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorododecanesulfonic acid (PFDoS)	<1.9		1.9	0.93	ng/L		03/18/24 13:00	03/19/24 18:23	1
Perfluorooctanesulfonamide (FOSA)	<1.9		1.9	0.94	ng/L		03/18/24 13:00	03/19/24 18:23	1
NEtFOSA	<1.9		1.9	0.84	ng/L		03/18/24 13:00	03/19/24 18:23	1
NMeFOSA	<1.9		1.9	0.41	ng/L		03/18/24 13:00	03/19/24 18:23	1
NMeFOSAA	<4.8		4.8	1.2	ng/L		03/18/24 13:00	03/19/24 18:23	1
NEtFOSAA	<4.8		4.8	1.2	ng/L		03/18/24 13:00	03/19/24 18:23	1
NMeFOSE	<3.8		3.8	1.3	ng/L		03/18/24 13:00	03/19/24 18:23	1
NEtFOSE	<1.9		1.9	0.82	ng/L		03/18/24 13:00	03/19/24 18:23	1
4:2 FTS	<1.9		1.9	0.23	ng/L		03/18/24 13:00	03/19/24 18:23	1
6:2 FTS	<4.8		4.8	2.4	ng/L		03/18/24 13:00	03/19/24 18:23	1
8:2 FTS	<1.9		1.9	0.44	ng/L		03/18/24 13:00	03/19/24 18:23	1
10:2 FTS	<1.9		1.9	0.64	ng/L		03/18/24 13:00	03/19/24 18:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9	0.38	ng/L		03/18/24 13:00	03/19/24 18:23	1
HFPO-DA (GenX)	<3.8		3.8	1.4	ng/L		03/18/24 13:00	03/19/24 18:23	1
9Cl-PF3ONS	<1.9		1.9	0.23	ng/L		03/18/24 13:00	03/19/24 18:23	1
11Cl-PF3OUdS	<1.9		1.9	0.31	ng/L		03/18/24 13:00	03/19/24 18:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	104		25 - 150				03/18/24 13:00	03/19/24 18:23	1
13C5 PFPeA	105		25 - 150				03/18/24 13:00	03/19/24 18:23	1
13C2 PFHxA	99		25 - 150				03/18/24 13:00	03/19/24 18:23	1
13C4 PFHpA	107		25 - 150				03/18/24 13:00	03/19/24 18:23	1
13C4 PFOA	101		25 - 150				03/18/24 13:00	03/19/24 18:23	1
13C5 PFNA	96		25 - 150				03/18/24 13:00	03/19/24 18:23	1
13C2 PFDA	103		25 - 150				03/18/24 13:00	03/19/24 18:23	1
13C2 PFUnA	86		25 - 150				03/18/24 13:00	03/19/24 18:23	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: Field Blank-03-13-2024-DW**

**Lab Sample ID: 500-247527-2**

**Date Collected: 03/13/24 17:05**

**Matrix: Water**

**Date Received: 03/15/24 10:00**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFDoA	91		25 - 150	03/18/24 13:00	03/19/24 18:23	1
13C2 PFTeDA	83		25 - 150	03/18/24 13:00	03/19/24 18:23	1
13C2 PFHxDA	74		25 - 150	03/18/24 13:00	03/19/24 18:23	1
13C3 PFBS	97		25 - 150	03/18/24 13:00	03/19/24 18:23	1
18O2 PFHxS	94		25 - 150	03/18/24 13:00	03/19/24 18:23	1
13C4 PFOS	95		25 - 150	03/18/24 13:00	03/19/24 18:23	1
13C8 FOSA	94		10 - 150	03/18/24 13:00	03/19/24 18:23	1
d3-NMeFOSAA	87		25 - 150	03/18/24 13:00	03/19/24 18:23	1
d5-NEtFOSAA	87		25 - 150	03/18/24 13:00	03/19/24 18:23	1
d-N-MeFOSA-M	74		10 - 150	03/18/24 13:00	03/19/24 18:23	1
d-N-EtFOSA-M	75		10 - 150	03/18/24 13:00	03/19/24 18:23	1
d7-N-MeFOSE-M	72		10 - 150	03/18/24 13:00	03/19/24 18:23	1
d9-N-EtFOSE-M	69		10 - 150	03/18/24 13:00	03/19/24 18:23	1
M2-4:2 FTS	137		25 - 150	03/18/24 13:00	03/19/24 18:23	1
M2-6:2 FTS	113		25 - 150	03/18/24 13:00	03/19/24 18:23	1
M2-8:2 FTS	95		25 - 150	03/18/24 13:00	03/19/24 18:23	1
13C3 HFPO-DA	96		25 - 150	03/18/24 13:00	03/19/24 18:23	1
13C2 10:2 FTS	86		25 - 150	03/18/24 13:00	03/19/24 18:23	1

# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: DMW-02\_1X**

**Lab Sample ID: 500-247527-3**

Date Collected: 03/13/24 10:30

Matrix: Water

Date Received: 03/15/24 10:00

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/19/24 09:04	03/22/24 19:27	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/19/24 09:04	03/26/24 13:57	1
<b>Arsenic</b>	<b>0.75</b>	<b>J</b>	1.0	0.23	ug/L		03/19/24 09:04	03/22/24 19:27	1
<b>Barium</b>	<b>3.7</b>		2.5	0.73	ug/L		03/19/24 09:04	03/22/24 19:27	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/19/24 09:04	03/22/24 19:27	1
<b>Boron</b>	<b>260</b>	<b>B</b>	50	13	ug/L		03/19/24 09:04	03/26/24 13:57	1
Cadmium	<0.50		0.50	0.17	ug/L		03/19/24 09:04	03/22/24 19:27	1
<b>Calcium</b>	<b>390000</b>	<b>B</b>	200	44	ug/L		03/19/24 09:04	03/22/24 19:27	1
Chromium	<5.0		5.0	1.1	ug/L		03/19/24 09:04	03/22/24 19:27	1
Cobalt	<1.0		1.0	0.40	ug/L		03/19/24 09:04	03/22/24 19:27	1
Copper	<2.0		2.0	0.50	ug/L		03/19/24 09:04	03/22/24 19:27	1
<b>Iron</b>	<b>1600</b>		100	47	ug/L		03/19/24 09:04	03/22/24 19:27	1
Lead	<0.50		0.50	0.19	ug/L		03/19/24 09:04	03/22/24 19:27	1
<b>Magnesium</b>	<b>120000</b>		200	49	ug/L		03/19/24 09:04	03/22/24 19:27	1
<b>Manganese</b>	<b>47</b>	<b>B</b>	2.5	0.79	ug/L		03/19/24 09:04	03/22/24 19:27	1
Nickel	<2.0		2.0	0.63	ug/L		03/19/24 09:04	03/22/24 19:27	1
<b>Potassium</b>	<b>5900</b>		500	110	ug/L		03/19/24 09:04	03/22/24 19:27	1
Selenium	<2.5		2.5	0.98	ug/L		03/19/24 09:04	03/22/24 19:27	1
Silver	<0.50		0.50	0.12	ug/L		03/19/24 09:04	03/22/24 19:27	1
<b>Sodium</b>	<b>61000</b>		200	77	ug/L		03/19/24 09:04	03/22/24 19:27	1
<b>Strontium</b>	<b>9800</b>		4.0	0.64	ug/L		03/19/24 09:04	03/22/24 19:27	1
Thallium	<2.0		2.0	0.57	ug/L		03/19/24 09:04	03/22/24 19:27	1
Vanadium	<5.0		5.0	2.2	ug/L		03/19/24 09:04	03/22/24 19:27	1
<b>Zinc</b>	<b>36</b>		20	6.9	ug/L		03/19/24 09:04	03/22/24 19:27	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/27/24 12:10	03/28/24 09:37	1

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Hardness as calcium carbonate</b>	<b>1500</b>		0.91	0.46	mg/L		03/19/24 09:04	03/26/24 11:58	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.77</b>	<b>J</b>	1.0	0.18	mg/L			03/15/24 12:23	1
<b>Nitrate as N (SW846 9056A)</b>	<b>0.38</b>	<b>J H</b>	1.0	0.043	mg/L			03/15/24 12:23	1
<b>Chloride (SW846 9056A)</b>	<b>67</b>	<b>B</b>	5.0	0.58	mg/L			03/26/24 21:40	5
Nitrite as N (SW846 9056A)	<1.0	H	1.0	0.070	mg/L			03/15/24 12:23	1
<b>Fluoride (SW846 9056A)</b>	<b>2.7</b>		1.0	0.19	mg/L			03/15/24 12:23	1
<b>Orthophosphate as P (SW846 9056A)</b>	<b>0.26</b>	<b>J H</b>	1.0	0.13	mg/L			03/15/24 12:23	1
<b>Sulfate (SW846 9056A)</b>	<b>1400</b>	<b>B</b>	100	21	mg/L			03/26/24 21:55	100
<b>Alkalinity, Total (SM 2320B)</b>	<b>97</b>	<b>B</b>	5.0	3.7	mg/L			03/27/24 19:51	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>97</b>	<b>B</b>	5.0	3.7	mg/L			03/27/24 19:51	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/27/24 19:51	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: DMW-02\_3X**

**Lab Sample ID: 500-247527-4**

Date Collected: 03/13/24 13:40

Matrix: Water

Date Received: 03/15/24 10:00

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/19/24 09:04	03/22/24 19:30	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/19/24 09:04	03/26/24 14:01	1
<b>Arsenic</b>	<b>0.71</b>	<b>J</b>	1.0	0.23	ug/L		03/19/24 09:04	03/22/24 19:30	1
<b>Barium</b>	<b>4.1</b>		2.5	0.73	ug/L		03/19/24 09:04	03/22/24 19:30	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/19/24 09:04	03/22/24 19:30	1
<b>Boron</b>	<b>250</b>	<b>B</b>	50	13	ug/L		03/19/24 09:04	03/26/24 14:01	1
Cadmium	<0.50		0.50	0.17	ug/L		03/19/24 09:04	03/22/24 19:30	1
<b>Calcium</b>	<b>400000</b>	<b>B</b>	200	44	ug/L		03/19/24 09:04	03/22/24 19:30	1
Chromium	<5.0		5.0	1.1	ug/L		03/19/24 09:04	03/22/24 19:30	1
Cobalt	<1.0		1.0	0.40	ug/L		03/19/24 09:04	03/22/24 19:30	1
Copper	<2.0		2.0	0.50	ug/L		03/19/24 09:04	03/22/24 19:30	1
<b>Iron</b>	<b>550</b>		100	47	ug/L		03/19/24 09:04	03/22/24 19:30	1
Lead	<0.50		0.50	0.19	ug/L		03/19/24 09:04	03/22/24 19:30	1
<b>Magnesium</b>	<b>120000</b>		200	49	ug/L		03/19/24 09:04	03/22/24 19:30	1
<b>Manganese</b>	<b>43</b>	<b>B</b>	2.5	0.79	ug/L		03/19/24 09:04	03/22/24 19:30	1
Nickel	<2.0		2.0	0.63	ug/L		03/19/24 09:04	03/22/24 19:30	1
<b>Potassium</b>	<b>6200</b>		500	110	ug/L		03/19/24 09:04	03/22/24 19:30	1
Selenium	<2.5		2.5	0.98	ug/L		03/19/24 09:04	03/22/24 19:30	1
Silver	<0.50		0.50	0.12	ug/L		03/19/24 09:04	03/22/24 19:30	1
<b>Sodium</b>	<b>63000</b>		200	77	ug/L		03/19/24 09:04	03/22/24 19:30	1
<b>Strontium</b>	<b>10000</b>		4.0	0.64	ug/L		03/19/24 09:04	03/22/24 19:30	1
Thallium	<2.0		2.0	0.57	ug/L		03/19/24 09:04	03/22/24 19:30	1
Vanadium	<5.0		5.0	2.2	ug/L		03/19/24 09:04	03/22/24 19:30	1
<b>Zinc</b>	<b>18</b>	<b>J</b>	20	6.9	ug/L		03/19/24 09:04	03/22/24 19:30	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/27/24 12:10	03/28/24 09:39	1

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Hardness as calcium carbonate</b>	<b>1500</b>		0.91	0.46	mg/L		03/19/24 09:04	03/26/24 11:58	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.59</b>	<b>J</b>	1.0	0.18	mg/L			03/15/24 12:38	1
Nitrate as N (SW846 9056A)	<1.0		1.0	0.043	mg/L			03/15/24 12:38	1
<b>Chloride (SW846 9056A)</b>	<b>66</b>	<b>B</b>	5.0	0.58	mg/L			03/26/24 15:51	5
Nitrite as N (SW846 9056A)	<1.0		1.0	0.070	mg/L			03/15/24 12:38	1
<b>Fluoride (SW846 9056A)</b>	<b>2.7</b>		1.0	0.19	mg/L			03/15/24 12:38	1
Orthophosphate as P (SW846 9056A)	<1.0		1.0	0.13	mg/L			03/15/24 12:38	1
<b>Sulfate (SW846 9056A)</b>	<b>1400</b>	<b>B</b>	100	21	mg/L			03/26/24 16:06	100
<b>Alkalinity, Total (SM 2320B)</b>	<b>100</b>	<b>B</b>	5.0	3.7	mg/L			03/27/24 19:59	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>100</b>	<b>B</b>	5.0	3.7	mg/L			03/27/24 19:59	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/27/24 19:59	1

# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: DMW-02\_5X**

**Lab Sample ID: 500-247527-5**

**Date Collected: 03/13/24 16:52**

**Matrix: Water**

**Date Received: 03/15/24 10:00**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.3		4.3	2.0	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluoropentanoic acid (PFPeA)	<1.7		1.7	0.42	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorohexanoic acid (PFHxA)	<1.7		1.7	0.49	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluoroheptanoic acid (PFHpA)	<1.7		1.7	0.21	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorooctanoic acid (PFOA)	<1.7		1.7	0.72	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorononanoic acid (PFNA)	<1.7		1.7	0.23	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorodecanoic acid (PFDA)	<1.7		1.7	0.26	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluoroundecanoic acid (PFUnA)	<1.7		1.7	0.94	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.47	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorotridecanoic acid (PFTrDA)	<1.7		1.7	1.1	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.62	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.76	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7	*	1.7	0.80	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorobutanesulfonic acid (PFBS)	<1.7		1.7	0.17	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.26	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorohexanesulfonic acid (PFHxS)	<1.7		1.7	0.49	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.7		1.7	0.16	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorooctanesulfonic acid (PFOS)	<1.7		1.7	0.46	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorononanesulfonic acid (PFNS)	<1.7		1.7	0.32	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.27	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.83	ng/L		03/19/24 05:23	03/20/24 13:26	1
Perfluorooctanesulfonamide (FOSA)	<1.7		1.7	0.84	ng/L		03/19/24 05:23	03/20/24 13:26	1
NEtFOSA	<1.7		1.7	0.74	ng/L		03/19/24 05:23	03/20/24 13:26	1
NMeFOSA	<1.7		1.7	0.37	ng/L		03/19/24 05:23	03/20/24 13:26	1
NMeFOSAA	<4.3		4.3	1.0	ng/L		03/19/24 05:23	03/20/24 13:26	1
NEtFOSAA	<4.3		4.3	1.1	ng/L		03/19/24 05:23	03/20/24 13:26	1
NMeFOSE	<3.4		3.4	1.2	ng/L		03/19/24 05:23	03/20/24 13:26	1
NEtFOSE	<1.7		1.7	0.72	ng/L		03/19/24 05:23	03/20/24 13:26	1
4:2 FTS	<1.7		1.7	0.20	ng/L		03/19/24 05:23	03/20/24 13:26	1
6:2 FTS	<4.3		4.3	2.1	ng/L		03/19/24 05:23	03/20/24 13:26	1
8:2 FTS	<1.7		1.7	0.39	ng/L		03/19/24 05:23	03/20/24 13:26	1
10:2 FTS	<1.7		1.7	0.57	ng/L		03/19/24 05:23	03/20/24 13:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.34	ng/L		03/19/24 05:23	03/20/24 13:26	1
HFPO-DA (GenX)	<3.4		3.4	1.3	ng/L		03/19/24 05:23	03/20/24 13:26	1
9Cl-PF3ONS	<1.7		1.7	0.20	ng/L		03/19/24 05:23	03/20/24 13:26	1
11Cl-PF3OUdS	<1.7		1.7	0.27	ng/L		03/19/24 05:23	03/20/24 13:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	106		25 - 150				03/19/24 05:23	03/20/24 13:26	1
13C5 PFPeA	115		25 - 150				03/19/24 05:23	03/20/24 13:26	1
13C2 PFHxA	106		25 - 150				03/19/24 05:23	03/20/24 13:26	1
13C4 PFHpA	105		25 - 150				03/19/24 05:23	03/20/24 13:26	1
13C4 PFOA	103		25 - 150				03/19/24 05:23	03/20/24 13:26	1
13C5 PFNA	100		25 - 150				03/19/24 05:23	03/20/24 13:26	1
13C2 PFDA	95		25 - 150				03/19/24 05:23	03/20/24 13:26	1
13C2 PFUnA	91		25 - 150				03/19/24 05:23	03/20/24 13:26	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: DMW-02\_5X**

**Lab Sample ID: 500-247527-5**

Date Collected: 03/13/24 16:52

Matrix: Water

Date Received: 03/15/24 10:00

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	86		25 - 150	03/19/24 05:23	03/20/24 13:26	1
13C2 PFTeDA	77		25 - 150	03/19/24 05:23	03/20/24 13:26	1
13C2 PFHxDA	60		25 - 150	03/19/24 05:23	03/20/24 13:26	1
13C3 PFBS	87		25 - 150	03/19/24 05:23	03/20/24 13:26	1
18O2 PFHxS	104		25 - 150	03/19/24 05:23	03/20/24 13:26	1
13C4 PFOS	91		25 - 150	03/19/24 05:23	03/20/24 13:26	1
13C8 FOSA	91		10 - 150	03/19/24 05:23	03/20/24 13:26	1
d3-NMeFOSAA	76		25 - 150	03/19/24 05:23	03/20/24 13:26	1
d5-NEtFOSAA	74		25 - 150	03/19/24 05:23	03/20/24 13:26	1
d-N-MeFOSA-M	91		10 - 150	03/19/24 05:23	03/20/24 13:26	1
d-N-EtFOSA-M	93		10 - 150	03/19/24 05:23	03/20/24 13:26	1
d7-N-MeFOSE-M	78		10 - 150	03/19/24 05:23	03/20/24 13:26	1
d9-N-EtFOSE-M	81		10 - 150	03/19/24 05:23	03/20/24 13:26	1
M2-4:2 FTS	125		25 - 150	03/19/24 05:23	03/20/24 13:26	1
M2-6:2 FTS	121		25 - 150	03/19/24 05:23	03/20/24 13:26	1
M2-8:2 FTS	98		25 - 150	03/19/24 05:23	03/20/24 13:26	1
13C3 HFPO-DA	92		25 - 150	03/19/24 05:23	03/20/24 13:26	1
13C2 10:2 FTS	104		25 - 150	03/19/24 05:23	03/20/24 13:26	1

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/19/24 09:04	03/22/24 19:34	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/19/24 09:04	03/26/24 14:04	1
<b>Arsenic</b>	<b>0.72</b>	<b>J</b>	1.0	0.23	ug/L		03/19/24 09:04	03/22/24 19:34	1
<b>Barium</b>	<b>4.2</b>		2.5	0.73	ug/L		03/19/24 09:04	03/22/24 19:34	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/19/24 09:04	03/22/24 19:34	1
<b>Boron</b>	<b>270</b>	<b>B</b>	50	13	ug/L		03/19/24 09:04	03/26/24 14:04	1
Cadmium	<0.50		0.50	0.17	ug/L		03/19/24 09:04	03/22/24 19:34	1
<b>Calcium</b>	<b>410000</b>	<b>B</b>	200	44	ug/L		03/19/24 09:04	03/22/24 19:34	1
Chromium	<5.0		5.0	1.1	ug/L		03/19/24 09:04	03/22/24 19:34	1
Cobalt	<1.0		1.0	0.40	ug/L		03/19/24 09:04	03/22/24 19:34	1
Copper	<2.0		2.0	0.50	ug/L		03/19/24 09:04	03/22/24 19:34	1
<b>Iron</b>	<b>480</b>		100	47	ug/L		03/19/24 09:04	03/22/24 19:34	1
Lead	<0.50		0.50	0.19	ug/L		03/19/24 09:04	03/22/24 19:34	1
<b>Magnesium</b>	<b>120000</b>		200	49	ug/L		03/19/24 09:04	03/22/24 19:34	1
<b>Manganese</b>	<b>43</b>	<b>B</b>	2.5	0.79	ug/L		03/19/24 09:04	03/22/24 19:34	1
Nickel	<2.0		2.0	0.63	ug/L		03/19/24 09:04	03/22/24 19:34	1
<b>Potassium</b>	<b>6200</b>		500	110	ug/L		03/19/24 09:04	03/22/24 19:34	1
Selenium	<2.5		2.5	0.98	ug/L		03/19/24 09:04	03/22/24 19:34	1
Silver	<0.50		0.50	0.12	ug/L		03/19/24 09:04	03/22/24 19:34	1
<b>Sodium</b>	<b>64000</b>		200	77	ug/L		03/19/24 09:04	03/22/24 19:34	1
<b>Strontium</b>	<b>10000</b>		4.0	0.64	ug/L		03/19/24 09:04	03/22/24 19:34	1
Thallium	<2.0		2.0	0.57	ug/L		03/19/24 09:04	03/22/24 19:34	1
Vanadium	<5.0		5.0	2.2	ug/L		03/19/24 09:04	03/22/24 19:34	1
<b>Zinc</b>	<b>20</b>		20	6.9	ug/L		03/19/24 09:04	03/22/24 19:34	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/27/24 12:10	03/28/24 09:41	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: DMW-02\_5X**

**Lab Sample ID: 500-247527-5**

Date Collected: 03/13/24 16:52

Matrix: Water

Date Received: 03/15/24 10:00

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	1500		0.91	0.46	mg/L		03/19/24 09:04	03/26/24 11:58	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide (SW846 9056A)	0.72	J	1.0	0.18	mg/L			03/15/24 12:53	1
Nitrate as N (SW846 9056A)	<1.0		1.0	0.043	mg/L			03/15/24 12:53	1
Chloride (SW846 9056A)	67	B	5.0	0.58	mg/L			03/26/24 22:10	5
Nitrite as N (SW846 9056A)	<1.0		1.0	0.070	mg/L			03/15/24 12:53	1
Fluoride (SW846 9056A)	2.7		1.0	0.19	mg/L			03/15/24 12:53	1
Orthophosphate as P (SW846 9056A)	0.22	J	1.0	0.13	mg/L			03/15/24 12:53	1
Sulfate (SW846 9056A)	1400	B	100	21	mg/L			03/26/24 22:25	100
Alkalinity, Total (SM 2320B)	100	B	5.0	3.7	mg/L			03/27/24 20:09	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	100	B	5.0	3.7	mg/L			03/27/24 20:09	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/27/24 20:09	1

# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: EB-006**

**Lab Sample ID: 500-247527-6**

**Date Collected: 03/13/24 17:20**

**Matrix: Water**

**Date Received: 03/15/24 10:00**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.5		4.5	2.2	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8	0.44	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.53	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.23	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.77	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.25	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.28	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	1.0	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.50	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorotridecanoic acid (PFTrDA)	<1.8		1.8	1.2	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.66	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.81	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.85	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.27	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.52	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.49	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.34	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.88	ng/L		03/18/24 13:00	03/19/24 19:42	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.89	ng/L		03/18/24 13:00	03/19/24 19:42	1
NEtFOSA	<1.8		1.8	0.79	ng/L		03/18/24 13:00	03/19/24 19:42	1
NMeFOSA	<1.8		1.8	0.39	ng/L		03/18/24 13:00	03/19/24 19:42	1
NMeFOSAA	<4.5		4.5	1.1	ng/L		03/18/24 13:00	03/19/24 19:42	1
NEtFOSAA	<4.5		4.5	1.2	ng/L		03/18/24 13:00	03/19/24 19:42	1
NMeFOSE	<3.6		3.6	1.3	ng/L		03/18/24 13:00	03/19/24 19:42	1
NEtFOSE	<1.8		1.8	0.77	ng/L		03/18/24 13:00	03/19/24 19:42	1
4:2 FTS	<1.8		1.8	0.22	ng/L		03/18/24 13:00	03/19/24 19:42	1
6:2 FTS	<4.5		4.5	2.3	ng/L		03/18/24 13:00	03/19/24 19:42	1
8:2 FTS	<1.8		1.8	0.42	ng/L		03/18/24 13:00	03/19/24 19:42	1
10:2 FTS	<1.8		1.8	0.61	ng/L		03/18/24 13:00	03/19/24 19:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		03/18/24 13:00	03/19/24 19:42	1
HFPO-DA (GenX)	<3.6		3.6	1.4	ng/L		03/18/24 13:00	03/19/24 19:42	1
9Cl-PF3ONS	<1.8		1.8	0.22	ng/L		03/18/24 13:00	03/19/24 19:42	1
11Cl-PF3OUdS	<1.8		1.8	0.29	ng/L		03/18/24 13:00	03/19/24 19:42	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	106		25 - 150				03/18/24 13:00	03/19/24 19:42	1
13C5 PFPeA	102		25 - 150				03/18/24 13:00	03/19/24 19:42	1
13C2 PFHxA	111		25 - 150				03/18/24 13:00	03/19/24 19:42	1
13C4 PFHpA	102		25 - 150				03/18/24 13:00	03/19/24 19:42	1
13C4 PFOA	100		25 - 150				03/18/24 13:00	03/19/24 19:42	1
13C5 PFNA	98		25 - 150				03/18/24 13:00	03/19/24 19:42	1
13C2 PFDA	98		25 - 150				03/18/24 13:00	03/19/24 19:42	1
13C2 PFUnA	91		25 - 150				03/18/24 13:00	03/19/24 19:42	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: EB-006**

**Lab Sample ID: 500-247527-6**

**Date Collected: 03/13/24 17:20**

**Matrix: Water**

**Date Received: 03/15/24 10:00**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFDoA	97		25 - 150	03/18/24 13:00	03/19/24 19:42	1
13C2 PFTeDA	81		25 - 150	03/18/24 13:00	03/19/24 19:42	1
13C2 PFHxDA	76		25 - 150	03/18/24 13:00	03/19/24 19:42	1
13C3 PFBS	98		25 - 150	03/18/24 13:00	03/19/24 19:42	1
18O2 PFHxS	101		25 - 150	03/18/24 13:00	03/19/24 19:42	1
13C4 PFOS	96		25 - 150	03/18/24 13:00	03/19/24 19:42	1
13C8 FOSA	95		10 - 150	03/18/24 13:00	03/19/24 19:42	1
d3-NMeFOSAA	99		25 - 150	03/18/24 13:00	03/19/24 19:42	1
d5-NEtFOSAA	95		25 - 150	03/18/24 13:00	03/19/24 19:42	1
d-N-MeFOSA-M	78		10 - 150	03/18/24 13:00	03/19/24 19:42	1
d-N-EtFOSA-M	79		10 - 150	03/18/24 13:00	03/19/24 19:42	1
d7-N-MeFOSE-M	70		10 - 150	03/18/24 13:00	03/19/24 19:42	1
d9-N-EtFOSE-M	66		10 - 150	03/18/24 13:00	03/19/24 19:42	1
M2-4:2 FTS	139		25 - 150	03/18/24 13:00	03/19/24 19:42	1
M2-6:2 FTS	119		25 - 150	03/18/24 13:00	03/19/24 19:42	1
M2-8:2 FTS	105		25 - 150	03/18/24 13:00	03/19/24 19:42	1
13C3 HFPO-DA	98		25 - 150	03/18/24 13:00	03/19/24 19:42	1
13C2 10:2 FTS	103		25 - 150	03/18/24 13:00	03/19/24 19:42	1

# Definitions/Glossary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.

### Metals

Qualifier	Qualifier Description
^1+	Initial Calibration Verification (ICV) is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-748243/1-A

Matrix: Water

Analysis Batch: 748491

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 748243

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	1.3	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		03/18/24 13:00	03/19/24 17:14	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		03/18/24 13:00	03/19/24 17:14	1
NEtFOSA	<2.0		2.0	0.87	ng/L		03/18/24 13:00	03/19/24 17:14	1
NMeFOSA	<2.0		2.0	0.43	ng/L		03/18/24 13:00	03/19/24 17:14	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		03/18/24 13:00	03/19/24 17:14	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		03/18/24 13:00	03/19/24 17:14	1
NMeFOSE	<4.0		4.0	1.4	ng/L		03/18/24 13:00	03/19/24 17:14	1
NEtFOSE	<2.0		2.0	0.85	ng/L		03/18/24 13:00	03/19/24 17:14	1
4:2 FTS	<2.0		2.0	0.24	ng/L		03/18/24 13:00	03/19/24 17:14	1
6:2 FTS	<5.0		5.0	2.5	ng/L		03/18/24 13:00	03/19/24 17:14	1
8:2 FTS	<2.0		2.0	0.46	ng/L		03/18/24 13:00	03/19/24 17:14	1
10:2 FTS	<2.0		2.0	0.67	ng/L		03/18/24 13:00	03/19/24 17:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		03/18/24 13:00	03/19/24 17:14	1
HFPO-DA (GenX)	<4.0		4.0	1.5	ng/L		03/18/24 13:00	03/19/24 17:14	1
9Cl-PF3ONS	<2.0		2.0	0.24	ng/L		03/18/24 13:00	03/19/24 17:14	1
11Cl-PF3OUdS	<2.0		2.0	0.32	ng/L		03/18/24 13:00	03/19/24 17:14	1
Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac			
	%Recovery	Qualifier							
13C4 PFBA	105		25 - 150	03/18/24 13:00	03/19/24 17:14	1			
13C5 PFPeA	98		25 - 150	03/18/24 13:00	03/19/24 17:14	1			
13C2 PFHxA	97		25 - 150	03/18/24 13:00	03/19/24 17:14	1			
13C4 PFHpA	107		25 - 150	03/18/24 13:00	03/19/24 17:14	1			
13C4 PFOA	96		25 - 150	03/18/24 13:00	03/19/24 17:14	1			
13C5 PFNA	89		25 - 150	03/18/24 13:00	03/19/24 17:14	1			

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: MB 320-748243/1-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFDA	95		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C2 PFUnA	87		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C2 PFDoA	85		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C2 PFTeDA	74		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C2 PFHxDA	73		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C3 PFBS	93		25 - 150	03/18/24 13:00	03/19/24 17:14	1
18O2 PFHxS	90		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C4 PFOS	88		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C8 FOSA	85		10 - 150	03/18/24 13:00	03/19/24 17:14	1
d3-NMeFOSAA	92		25 - 150	03/18/24 13:00	03/19/24 17:14	1
d5-NEtFOSAA	88		25 - 150	03/18/24 13:00	03/19/24 17:14	1
d-N-MeFOSA-M	71		10 - 150	03/18/24 13:00	03/19/24 17:14	1
d-N-EtFOSA-M	68		10 - 150	03/18/24 13:00	03/19/24 17:14	1
d7-N-MeFOSE-M	64		10 - 150	03/18/24 13:00	03/19/24 17:14	1
d9-N-EtFOSE-M	61		10 - 150	03/18/24 13:00	03/19/24 17:14	1
M2-4:2 FTS	131		25 - 150	03/18/24 13:00	03/19/24 17:14	1
M2-6:2 FTS	109		25 - 150	03/18/24 13:00	03/19/24 17:14	1
M2-8:2 FTS	90		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C3 HFPO-DA	93		25 - 150	03/18/24 13:00	03/19/24 17:14	1
13C2 10:2 FTS	79		25 - 150	03/18/24 13:00	03/19/24 17:14	1

**Lab Sample ID: LLCS 320-748243/2-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec	Limits
Perfluoropentanoic acid (PFPeA)	8.00	8.30		ng/L		104	50 - 150	
Perfluorohexanoic acid (PFHxA)	8.00	8.10		ng/L		101	50 - 150	
Perfluoroheptanoic acid (PFHpA)	8.00	7.81		ng/L		98	50 - 150	
Perfluorooctanoic acid (PFOA)	8.00	7.92		ng/L		99	50 - 150	
Perfluorononanoic acid (PFNA)	8.00	7.67		ng/L		96	50 - 150	
Perfluorodecanoic acid (PFDA)	8.00	7.89		ng/L		99	50 - 150	
Perfluoroundecanoic acid (PFUnA)	8.00	8.99		ng/L		112	50 - 150	
Perfluorododecanoic acid (PFDoA)	8.00	7.90		ng/L		99	50 - 150	
Perfluorotridecanoic acid (PFTTrDA)	8.00	7.89		ng/L		99	50 - 150	
Perfluorotetradecanoic acid (PFTeA)	8.00	8.59		ng/L		107	50 - 150	
Perfluoro-n-hexadecanoic acid (PFHxDA)	8.00	8.91		ng/L		111	50 - 150	
Perfluoro-n-octadecanoic acid (PFODA)	8.00	5.87		ng/L		73	50 - 150	
Perfluorobutanesulfonic acid (PFBS)	7.10	7.28		ng/L		102	50 - 150	
Perfluoropentanesulfonic acid (PFPeS)	7.52	8.33		ng/L		111	50 - 150	
Perfluorohexanesulfonic acid (PFHxS)	7.30	7.46		ng/L		102	50 - 150	

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LLCS 320-748243/2-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanesulfonic acid (PFHpS)	7.63	7.71		ng/L		101	50 - 150
Perfluorooctanesulfonic acid (PFOS)	7.44	7.23		ng/L		97	50 - 150
Perfluorononanesulfonic acid (PFNS)	7.70	7.19		ng/L		93	50 - 150
Perfluorodecanesulfonic acid (PFDS)	7.71	7.52		ng/L		98	50 - 150
Perfluorododecanesulfonic acid (PFDoS)	7.76	7.31		ng/L		94	50 - 150
Perfluorooctanesulfonamide (FOSA)	8.00	7.85		ng/L		98	50 - 150
NEtFOSA	8.00	7.93		ng/L		99	50 - 150
NMeFOSA	8.00	7.39		ng/L		92	50 - 150
NMeFOSAA	8.00	8.08		ng/L		101	50 - 150
NEtFOSAA	8.00	7.91		ng/L		99	50 - 150
NMeFOSE	8.00	8.32		ng/L		104	50 - 150
NEtFOSE	8.00	7.93		ng/L		99	50 - 150
4:2 FTS	7.50	8.79		ng/L		117	50 - 150
6:2 FTS	7.62	9.45		ng/L		124	50 - 150
8:2 FTS	7.68	9.25		ng/L		120	50 - 150
10:2 FTS	7.73	6.41		ng/L		83	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.57	8.80		ng/L		116	50 - 150
HFPO-DA (GenX)	8.00	7.88		ng/L		98	50 - 150
9Cl-PF3ONS	7.47	7.97		ng/L		107	50 - 150
11Cl-PF3OUdS	7.55	7.60		ng/L		101	50 - 150

Isotope Dilution	LLCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	113		25 - 150
13C5 PFPeA	110		25 - 150
13C2 PFHxA	106		25 - 150
13C4 PFHpA	107		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	105		25 - 150
13C2 PFDA	108		25 - 150
13C2 PFUnA	93		25 - 150
13C2 PFDoA	92		25 - 150
13C2 PFTeDA	84		25 - 150
13C2 PFHxDA	79		25 - 150
13C3 PFBS	99		25 - 150
18O2 PFHxS	98		25 - 150
13C4 PFOS	97		25 - 150
13C8 FOSA	98		10 - 150
d3-NMeFOSAA	86		25 - 150
d5-NEtFOSAA	97		25 - 150
d-N-MeFOSA-M	81		10 - 150
d-N-EtFOSA-M	84		10 - 150
d7-N-MeFOSE-M	73		10 - 150
d9-N-EtFOSE-M	75		10 - 150

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LLCS 320-748243/2-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Isotope Dilution	LLCS LLCS		Limits
	%Recovery	Qualifier	
M2-4:2 FTS	117		25 - 150
M2-6:2 FTS	110		25 - 150
M2-8:2 FTS	97		25 - 150
13C3 HFPO-DA	101		25 - 150
13C2 10:2 FTS	99		25 - 150

**Lab Sample ID: LLCSD 320-748243/3-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Analyte	Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	8.00	8.80		ng/L		110	50 - 150	9	30	
Perfluoropentanoic acid (PFPeA)	8.00	9.26		ng/L		116	50 - 150	11	30	
Perfluorohexanoic acid (PFHxA)	8.00	8.29		ng/L		104	50 - 150	2	30	
Perfluoroheptanoic acid (PFHpA)	8.00	8.92		ng/L		111	50 - 150	13	30	
Perfluorooctanoic acid (PFOA)	8.00	8.27		ng/L		103	50 - 150	4	30	
Perfluorononanoic acid (PFNA)	8.00	8.57		ng/L		107	50 - 150	11	30	
Perfluorodecanoic acid (PFDA)	8.00	8.91		ng/L		111	50 - 150	12	30	
Perfluoroundecanoic acid (PFUnA)	8.00	9.26		ng/L		116	50 - 150	3	30	
Perfluorododecanoic acid (PFDoA)	8.00	8.10		ng/L		101	50 - 150	3	30	
Perfluorotridecanoic acid (PFTrDA)	8.00	7.74		ng/L		97	50 - 150	2	30	
Perfluorotetradecanoic acid (PFTeA)	8.00	7.88		ng/L		99	50 - 150	9	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	8.00	8.22		ng/L		103	50 - 150	8	30	
Perfluoro-n-octadecanoic acid (PFODA)	8.00	6.76		ng/L		84	50 - 150	14	30	
Perfluorobutanesulfonic acid (PFBS)	7.10	7.33		ng/L		103	50 - 150	0.7	30	
Perfluoropentanesulfonic acid (PFPeS)	7.52	8.17		ng/L		109	50 - 150	2	30	
Perfluorohexanesulfonic acid (PFHxS)	7.30	7.80		ng/L		107	50 - 150	4	30	
Perfluoroheptanesulfonic acid (PFHpS)	7.63	8.22		ng/L		108	50 - 150	6	30	
Perfluorooctanesulfonic acid (PFOS)	7.44	7.60		ng/L		102	50 - 150	5	30	
Perfluorononanesulfonic acid (PFNS)	7.70	7.48		ng/L		97	50 - 150	4	30	
Perfluorodecanesulfonic acid (PFDS)	7.71	7.29		ng/L		95	50 - 150	3	30	
Perfluorododecanesulfonic acid (PFDoS)	7.76	7.03		ng/L		91	50 - 150	4	30	
Perfluorooctanesulfonamide (FOSA)	8.00	8.49		ng/L		106	50 - 150	8	30	
NEtFOSA	8.00	7.94		ng/L		99	50 - 150	0.1	30	
NMeFOSA	8.00	7.68		ng/L		96	50 - 150	4	30	
NMeFOSAA	8.00	7.44		ng/L		93	50 - 150	8	30	
NEtFOSAA	8.00	7.74		ng/L		97	50 - 150	2	30	
NMeFOSE	8.00	8.46		ng/L		106	50 - 150	2	30	

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LLCSD 320-748243/3-A**  
**Matrix: Water**  
**Analysis Batch: 748491**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 748243**

Analyte	Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NETFOSE	8.00	8.30		ng/L		104	50 - 150	5	30
4:2 FTS	7.50	8.35		ng/L		111	50 - 150	5	30
6:2 FTS	7.62	8.51		ng/L		112	50 - 150	10	30
8:2 FTS	7.68	9.16		ng/L		119	50 - 150	1	30
10:2 FTS	7.73	8.22		ng/L		106	50 - 150	25	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.57	9.57		ng/L		126	50 - 150	8	30
HFPO-DA (GenX)	8.00	8.37		ng/L		105	50 - 150	6	30
9CI-PF3ONS	7.47	8.82		ng/L		118	50 - 150	10	30
11CI-PF3OUdS	7.55	7.39		ng/L		98	50 - 150	3	30

Isotope Dilution	LLCSD %Recovery	LLCSD Qualifier	LLCSD Limits
13C4 PFBA	104		25 - 150
13C5 PFPeA	96		25 - 150
13C2 PFHxA	104		25 - 150
13C4 PFHpA	95		25 - 150
13C4 PFOA	97		25 - 150
13C5 PFNA	89		25 - 150
13C2 PFDA	91		25 - 150
13C2 PFUnA	80		25 - 150
13C2 PFDoA	82		25 - 150
13C2 PFTeDA	81		25 - 150
13C2 PFHxDA	77		25 - 150
13C3 PFBS	94		25 - 150
18O2 PFHxS	90		25 - 150
13C4 PFOS	86		25 - 150
13C8 FOSA	86		10 - 150
d3-NMeFOSAA	90		25 - 150
d5-NEtFOSAA	78		25 - 150
d-N-MeFOSA-M	75		10 - 150
d-N-EtFOSA-M	78		10 - 150
d7-N-MeFOSE-M	66		10 - 150
d9-N-EtFOSE-M	67		10 - 150
M2-4:2 FTS	130		25 - 150
M2-6:2 FTS	111		25 - 150
M2-8:2 FTS	87		25 - 150
13C3 HFPO-DA	95		25 - 150
13C2 10:2 FTS	82		25 - 150

**Lab Sample ID: MB 320-748430/1-A**  
**Matrix: Water**  
**Analysis Batch: 748744**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 748430**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		03/19/24 05:23	03/20/24 12:41	1

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: MB 320-748430/1-A**  
**Matrix: Water**  
**Analysis Batch: 748744**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 748430**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorotridecanoic acid (PFTTrDA)	<2.0		2.0	1.3	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		03/19/24 05:23	03/20/24 12:41	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		03/19/24 05:23	03/20/24 12:41	1
NEtFOSA	<2.0		2.0	0.87	ng/L		03/19/24 05:23	03/20/24 12:41	1
NMeFOSA	<2.0		2.0	0.43	ng/L		03/19/24 05:23	03/20/24 12:41	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		03/19/24 05:23	03/20/24 12:41	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		03/19/24 05:23	03/20/24 12:41	1
NMeFOSE	<4.0		4.0	1.4	ng/L		03/19/24 05:23	03/20/24 12:41	1
NEtFOSE	<2.0		2.0	0.85	ng/L		03/19/24 05:23	03/20/24 12:41	1
4:2 FTS	<2.0		2.0	0.24	ng/L		03/19/24 05:23	03/20/24 12:41	1
6:2 FTS	<5.0		5.0	2.5	ng/L		03/19/24 05:23	03/20/24 12:41	1
8:2 FTS	<2.0		2.0	0.46	ng/L		03/19/24 05:23	03/20/24 12:41	1
10:2 FTS	<2.0		2.0	0.67	ng/L		03/19/24 05:23	03/20/24 12:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		03/19/24 05:23	03/20/24 12:41	1
HFPO-DA (GenX)	<4.0		4.0	1.5	ng/L		03/19/24 05:23	03/20/24 12:41	1
9Cl-PF3ONS	<2.0		2.0	0.24	ng/L		03/19/24 05:23	03/20/24 12:41	1
11Cl-PF3OUdS	<2.0		2.0	0.32	ng/L		03/19/24 05:23	03/20/24 12:41	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA	87		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C5 PFPeA	97		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C2 PFHxA	85		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C4 PFHpA	89		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C4 PFOA	84		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C5 PFNA	83		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C2 PFDA	81		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C2 PFUnA	81		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C2 PFDoA	76		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C2 PFTeDA	64		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C2 PFHxDA	63		25 - 150	03/19/24 05:23	03/20/24 12:41	1

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: MB 320-748430/1-A**  
**Matrix: Water**  
**Analysis Batch: 748744**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 748430**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 PFBS	67		25 - 150	03/19/24 05:23	03/20/24 12:41	1
18O2 PFHxS	89		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C4 PFOS	76		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C8 FOSA	74		10 - 150	03/19/24 05:23	03/20/24 12:41	1
d3-NMeFOSAA	67		25 - 150	03/19/24 05:23	03/20/24 12:41	1
d5-NEtFOSAA	65		25 - 150	03/19/24 05:23	03/20/24 12:41	1
d-N-MeFOSA-M	74		10 - 150	03/19/24 05:23	03/20/24 12:41	1
d-N-EtFOSA-M	71		10 - 150	03/19/24 05:23	03/20/24 12:41	1
d7-N-MeFOSE-M	62		10 - 150	03/19/24 05:23	03/20/24 12:41	1
d9-N-EtFOSE-M	65		10 - 150	03/19/24 05:23	03/20/24 12:41	1
M2-4:2 FTS	107		25 - 150	03/19/24 05:23	03/20/24 12:41	1
M2-6:2 FTS	95		25 - 150	03/19/24 05:23	03/20/24 12:41	1
M2-8:2 FTS	79		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C3 HFPO-DA	79		25 - 150	03/19/24 05:23	03/20/24 12:41	1
13C2 10:2 FTS	84		25 - 150	03/19/24 05:23	03/20/24 12:41	1

**Lab Sample ID: LCS 320-748430/3-A**  
**Matrix: Water**  
**Analysis Batch: 748744**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 748430**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
Perfluorobutanoic acid (PFBA)	40.0	37.5		ng/L		94	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	39.4		ng/L		99	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	39.7		ng/L		99	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	37.6		ng/L		94	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	38.5		ng/L		96	60 - 135
Perfluorononanoic acid (PFNA)	40.0	39.5		ng/L		99	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	39.5		ng/L		99	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	38.4		ng/L		96	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	42.3		ng/L		106	60 - 135
Perfluorotridecanoic acid (PFTrDA)	40.0	36.5		ng/L		91	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	36.2		ng/L		90	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	40.3		ng/L		101	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	30.8		ng/L		77	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	35.9		ng/L		101	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	41.2		ng/L		109	60 - 135
Perfluorohexanesulfonic acid (PFHxS)	36.5	28.5		ng/L		78	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	37.6		ng/L		99	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	33.7		ng/L		91	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	33.2		ng/L		86	60 - 135

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LCS 320-748430/3-A**  
**Matrix: Water**  
**Analysis Batch: 748744**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 748430**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanesulfonic acid (PFDS)	38.6	39.6		ng/L		103	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	38.1		ng/L		98	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	37.7		ng/L		94	60 - 135
NEtFOSA	40.0	35.4		ng/L		88	60 - 135
NMeFOSA	40.0	33.6		ng/L		84	60 - 135
NMeFOSAA	40.0	39.3		ng/L		98	60 - 135
NEtFOSAA	40.0	35.6		ng/L		89	60 - 135
NMeFOSE	40.0	41.8		ng/L		105	60 - 135
NEtFOSE	40.0	37.9		ng/L		95	60 - 135
4:2 FTS	37.5	33.4		ng/L		89	60 - 135
6:2 FTS	38.1	36.8		ng/L		97	60 - 135
8:2 FTS	38.4	43.8		ng/L		114	60 - 135
10:2 FTS	38.6	35.0		ng/L		91	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.8		ng/L		108	60 - 135
HFPO-DA (GenX)	40.0	39.6		ng/L		99	60 - 135
9Cl-PF3ONS	37.4	40.4		ng/L		108	60 - 135
11Cl-PF3OUdS	37.8	39.6		ng/L		105	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	36		25 - 150
13C5 PFPeA	39		25 - 150
13C2 PFHxA	37		25 - 150
13C4 PFHpA	40		25 - 150
13C4 PFOA	38		25 - 150
13C5 PFNA	39		25 - 150
13C2 PFDA	34		25 - 150
13C2 PFUnA	37		25 - 150
13C2 PFDoA	36		25 - 150
13C2 PFTeDA	37		25 - 150
13C2 PFHxDA	40		25 - 150
13C3 PFBS	34		25 - 150
18O2 PFHxS	42		25 - 150
13C4 PFOS	35		25 - 150
13C8 FOSA	33		10 - 150
d3-NMeFOSAA	29		25 - 150
d5-NEtFOSAA	34		25 - 150
d-N-MeFOSA-M	38		10 - 150
d-N-EtFOSA-M	38		10 - 150
d7-N-MeFOSE-M	31		10 - 150
d9-N-EtFOSE-M	34		10 - 150
M2-4:2 FTS	46		25 - 150
M2-6:2 FTS	47		25 - 150
M2-8:2 FTS	38		25 - 150
13C3 HFPO-DA	33		25 - 150
13C2 10:2 FTS	43		25 - 150

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LCSD 320-748430/4-A**  
**Matrix: Water**  
**Analysis Batch: 748744**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 748430**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	40.0	39.5		ng/L		99	60 - 135	5	30	
Perfluoropentanoic acid (PFPeA)	40.0	40.1		ng/L		100	60 - 135	2	30	
Perfluorohexanoic acid (PFHxA)	40.0	39.9		ng/L		100	60 - 135	0	30	
Perfluoroheptanoic acid (PFHpA)	40.0	42.8		ng/L		107	60 - 135	13	30	
Perfluorooctanoic acid (PFOA)	40.0	42.6		ng/L		106	60 - 135	10	30	
Perfluorononanoic acid (PFNA)	40.0	41.7		ng/L		104	60 - 135	5	30	
Perfluorodecanoic acid (PFDA)	40.0	40.9		ng/L		102	60 - 135	3	30	
Perfluoroundecanoic acid (PFUnA)	40.0	41.5		ng/L		104	60 - 135	8	30	
Perfluorododecanoic acid (PFDoA)	40.0	41.7		ng/L		104	60 - 135	1	30	
Perfluorotridecanoic acid (PFTTrDA)	40.0	34.9		ng/L		87	60 - 135	5	30	
Perfluorotetradecanoic acid (PFTeA)	40.0	38.4		ng/L		96	60 - 135	6	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	38.9		ng/L		97	60 - 135	4	30	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	23.3	*-	ng/L		58	60 - 135	27	30	
Perfluorobutanesulfonic acid (PFBS)	35.5	36.8		ng/L		104	60 - 135	3	30	
Perfluoropentanesulfonic acid (PFPeS)	37.6	40.7		ng/L		108	60 - 135	1	30	
Perfluorohexanesulfonic acid (PFHxS)	36.5	30.1		ng/L		82	60 - 135	5	30	
Perfluoroheptanesulfonic acid (PFHpS)	38.2	39.5		ng/L		104	60 - 135	5	30	
Perfluorooctanesulfonic acid (PFOS)	37.2	33.5		ng/L		90	60 - 135	0	30	
Perfluorononanesulfonic acid (PFNS)	38.5	36.5		ng/L		95	60 - 135	9	30	
Perfluorodecanesulfonic acid (PFDS)	38.6	35.4		ng/L		92	60 - 135	11	30	
Perfluorododecanesulfonic acid (PFDoS)	38.8	33.2		ng/L		85	60 - 135	14	30	
Perfluorooctanesulfonamide (FOSA)	40.0	39.4		ng/L		99	60 - 135	4	30	
NEtFOSA	40.0	37.9		ng/L		95	60 - 135	7	30	
NMeFOSA	40.0	36.8		ng/L		92	60 - 135	9	30	
NMeFOSAA	40.0	38.3		ng/L		96	60 - 135	3	30	
NEtFOSAA	40.0	37.8		ng/L		95	60 - 135	6	30	
NMeFOSE	40.0	41.2		ng/L		103	60 - 135	1	30	
NEtFOSE	40.0	40.9		ng/L		102	60 - 135	8	30	
4:2 FTS	37.5	41.2		ng/L		110	60 - 135	21	30	
6:2 FTS	38.1	44.3		ng/L		116	60 - 135	19	30	
8:2 FTS	38.4	42.9		ng/L		112	60 - 135	2	30	
10:2 FTS	38.6	33.7		ng/L		87	60 - 135	4	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.3		ng/L		114	60 - 135	6	30	
HFPO-DA (GenX)	40.0	40.6		ng/L		102	60 - 135	3	30	
9CI-PF3ONS	37.4	40.0		ng/L		107	60 - 135	1	30	
11CI-PF3OUdS	37.8	40.1		ng/L		106	60 - 135	1	30	

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>LCS D</i>	<i>LCS D</i>	<i>Limits</i>
<i>%Recovery</i>	<i>Qualifier</i>		
13C4 PFBA	97		25 - 150
13C5 PFPeA	103		25 - 150
13C2 PFHxA	101		25 - 150
13C4 PFHpA	95		25 - 150
13C4 PFOA	97		25 - 150
13C5 PFNA	95		25 - 150
13C2 PFDA	92		25 - 150
13C2 PFUnA	88		25 - 150
13C2 PFDoA	87		25 - 150
13C2 PFTeDA	79		25 - 150
13C2 PFHxDA	73		25 - 150
13C3 PFBS	86		25 - 150
18O2 PFHxS	101		25 - 150
13C4 PFOS	85		25 - 150
13C8 FOSA	83		10 - 150
d3-NMeFOSAA	73		25 - 150
d5-NEtFOSAA	74		25 - 150
d-N-MeFOSA-M	86		10 - 150
d-N-EtFOSA-M	82		10 - 150
d7-N-MeFOSE-M	73		10 - 150
d9-N-EtFOSE-M	74		10 - 150
M2-4:2 FTS	114		25 - 150
M2-6:2 FTS	110		25 - 150
M2-8:2 FTS	96		25 - 150
13C3 HFPO-DA	87		25 - 150
13C2 10:2 FTS	97		25 - 150

**Lab Sample ID: LLCSSD 320-748430/2-A**  
**Matrix: Water**  
**Analysis Batch: 748744**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 748430**

<i>Analyte</i>	<i>Spike Added</i>	<i>LLC SSD Result</i>	<i>LLC SSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
Perfluorobutanoic acid (PFBA)	8.00	8.46		ng/L		106	
Perfluoropentanoic acid (PFPeA)	8.00	7.87		ng/L		98	
Perfluorohexanoic acid (PFHxA)	8.00	9.20		ng/L		115	
Perfluoroheptanoic acid (PFHpA)	8.00	8.10		ng/L		101	
Perfluorooctanoic acid (PFOA)	8.00	8.15		ng/L		102	
Perfluorononanoic acid (PFNA)	8.00	8.01		ng/L		100	
Perfluorodecanoic acid (PFDA)	8.00	8.77		ng/L		110	
Perfluoroundecanoic acid (PFUnA)	8.00	8.20		ng/L		103	
Perfluorododecanoic acid (PFDoA)	8.00	8.09		ng/L		101	
Perfluorotridecanoic acid (PFTTrDA)	8.00	6.74		ng/L		84	
Perfluorotetradecanoic acid (PFTTeA)	8.00	7.55		ng/L		94	
Perfluoro-n-hexadecanoic acid (PFHxDA)	8.00	7.88		ng/L		99	
Perfluoro-n-octadecanoic acid (PFODA)	8.00	4.75		ng/L		59	
Perfluorobutanesulfonic acid (PFBS)	7.10	8.01		ng/L		113	

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LLCSSD 320-748430/2-A**  
**Matrix: Water**  
**Analysis Batch: 748744**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 748430**

Analyte	Spike Added	LLCSSD Result	LLCSSD Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanesulfonic acid (PFPeS)	7.52	8.49		ng/L		113	
Perfluorohexanesulfonic acid (PFHxS)	7.30	6.04		ng/L		83	
Perfluoroheptanesulfonic acid (PFHpS)	7.63	7.66		ng/L		100	
Perfluorooctanesulfonic acid (PFOS)	7.44	6.78		ng/L		91	
Perfluorononanesulfonic acid (PFNS)	7.70	6.76		ng/L		88	
Perfluorodecanesulfonic acid (PFDS)	7.71	7.16		ng/L		93	
Perfluorododecanesulfonic acid (PFDoS)	7.76	6.81		ng/L		88	
Perfluorooctanesulfonamide (FOSA)	8.00	7.40		ng/L		93	
NEtFOSA	8.00	6.81		ng/L		85	
NMeFOSA	8.00	6.73		ng/L		84	
NMeFOSAA	8.00	7.74		ng/L		97	
NEtFOSAA	8.00	7.91		ng/L		99	
NMeFOSE	8.00	8.02		ng/L		100	
NEtFOSE	8.00	8.13		ng/L		102	
4:2 FTS	7.50	7.39		ng/L		98	
6:2 FTS	7.62	6.96		ng/L		91	
8:2 FTS	7.68	7.89		ng/L		103	
10:2 FTS	7.73	8.12		ng/L		105	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.57	8.89		ng/L		117	
HFPO-DA (GenX)	8.00	7.82		ng/L		98	
9Cl-PF3ONS	7.47	7.86		ng/L		105	
11Cl-PF3OUdS	7.55	7.74		ng/L		102	

Isotope Dilution	LLCSSD		Limits
	%Recovery	Qualifier	
13C4 PFBA	102		25 - 150
13C5 PFPeA	104		25 - 150
13C2 PFHxA	100		25 - 150
13C4 PFHpA	101		25 - 150
13C4 PFOA	98		25 - 150
13C5 PFNA	93		25 - 150
13C2 PFDA	92		25 - 150
13C2 PFUnA	89		25 - 150
13C2 PFDoA	86		25 - 150
13C2 PFTeDA	72		25 - 150
13C2 PFHxDA	68		25 - 150
13C3 PFBS	78		25 - 150
18O2 PFHxS	101		25 - 150
13C4 PFOS	85		25 - 150
13C8 FOSA	81		10 - 150
d3-NMeFOSAA	84		25 - 150
d5-NEtFOSAA	73		25 - 150
d-N-MeFOSA-M	86		10 - 150

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LLCSSD 320-748430/2-A**  
**Matrix: Water**  
**Analysis Batch: 748744**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 748430**

Isotope Dilution	LLCSSD LLCSSD		Limits
	%Recovery	Qualifier	
d-N-EtFOSA-M	85		10 - 150
d7-N-MeFOSE-M	69		10 - 150
d9-N-EtFOSE-M	70		10 - 150
M2-4:2 FTS	122		25 - 150
M2-6:2 FTS	120		25 - 150
M2-8:2 FTS	96		25 - 150
13C3 HFPO-DA	90		25 - 150
13C2 10:2 FTS	83		25 - 150

## Method: 6020B - Metals (ICP/MS)

**Lab Sample ID: MB 500-758911/1-A**  
**Matrix: Water**  
**Analysis Batch: 759758**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 758911**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aluminum	<100		100	25	ug/L		03/19/24 09:04	03/22/24 18:08	1
Arsenic	<1.0		1.0	0.23	ug/L		03/19/24 09:04	03/22/24 18:08	1
Barium	<2.5		2.5	0.73	ug/L		03/19/24 09:04	03/22/24 18:08	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/19/24 09:04	03/22/24 18:08	1
Cadmium	<0.50		0.50	0.17	ug/L		03/19/24 09:04	03/22/24 18:08	1
Calcium	59.9	J	200	44	ug/L		03/19/24 09:04	03/22/24 18:08	1
Chromium	<5.0		5.0	1.1	ug/L		03/19/24 09:04	03/22/24 18:08	1
Cobalt	<1.0		1.0	0.40	ug/L		03/19/24 09:04	03/22/24 18:08	1
Copper	<2.0		2.0	0.50	ug/L		03/19/24 09:04	03/22/24 18:08	1
Iron	<100		100	47	ug/L		03/19/24 09:04	03/22/24 18:08	1
Lead	<0.50		0.50	0.19	ug/L		03/19/24 09:04	03/22/24 18:08	1
Magnesium	<200		200	49	ug/L		03/19/24 09:04	03/22/24 18:08	1
Manganese	0.833	J	2.5	0.79	ug/L		03/19/24 09:04	03/22/24 18:08	1
Nickel	<2.0		2.0	0.63	ug/L		03/19/24 09:04	03/22/24 18:08	1
Potassium	<500		500	110	ug/L		03/19/24 09:04	03/22/24 18:08	1
Selenium	<2.5		2.5	0.98	ug/L		03/19/24 09:04	03/22/24 18:08	1
Silver	<0.50		0.50	0.12	ug/L		03/19/24 09:04	03/22/24 18:08	1
Sodium	<200		200	77	ug/L		03/19/24 09:04	03/22/24 18:08	1
Strontium	<4.0		4.0	0.64	ug/L		03/19/24 09:04	03/22/24 18:08	1
Thallium	<2.0		2.0	0.57	ug/L		03/19/24 09:04	03/22/24 18:08	1
Vanadium	<5.0		5.0	2.2	ug/L		03/19/24 09:04	03/22/24 18:08	1
Zinc	<20		20	6.9	ug/L		03/19/24 09:04	03/22/24 18:08	1

**Lab Sample ID: MB 500-758911/1-A**  
**Matrix: Water**  
**Analysis Batch: 760160**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 758911**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/19/24 09:04	03/26/24 13:08	1
Boron	22.8	J	50	13	ug/L		03/19/24 09:04	03/26/24 13:08	1



# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 500-758911/2-A  
 Matrix: Water  
 Analysis Batch: 759758

Client Sample ID: Lab Control Sample  
 Prep Type: Total Recoverable  
 Prep Batch: 758911

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	2000	1830		ug/L		91	80 - 120
Arsenic	100	88.0		ug/L		88	80 - 120
Barium	500	450		ug/L		90	80 - 120
Beryllium	50.0	44.4	^1+	ug/L		89	80 - 120
Cadmium	50.0	46.4		ug/L		93	80 - 120
Calcium	10000	9100		ug/L		91	80 - 120
Chromium	200	177		ug/L		88	80 - 120
Cobalt	500	437		ug/L		87	80 - 120
Copper	250	241		ug/L		96	80 - 120
Iron	1000	879		ug/L		88	80 - 120
Lead	100	92.8		ug/L		93	80 - 120
Magnesium	10000	9040		ug/L		90	80 - 120
Manganese	500	437		ug/L		87	80 - 120
Nickel	500	457		ug/L		91	80 - 120
Potassium	10000	9010		ug/L		90	80 - 120
Selenium	100	89.7		ug/L		90	80 - 120
Silver	50.0	46.0		ug/L		92	80 - 120
Sodium	10000	8910		ug/L		89	80 - 120
Strontium	1000	872		ug/L		87	80 - 120
Thallium	100	89.6		ug/L		90	80 - 120
Vanadium	500	421		ug/L		84	80 - 120
Zinc	500	482		ug/L		96	80 - 120

Lab Sample ID: LCS 500-758911/2-A  
 Matrix: Water  
 Analysis Batch: 760160

Client Sample ID: Lab Control Sample  
 Prep Type: Total Recoverable  
 Prep Batch: 758911

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	500	463	^1+	ug/L		93	80 - 120
Boron	1000	884		ug/L		88	80 - 120

## Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 500-760226/12-A  
 Matrix: Water  
 Analysis Batch: 760438

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 760226

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/27/24 12:10	03/28/24 08:07	1

Lab Sample ID: LCS 500-760226/13-A  
 Matrix: Water  
 Analysis Batch: 760438

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 760226

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	2.01	1.88		ug/L		94	80 - 120

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 7470A - Mercury (CVAA) (Continued)

**Lab Sample ID: 500-247527-5 MS**  
**Matrix: Water**  
**Analysis Batch: 760438**

**Client Sample ID: DMW-02\_5X**  
**Prep Type: Total/NA**  
**Prep Batch: 760226**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	<0.20		1.00	0.955		ug/L		96	75 - 125

**Lab Sample ID: 500-247527-5 MSD**  
**Matrix: Water**  
**Analysis Batch: 760438**

**Client Sample ID: DMW-02\_5X**  
**Prep Type: Total/NA**  
**Prep Batch: 760226**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Mercury	<0.20		1.00	0.941		ug/L		94	75 - 125	1	20

**Lab Sample ID: 500-247527-5 DU**  
**Matrix: Water**  
**Analysis Batch: 760438**

**Client Sample ID: DMW-02\_5X**  
**Prep Type: Total/NA**  
**Prep Batch: 760226**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Mercury	<0.20		<0.20		ug/L		NC	20

## Method: 9056A - Anions, Ion Chromatography

**Lab Sample ID: MB 500-758509/3**  
**Matrix: Water**  
**Analysis Batch: 758509**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	<1.0		1.0	0.18	mg/L			03/15/24 11:37	1
Fluoride	<1.0		1.0	0.19	mg/L			03/15/24 11:37	1

**Lab Sample ID: LCS 500-758509/4**  
**Matrix: Water**  
**Analysis Batch: 758509**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromide	20.0	19.4		mg/L		97	80 - 120
Fluoride	20.0	20.1		mg/L		101	80 - 120

**Lab Sample ID: MB 500-758510/3**  
**Matrix: Water**  
**Analysis Batch: 758510**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<1.0		1.0	0.043	mg/L			03/15/24 11:37	1
Nitrite as N	<1.0		1.0	0.070	mg/L			03/15/24 11:37	1
Orthophosphate as P	<1.0		1.0	0.13	mg/L			03/15/24 11:37	1

**Lab Sample ID: LCS 500-758510/4**  
**Matrix: Water**  
**Analysis Batch: 758510**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	20.0	19.4		mg/L		97	80 - 120
Nitrite as N	20.0	20.3		mg/L		101	80 - 120

Eurolins Chicago

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 9056A - Anions, Ion Chromatography (Continued)

**Lab Sample ID: LCS 500-758510/4**  
**Matrix: Water**  
**Analysis Batch: 758510**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Orthophosphate as P	20.0	19.5		mg/L		97	80 - 120

**Lab Sample ID: MB 500-759579/3**  
**Matrix: Water**  
**Analysis Batch: 759579**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.181	J	1.0	0.12	mg/L			03/22/24 20:18	1

**Lab Sample ID: LCS 500-759579/4**  
**Matrix: Water**  
**Analysis Batch: 759579**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	20.0	20.8		mg/L		104	80 - 120

**Lab Sample ID: MB 500-760013/3**  
**Matrix: Water**  
**Analysis Batch: 760013**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.216	J	1.0	0.12	mg/L			03/26/24 12:04	1
Sulfate	0.731	J	1.0	0.21	mg/L			03/26/24 12:04	1

**Lab Sample ID: LCS 500-760013/4**  
**Matrix: Water**  
**Analysis Batch: 760013**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	20.0	20.7		mg/L		104	80 - 120
Sulfate	20.0	20.4		mg/L		102	80 - 120

## Method: SM 2320B - Alkalinity

**Lab Sample ID: MB 500-760351/3**  
**Matrix: Water**  
**Analysis Batch: 760351**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Total	6.90		5.0	3.7	mg/L			03/27/24 17:26	1
Bicarbonate Alkalinity as CaCO3	6.90		5.0	3.7	mg/L			03/27/24 17:26	1
Carbonate Alkalinity as CaCO3	<5.0		5.0	3.7	mg/L			03/27/24 17:26	1

**Lab Sample ID: LCS 500-760351/4**  
**Matrix: Water**  
**Analysis Batch: 760351**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity, Total	100	114		mg/L		114	95 - 121

Eurofins Chicago

# Lab Chronicle

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: DUP-006**

**Lab Sample ID: 500-247527-1**

**Date Collected: 03/13/24 00:00**

**Matrix: Water**

**Date Received: 03/15/24 10:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			748243	MKC	EET SAC	03/18/24 13:00
Total/NA	Analysis	537 (modified)		1	748491	K1S	EET SAC	03/19/24 18:11
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	759758	RN	EET CHI	03/22/24 19:24
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760160	RN	EET CHI	03/26/24 13:54
Total/NA	Prep	7470A			760226	MJG	EET CHI	03/27/24 12:10 - 03/27/24 14:10 <sup>1</sup>
Total/NA	Analysis	7470A		1	760438	MJG	EET CHI	03/28/24 09:34
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	760019	RN	EET CHI	03/26/24 11:58
Total/NA	Analysis	9056A		1	758509	W1T	EET CHI	03/15/24 12:08
Total/NA	Analysis	9056A		1	758510	NMB	EET CHI	03/15/24 12:08
Total/NA	Analysis	9056A		10	759579	W1T	EET CHI	03/23/24 02:37
Total/NA	Analysis	9056A		100	760013	NMB	EET CHI	03/26/24 20:55
Total/NA	Analysis	SM 2320B		1	760351	SO	EET CHI	03/27/24 19:41

**Client Sample ID: Field Blank-03-13-2024-DW**

**Lab Sample ID: 500-247527-2**

**Date Collected: 03/13/24 17:05**

**Matrix: Water**

**Date Received: 03/15/24 10:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			748243	MKC	EET SAC	03/18/24 13:00
Total/NA	Analysis	537 (modified)		1	748491	K1S	EET SAC	03/19/24 18:23

**Client Sample ID: DMW-02\_1X**

**Lab Sample ID: 500-247527-3**

**Date Collected: 03/13/24 10:30**

**Matrix: Water**

**Date Received: 03/15/24 10:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	759758	RN	EET CHI	03/22/24 19:27
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760160	RN	EET CHI	03/26/24 13:57
Total/NA	Prep	7470A			760226	MJG	EET CHI	03/27/24 12:10 - 03/27/24 14:10 <sup>1</sup>
Total/NA	Analysis	7470A		1	760438	MJG	EET CHI	03/28/24 09:37
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	760019	RN	EET CHI	03/26/24 11:58
Total/NA	Analysis	9056A		1	758509	W1T	EET CHI	03/15/24 12:23
Total/NA	Analysis	9056A		1	758510	NMB	EET CHI	03/15/24 12:23
Total/NA	Analysis	9056A		5	760013	NMB	EET CHI	03/26/24 21:40
Total/NA	Analysis	9056A		100	760013	NMB	EET CHI	03/26/24 21:55
Total/NA	Analysis	SM 2320B		1	760351	SO	EET CHI	03/27/24 19:51

# Lab Chronicle

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Client Sample ID: DMW-02\_3X**  
**Date Collected: 03/13/24 13:40**  
**Date Received: 03/15/24 10:00**

**Lab Sample ID: 500-247527-4**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	759758	RN	EET CHI	03/22/24 19:30
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760160	RN	EET CHI	03/26/24 14:01
Total/NA	Prep	7470A			760226	MJG	EET CHI	03/27/24 12:10 - 03/27/24 14:10 <sup>1</sup>
Total/NA	Analysis	7470A		1	760438	MJG	EET CHI	03/28/24 09:39
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	760019	RN	EET CHI	03/26/24 11:58
Total/NA	Analysis	9056A		1	758509	W1T	EET CHI	03/15/24 12:38
Total/NA	Analysis	9056A		1	758510	NMB	EET CHI	03/15/24 12:38
Total/NA	Analysis	9056A		5	760013	NMB	EET CHI	03/26/24 15:51
Total/NA	Analysis	9056A		100	760013	NMB	EET CHI	03/26/24 16:06
Total/NA	Analysis	SM 2320B		1	760351	SO	EET CHI	03/27/24 19:59

**Client Sample ID: DMW-02\_5X**  
**Date Collected: 03/13/24 16:52**  
**Date Received: 03/15/24 10:00**

**Lab Sample ID: 500-247527-5**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			748430	VJC	EET SAC	03/19/24 05:23
Total/NA	Analysis	537 (modified)		1	748744	K1S	EET SAC	03/20/24 13:26
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	759758	RN	EET CHI	03/22/24 19:34
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760160	RN	EET CHI	03/26/24 14:04
Total/NA	Prep	7470A			760226	MJG	EET CHI	03/27/24 12:10 - 03/27/24 14:10 <sup>1</sup>
Total/NA	Analysis	7470A		1	760438	MJG	EET CHI	03/28/24 09:41
Total Recoverable	Prep	3005A			758911	BDE	EET CHI	03/19/24 09:04 - 03/19/24 15:04 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	760019	RN	EET CHI	03/26/24 11:58
Total/NA	Analysis	9056A		1	758509	W1T	EET CHI	03/15/24 12:53
Total/NA	Analysis	9056A		1	758510	NMB	EET CHI	03/15/24 12:53
Total/NA	Analysis	9056A		5	760013	NMB	EET CHI	03/26/24 22:10
Total/NA	Analysis	9056A		100	760013	NMB	EET CHI	03/26/24 22:25
Total/NA	Analysis	SM 2320B		1	760351	SO	EET CHI	03/27/24 20:09

**Client Sample ID: EB-006**  
**Date Collected: 03/13/24 17:20**  
**Date Received: 03/15/24 10:00**

**Lab Sample ID: 500-247527-6**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			748243	MKC	EET SAC	03/18/24 13:00
Total/NA	Analysis	537 (modified)		1	748491	K1S	EET SAC	03/19/24 19:42

<sup>1</sup> This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

# Lab Chronicle

Client: Arcadis U.S., Inc.

Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Laboratory References:

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Accreditation/Certification Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Laboratory: Eurofins Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-24

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-24

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

Eurofins TestAmerica, Chicago  
2417 Bond Street

University Park, IL 60484-3101  
phone 708 534 5200 fax 708 534 5211

# Chain of Custody Record

Tracking #  
7252 5233 4517  
FEDEX

eurofins  
Environment Testing  
Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Project Manager: Lisa Rutkowski

<b>Client Contact</b>	<b>Email:</b> N/A	<b>Site Contact:</b>	<b>Date:</b> 3/13/2024	<b>COC No</b>
Arcadis U S , Inc	<b>Tel/Fax:</b> N/A	<b>Lab Contact:</b> Sandie Fredrick	<b>Carrier:</b> FedEx	1 of 1 COCs

126 North Jefferson Street, Suite 400  
Milwaukee, WI 53202

Phone \_\_\_\_\_  
FAX \_\_\_\_\_

Project Name Marinette, WI  
Site Marinette, WI  
P O # 20468807.1.2.3 30168809.1.4.1

**Analysis Turnaround Time**

CALENDAR DAYS  WORKING DAYS

TAT if different from Below **STANDARD**

2 weeks  
 1 week  
 2 days  
 1 day

Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 Modified (36 Compounds)	Rad 226 903	Rad 228 904	TAL Metals 6020A / 7470A	Hardness SM234B	Sulfur 6010D	Total Sulfide SM4500	Anions 9056A	Uranium 6020B	Alkalinity 2320B
-----------------------	------------------------	---------------------------------	-------------	-------------	--------------------------	-----------------	--------------	----------------------	--------------	---------------	------------------

500-247527 COC

50020191-50021668

500-247527

Sample Specific Notes

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 Modified (36 Compounds)	Rad 226 903	Rad 228 904	TAL Metals 6020A / 7470A	Hardness SM234B	Sulfur 6010D	Total Sulfide SM4500	Anions 9056A	Uranium 6020B	Alkalinity 2320B	Sample Specific Notes
<del>WS-R</del>			G	W		N												
<del>WS-R-POST</del>			G	W		N												
1 DUP-006	3/13/24		G	W	5	N	X			X	X			X	X			Duplicate
2 Field Blank-03-13-2024 -DW	1	1705	G	W	2	N	X											Field Blank
3 DMW-02_1X	1	1030	G	W	3	N					X	X		X	X			
4 DMW-02_3X	1	1340	G	W	3	N					X	X		X	X			
5 DMW-02_5X	1	1652	G	W	5	N	X				X	X		X	X			
6 EB-006	X	1720	X	X	2	M	N	X										Equipment Blank

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other - Zn Acetate/NaOH; 7=None

**Possible Hazard Identification:**  
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

Non Hazard  Flammable  Skin Irritant  Poison B  Unknown

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Special Instructions/QC Requirements & Comments:**  
Level 4, Questions call L. Rutkowski  
TAT: Standard

Custody Seals Intact  Yes  No

Custody Seal No \_\_\_\_\_ Cooler Temp (°C) Obs'd \_\_\_\_\_ Corr'd \_\_\_\_\_ Therm ID No \_\_\_\_\_

Relinquished by <i>Fele P...</i>	Company Arcadis	Date/Time 3/14/24	Received by	Company	Date/Time
Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Relinquished by	Company	Date/Time	Received in Laboratory by <i>Stephanie Hernandez</i>	Company EETA	Date/Time 3/15/24 1000

2.1-1.6

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111 HOLLER (DEEP WELL)  
JCI/ARCADIS  
2700 INDUSTRIAL PARKWAY  
BUILDING 112 - RECEIVING STATION 5  
MARINETTE, WI 54143  
UNITED STATES US

HLINB1: 25.00 LB 11.11  
CAD: 0780307/CAFE3755

7a. # 3498-434 NTW EXP 03/24 \*\*  
SABP/UM/LSBS



500-247527 Waybi

TO **SAMPLE RECEIPT**  
**EUROFINS CHICAGO**  
**2417 BOND ST.**

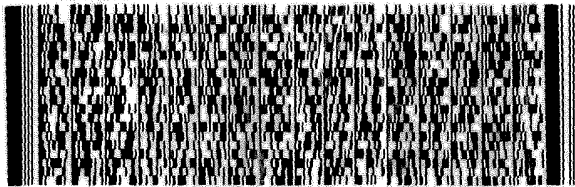
**UNIVERSITY PARK IL 60484**

(708) 634-5200

REF:

DEPT:

RMA: ||| ||| |||



**FedEx**  
Express



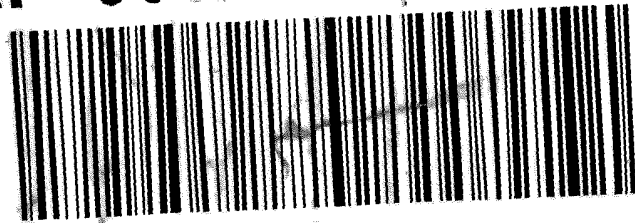
AN 1011201508203827

TRK# 7252 5233 4517  
0221

**XP JOTA**

**FRI - 15 MAR AA**  
**PRIORITY OVERNIGHT**

**60484**  
IL-US  
**ORD**



3962314 14Mar2024 GRBA 601G2/0530/C008

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# Login Sample Receipt Checklist

Client: Arcadis U.S., Inc.

Job Number: 500-247527-1

**Login Number: 247527**

**List Source: Eurofins Chicago**

**List Number: 1**

**Creator: Hernandez, Stephanie**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are 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 is acceptable.	True	
Cooler Temperature is recorded.	True	1.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	False	
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	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Arcadis U.S., Inc.

Job Number: 500-247527-1

**Login Number: 247527**

**List Number: 2**

**Creator: Simmons, Jason C**

**List Source: Eurofins Sacramento**

**List Creation: 03/16/24 02:27 PM**

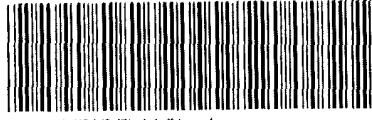
Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2370648
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.9c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Environment Testing

# Sacramento Sample Receiving Notes (SSRN)

Job: \_\_\_\_\_



500-247527 Field Sheet

Tracking # 705176190466

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSL / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC

Therm. ID: L-11 Corr. Factor (+/-) - °C  
Ice 1 Wet 1 Gel \_\_\_\_\_ Other \_\_\_\_\_  
Cooler Custody Seal: 2370648  
Cooler ID: \_\_\_\_\_  
Temp Observed. 11.9 °C Corrected 1.9 °C  
From Temp Blank  Sample

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen samples show signs of thaw?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: [Signature] Date: 3.16.24

Unpacking/Labeling The Samples	Yes	No	NA
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
COC is complete w/o discrepancies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the Field Sampler's name on COC?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 8850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")  
Initials: [Signature] Date: 3.16.24

Notes: \_\_\_\_\_  
\_\_\_\_\_  
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Trizma Lot #(s) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Ammonium  
Acetate Lot #(s). \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples received within hold time?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: [Signature] Date: 3.16.24

# Isotope Dilution Summary

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

## Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-247527-1	DUP-006	110	103	106	100	96	99	104	91
500-247527-2	Field Blank-03-13-2024-DW	104	105	99	107	101	96	103	86
500-247527-5	DMW-02_5X	106	115	106	105	103	100	95	91
500-247527-6	EB-006	106	102	111	102	100	98	98	91
LCS 320-748430/3-A	Lab Control Sample	36	39	37	40	38	39	34	37
LCSD 320-748430/4-A	Lab Control Sample Dup	97	103	101	95	97	95	92	88
LLCS 320-748243/2-A	Lab Control Sample	113	110	106	107	103	105	108	93
LLCSD 320-748243/3-A	Lab Control Sample Dup	104	96	104	95	97	89	91	80
LLCSSD 320-748430/2-A	Lab Control Sample	102	104	100	101	98	93	92	89
MB 320-748243/1-A	Method Blank	105	98	97	107	96	89	95	87
MB 320-748430/1-A	Method Blank	87	97	85	89	84	83	81	81

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-247527-1	DUP-006	94	86	78	93	95	94	98	95
500-247527-2	Field Blank-03-13-2024-DW	91	83	74	97	94	95	94	87
500-247527-5	DMW-02_5X	86	77	60	87	104	91	91	76
500-247527-6	EB-006	97	81	76	98	101	96	95	99
LCS 320-748430/3-A	Lab Control Sample	36	37	40	34	42	35	33	29
LCSD 320-748430/4-A	Lab Control Sample Dup	87	79	73	86	101	85	83	73
LLCS 320-748243/2-A	Lab Control Sample	92	84	79	99	98	97	98	86
LLCSD 320-748243/3-A	Lab Control Sample Dup	82	81	77	94	90	86	86	90
LLCSSD 320-748430/2-A	Lab Control Sample	86	72	68	78	101	85	81	84
MB 320-748243/1-A	Method Blank	85	74	73	93	90	88	85	92
MB 320-748430/1-A	Method Blank	76	64	63	67	89	76	74	67

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-247527-1	DUP-006	103	87	90	73	75	122	119	102
500-247527-2	Field Blank-03-13-2024-DW	87	74	75	72	69	137	113	95
500-247527-5	DMW-02_5X	74	91	93	78	81	125	121	98
500-247527-6	EB-006	95	78	79	70	66	139	119	105
LCS 320-748430/3-A	Lab Control Sample	34	38	38	31	34	46	47	38
LCSD 320-748430/4-A	Lab Control Sample Dup	74	86	82	73	74	114	110	96
LLCS 320-748243/2-A	Lab Control Sample	97	81	84	73	75	117	110	97
LLCSD 320-748243/3-A	Lab Control Sample Dup	78	75	78	66	67	130	111	87
LLCSSD 320-748430/2-A	Lab Control Sample	73	86	85	69	70	122	120	96
MB 320-748243/1-A	Method Blank	88	71	68	64	61	131	109	90
MB 320-748430/1-A	Method Blank	65	74	71	62	65	107	95	79

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-247527-1	DUP-006	96	99
500-247527-2	Field Blank-03-13-2024-DW	96	86
500-247527-5	DMW-02_5X	92	104
500-247527-6	EB-006	98	103
LCS 320-748430/3-A	Lab Control Sample	33	43
LCSD 320-748430/4-A	Lab Control Sample Dup	87	97
LLCS 320-748243/2-A	Lab Control Sample	101	99

# Isotope Dilution Summary

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247527-1

**Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)**

**Matrix: Water**

**Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)	
		HFPODA (25-150)	M102FTS (25-150)
LLCSD 320-748243/3-A	Lab Control Sample Dup	95	82
LLCSD 320-748430/2-A	Lab Control Sample	90	83
MB 320-748243/1-A	Method Blank	93	79
MB 320-748430/1-A	Method Blank	79	84

**Surrogate Legend**

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M
- dEtFOSA = d-N-EtFOSA-M
- NMFM = d7-N-MeFOSE-M
- NEFM = d9-N-EtFOSE-M
- M242FTS = M2-4:2 FTS
- M262FTS = M2-6:2 FTS
- M282FTS = M2-8:2 FTS
- HFPODA = 13C3 HFPO-DA
- M102FTS = 13C2 10:2 FTS



 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Lisa Rutkowski  
Arcadis U.S., Inc.  
126 North Jefferson Street  
Suite 400  
Milwaukee, Wisconsin 53202

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**JOB DESCRIPTION**

Marinette, WI Deep Well 30219428.1.4.1

**JOB NUMBER**

500-247230-1



# Eurofins Chicago

## Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

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

## Compliance Statement

The LOD and LOQ reported are adjusted by the dilution factor when a dilution factor greater than 1 is needed. Additionally, where results are indicated as being reported on a dry weight basis, the LOD and LOQ are adjusted for moisture content as well.

### Definitions of Limits

- LOD = Limit of Detection = MDL as defined by 40 CFR part 136 Appendix B
- LOQ = Limit of Quantitation = 3.33 x LOD as defined by Wisconsin
- RL = Report Limit = a concentration supported by a standard in the calibration curves

## Authorization



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4/1/2024 2:09:49 PM

Authorized for release by  
Sandie Fredrick, Senior Project Manager  
[Sandra.Fredrick@et.eurofinsus.com](mailto:Sandra.Fredrick@et.eurofinsus.com)  
(920)261-1660



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Case Narrative . . . . .	4
Method Summary . . . . .	5
Sample Summary . . . . .	6
Client Sample Results . . . . .	7
Definitions . . . . .	19
QC Sample Results . . . . .	20
Chronicle . . . . .	31
Certification Summary . . . . .	34
Chain of Custody . . . . .	35
Receipt Checklists . . . . .	38
Isotope Dilution Summary . . . . .	40

# Case Narrative

Client: Arcadis U.S., Inc.  
Project: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Job ID: 500-247230-1**

**Eurofins Chicago**

## Job Narrative 500-247230-1

### Receipt

The samples were received on 3/9/2024 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 was 0.8° C.

### Metals

Method 6020B: The linear range check (LRC) result for batch 500-760859 was above the upper control limit. The affected analytes are: Thallium. Sample results were within the high calibration standard, and have been reported as qualified data.

Method 6020B: The initial low level calibration verification (ICVL) result for batch 500-760859 was above the upper control limit. The affected analytes are: Antimony and Beryllium. Sample results were below the reporting limit, and have been reported as qualified data.

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

### LCMS

Method 537 (modified): The continuing calibration verification internal standard (CCVIS) associated with batch 320-747259 recovered above the upper control limit for 6:2 FTS. The Low Level Laboratory Control Sample/Low Level Laboratory control sample duplicate (LLCS/LLCSD) recoveries were in control for all analytes, The method blank and client samples associated with this CCVIS were non-detect for the affected analyte; therefore, the data have been reported. The associated samples are impacted: 500-247230-1, 500-247230-2, 500-247230-3, 500-247230-6 and CCVIS 320-747259/6.

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

### General Chemistry

Method 9056A: The continuing calibration verification (CCV) associated with batch 500-757496 recovered above the upper control limit for Bromide. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 500-247230-1, 500-247230-4, 500-247230-5, 500-247230-6 and CCV 500-757496/13.

Method 9056A: The following sample was received outside of holding time: 500-247230-1. Sample a DUP - time 00:00.

Method 9056A: The following sample was received with insufficient time remaining to perform the analysis within holding time: 500-247230-4.

Method SM 2320B: The method blank for analytical batch 500-759131 contained Alkalinity above the reporting limit (RL). Associated sample(s) were not re-analyzed because results were greater than 10X the value found in the method blank.

Method 9056A: The method blank for analytical batch 500-760013 contained Chloride and Sulfate above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

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

### Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-746924.

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

Eurofins Chicago

# Method Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
6020B	Metals (ICP/MS)	SW846	EET CHI
7470A	Mercury (CVAA)	SW846	EET CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	EET CHI
9056A	Anions, Ion Chromatography	SW846	EET CHI
SM 2320B	Alkalinity	SM	EET CHI
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET CHI
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC
7470A	Preparation, Mercury	SW846	EET CHI

#### Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Sample Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-247230-1	DUP-005	Water	03/07/24 00:00	03/09/24 09:40
500-247230-2	Field Blank-03-07-2024-DW	Water	03/07/24 16:15	03/09/24 09:40
500-247230-3	EB-005	Water	03/07/24 16:50	03/09/24 09:40
500-247230-4	DMW-03_1X	Water	03/07/24 11:15	03/09/24 09:40
500-247230-5	DMW-03_3X	Water	03/07/24 13:42	03/09/24 09:40
500-247230-6	DMW-03_5X	Water	03/07/24 16:13	03/09/24 09:40

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# Client Sample Results

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: DUP-005**

**Lab Sample ID: 500-247230-1**

**Date Collected: 03/07/24 00:00**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.3		4.3	2.1	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluoropentanoic acid (PFPeA)	<1.7		1.7	0.42	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorohexanoic acid (PFHxA)	<1.7		1.7	0.50	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluoroheptanoic acid (PFHpA)	<1.7		1.7	0.22	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorooctanoic acid (PFOA)	<1.7		1.7	0.73	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorononanoic acid (PFNA)	<1.7		1.7	0.23	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorodecanoic acid (PFDA)	<1.7		1.7	0.27	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluoroundecanoic acid (PFUnA)	<1.7		1.7	0.95	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.47	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorotridecanoic acid (PFTrDA)	<1.7		1.7	1.1	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.63	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.77	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7		1.7	0.81	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorobutanesulfonic acid (PFBS)	<1.7		1.7	0.17	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.26	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorohexanesulfonic acid (PFHxS)	<1.7		1.7	0.49	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.7		1.7	0.16	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorooctanesulfonic acid (PFOS)	<1.7		1.7	0.47	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorononanesulfonic acid (PFNS)	<1.7		1.7	0.32	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.28	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.84	ng/L		03/14/24 05:27	03/15/24 00:31	1
Perfluorooctanesulfonamide (FOSA)	<1.7		1.7	0.85	ng/L		03/14/24 05:27	03/15/24 00:31	1
NEtFOSA	<1.7		1.7	0.75	ng/L		03/14/24 05:27	03/15/24 00:31	1
NMeFOSA	<1.7		1.7	0.37	ng/L		03/14/24 05:27	03/15/24 00:31	1
NMeFOSAA	<4.3		4.3	1.0	ng/L		03/14/24 05:27	03/15/24 00:31	1
NEtFOSAA	<4.3		4.3	1.1	ng/L		03/14/24 05:27	03/15/24 00:31	1
NMeFOSE	<3.5		3.5	1.2	ng/L		03/14/24 05:27	03/15/24 00:31	1
NEtFOSE	<1.7		1.7	0.73	ng/L		03/14/24 05:27	03/15/24 00:31	1
4:2 FTS	<1.7		1.7	0.21	ng/L		03/14/24 05:27	03/15/24 00:31	1
6:2 FTS	<4.3		4.3	2.2	ng/L		03/14/24 05:27	03/15/24 00:31	1
8:2 FTS	<1.7		1.7	0.40	ng/L		03/14/24 05:27	03/15/24 00:31	1
10:2 FTS	<1.7		1.7	0.58	ng/L		03/14/24 05:27	03/15/24 00:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.35	ng/L		03/14/24 05:27	03/15/24 00:31	1
HFPO-DA (GenX)	<3.5		3.5	1.3	ng/L		03/14/24 05:27	03/15/24 00:31	1
9Cl-PF3ONS	<1.7		1.7	0.21	ng/L		03/14/24 05:27	03/15/24 00:31	1
11Cl-PF3OUdS	<1.7		1.7	0.28	ng/L		03/14/24 05:27	03/15/24 00:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150				03/14/24 05:27	03/15/24 00:31	1
13C5 PFPeA	98		25 - 150				03/14/24 05:27	03/15/24 00:31	1
13C2 PFHxA	96		25 - 150				03/14/24 05:27	03/15/24 00:31	1
13C4 PFHpA	96		25 - 150				03/14/24 05:27	03/15/24 00:31	1
13C4 PFOA	108		25 - 150				03/14/24 05:27	03/15/24 00:31	1
13C5 PFNA	100		25 - 150				03/14/24 05:27	03/15/24 00:31	1
13C2 PFDA	101		25 - 150				03/14/24 05:27	03/15/24 00:31	1
13C2 PFUnA	89		25 - 150				03/14/24 05:27	03/15/24 00:31	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: DUP-005**

**Lab Sample ID: 500-247230-1**

**Date Collected: 03/07/24 00:00**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	83		25 - 150	03/14/24 05:27	03/15/24 00:31	1
13C2 PFTeDA	84		25 - 150	03/14/24 05:27	03/15/24 00:31	1
13C2 PFHxDA	83		25 - 150	03/14/24 05:27	03/15/24 00:31	1
13C3 PFBS	95		25 - 150	03/14/24 05:27	03/15/24 00:31	1
18O2 PFHxS	91		25 - 150	03/14/24 05:27	03/15/24 00:31	1
13C4 PFOS	94		25 - 150	03/14/24 05:27	03/15/24 00:31	1
13C8 FOSA	106		10 - 150	03/14/24 05:27	03/15/24 00:31	1
d3-NMeFOSAA	85		25 - 150	03/14/24 05:27	03/15/24 00:31	1
d5-NEtFOSAA	83		25 - 150	03/14/24 05:27	03/15/24 00:31	1
d-N-MeFOSA-M	75		10 - 150	03/14/24 05:27	03/15/24 00:31	1
d-N-EtFOSA-M	71		10 - 150	03/14/24 05:27	03/15/24 00:31	1
d7-N-MeFOSE-M	84		10 - 150	03/14/24 05:27	03/15/24 00:31	1
d9-N-EtFOSE-M	70		10 - 150	03/14/24 05:27	03/15/24 00:31	1
M2-4:2 FTS	89		25 - 150	03/14/24 05:27	03/15/24 00:31	1
M2-6:2 FTS	96		25 - 150	03/14/24 05:27	03/15/24 00:31	1
M2-8:2 FTS	102		25 - 150	03/14/24 05:27	03/15/24 00:31	1
13C3 HFPO-DA	87		25 - 150	03/14/24 05:27	03/15/24 00:31	1
13C2 10:2 FTS	81		25 - 150	03/14/24 05:27	03/15/24 00:31	1

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/11/24 08:59	03/29/24 14:23	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/11/24 08:59	03/29/24 14:23	1
Arsenic	<1.0		1.0	0.23	ug/L		03/11/24 08:59	03/29/24 14:23	1
<b>Barium</b>	<b>16</b>		2.5	0.73	ug/L		03/11/24 08:59	03/29/24 14:23	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/11/24 08:59	03/29/24 14:23	1
<b>Boron</b>	<b>260</b>		50	13	ug/L		03/11/24 08:59	03/29/24 14:23	1
Cadmium	<0.50		0.50	0.17	ug/L		03/11/24 08:59	03/29/24 14:23	1
<b>Calcium</b>	<b>68000</b>	<b>B</b>	200	44	ug/L		03/11/24 08:59	03/29/24 14:23	1
Chromium	<5.0		5.0	1.1	ug/L		03/11/24 08:59	03/29/24 14:23	1
Cobalt	<1.0		1.0	0.40	ug/L		03/11/24 08:59	03/29/24 14:23	1
Copper	<2.0		2.0	0.50	ug/L		03/11/24 08:59	04/01/24 11:28	1
<b>Iron</b>	<b>150</b>		100	47	ug/L		03/11/24 08:59	03/29/24 14:23	1
Lead	<0.50		0.50	0.19	ug/L		03/11/24 08:59	03/29/24 14:23	1
<b>Magnesium</b>	<b>54000</b>		200	49	ug/L		03/11/24 08:59	03/29/24 14:23	1
<b>Manganese</b>	<b>6.4</b>		2.5	0.79	ug/L		03/11/24 08:59	03/29/24 14:23	1
Nickel	<2.0		2.0	0.63	ug/L		03/11/24 08:59	03/29/24 14:23	1
<b>Potassium</b>	<b>5800</b>		500	110	ug/L		03/11/24 08:59	03/29/24 14:23	1
Selenium	<2.5		2.5	0.98	ug/L		03/11/24 08:59	03/29/24 14:23	1
Silver	<0.50		0.50	0.12	ug/L		03/11/24 08:59	03/29/24 14:23	1
<b>Sodium</b>	<b>46000</b>		200	77	ug/L		03/11/24 08:59	03/29/24 14:23	1
<b>Strontium</b>	<b>14000</b>		4.0	0.64	ug/L		03/11/24 08:59	03/29/24 14:23	1
Thallium	<2.0		2.0	0.57	ug/L		03/11/24 08:59	03/29/24 14:23	1
Vanadium	<5.0		5.0	2.2	ug/L		03/11/24 08:59	04/01/24 11:28	1
<b>Zinc</b>	<b>15</b>	<b>J</b>	20	6.9	ug/L		03/11/24 08:59	03/29/24 14:23	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/28/24 11:25	03/29/24 07:40	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: DUP-005**

**Lab Sample ID: 500-247230-1**

Date Collected: 03/07/24 00:00

Matrix: Water

Date Received: 03/09/24 09:40

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	390		0.91	0.46	mg/L		03/11/24 08:59	04/01/24 13:12	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide (SW846 9056A)	0.45	J ^+	1.0	0.18	mg/L			03/09/24 11:58	1
Nitrate as N (SW846 9056A)	<1.0	H3	1.0	0.043	mg/L			03/09/24 11:58	1
Chloride (SW846 9056A)	76	B	20	2.3	mg/L			03/26/24 16:21	20
Nitrite as N (SW846 9056A)	<1.0	H3	1.0	0.070	mg/L			03/09/24 11:58	1
Fluoride (SW846 9056A)	1.5		1.0	0.19	mg/L			03/09/24 11:58	1
Orthophosphate as P (SW846 9056A)	<1.0	H3	1.0	0.13	mg/L			03/09/24 11:58	1
Sulfate (SW846 9056A)	470	B	20	4.1	mg/L			03/26/24 16:21	20
Alkalinity, Total (SM 2320B)	100	B	5.0	3.7	mg/L			03/19/24 18:44	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	100	B	5.0	3.7	mg/L			03/19/24 18:44	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/19/24 18:44	1



# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: Field Blank-03-07-2024-DW**

**Lab Sample ID: 500-247230-2**

**Date Collected: 03/07/24 16:15**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.5		4.5	2.2	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8	0.44	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.52	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.23	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.77	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.24	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.28	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	0.99	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.50	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorotridecanoic acid (PFTrDA)	<1.8		1.8	1.2	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.66	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.80	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.85	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.27	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.51	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.49	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.33	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.87	ng/L		03/14/24 05:27	03/15/24 00:42	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.88	ng/L		03/14/24 05:27	03/15/24 00:42	1
NEtFOSA	<1.8		1.8	0.78	ng/L		03/14/24 05:27	03/15/24 00:42	1
NMeFOSA	<1.8		1.8	0.39	ng/L		03/14/24 05:27	03/15/24 00:42	1
NMeFOSAA	<4.5		4.5	1.1	ng/L		03/14/24 05:27	03/15/24 00:42	1
NEtFOSAA	<4.5		4.5	1.2	ng/L		03/14/24 05:27	03/15/24 00:42	1
NMeFOSE	<3.6		3.6	1.3	ng/L		03/14/24 05:27	03/15/24 00:42	1
NEtFOSE	<1.8		1.8	0.77	ng/L		03/14/24 05:27	03/15/24 00:42	1
4:2 FTS	<1.8		1.8	0.22	ng/L		03/14/24 05:27	03/15/24 00:42	1
6:2 FTS	<4.5		4.5	2.3	ng/L		03/14/24 05:27	03/15/24 00:42	1
8:2 FTS	<1.8		1.8	0.41	ng/L		03/14/24 05:27	03/15/24 00:42	1
10:2 FTS	<1.8		1.8	0.60	ng/L		03/14/24 05:27	03/15/24 00:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		03/14/24 05:27	03/15/24 00:42	1
HFPO-DA (GenX)	<3.6		3.6	1.4	ng/L		03/14/24 05:27	03/15/24 00:42	1
9Cl-PF3ONS	<1.8		1.8	0.22	ng/L		03/14/24 05:27	03/15/24 00:42	1
11Cl-PF3OUdS	<1.8		1.8	0.29	ng/L		03/14/24 05:27	03/15/24 00:42	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150				03/14/24 05:27	03/15/24 00:42	1
13C5 PFPeA	95		25 - 150				03/14/24 05:27	03/15/24 00:42	1
13C2 PFHxA	99		25 - 150				03/14/24 05:27	03/15/24 00:42	1
13C4 PFHpA	102		25 - 150				03/14/24 05:27	03/15/24 00:42	1
13C4 PFOA	108		25 - 150				03/14/24 05:27	03/15/24 00:42	1
13C5 PFNA	100		25 - 150				03/14/24 05:27	03/15/24 00:42	1
13C2 PFDA	110		25 - 150				03/14/24 05:27	03/15/24 00:42	1
13C2 PFUnA	94		25 - 150				03/14/24 05:27	03/15/24 00:42	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: Field Blank-03-07-2024-DW**

**Lab Sample ID: 500-247230-2**

**Date Collected: 03/07/24 16:15**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFDoA	88		25 - 150	03/14/24 05:27	03/15/24 00:42	1
13C2 PFTeDA	85		25 - 150	03/14/24 05:27	03/15/24 00:42	1
13C2 PFHxDA	81		25 - 150	03/14/24 05:27	03/15/24 00:42	1
13C3 PFBS	96		25 - 150	03/14/24 05:27	03/15/24 00:42	1
18O2 PFHxS	96		25 - 150	03/14/24 05:27	03/15/24 00:42	1
13C4 PFOS	101		25 - 150	03/14/24 05:27	03/15/24 00:42	1
13C8 FOSA	103		10 - 150	03/14/24 05:27	03/15/24 00:42	1
d3-NMeFOSAA	90		25 - 150	03/14/24 05:27	03/15/24 00:42	1
d5-NEtFOSAA	82		25 - 150	03/14/24 05:27	03/15/24 00:42	1
d-N-MeFOSA-M	81		10 - 150	03/14/24 05:27	03/15/24 00:42	1
d-N-EtFOSA-M	79		10 - 150	03/14/24 05:27	03/15/24 00:42	1
d7-N-MeFOSE-M	79		10 - 150	03/14/24 05:27	03/15/24 00:42	1
d9-N-EtFOSE-M	73		10 - 150	03/14/24 05:27	03/15/24 00:42	1
M2-4:2 FTS	97		25 - 150	03/14/24 05:27	03/15/24 00:42	1
M2-6:2 FTS	94		25 - 150	03/14/24 05:27	03/15/24 00:42	1
M2-8:2 FTS	109		25 - 150	03/14/24 05:27	03/15/24 00:42	1
13C3 HFPO-DA	92		25 - 150	03/14/24 05:27	03/15/24 00:42	1
13C2 10:2 FTS	86		25 - 150	03/14/24 05:27	03/15/24 00:42	1

# Client Sample Results

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: EB-005**

**Lab Sample ID: 500-247230-3**

**Date Collected: 03/07/24 16:50**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.5		4.5	2.2	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8	0.44	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.52	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.22	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.76	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.24	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.28	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	0.99	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.49	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorotridecanoic acid (PFTrDA)	<1.8		1.8	1.2	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.65	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.80	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.84	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.27	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.51	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.48	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.33	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.87	ng/L		03/14/24 05:27	03/15/24 00:52	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.88	ng/L		03/14/24 05:27	03/15/24 00:52	1
NEtFOSA	<1.8		1.8	0.78	ng/L		03/14/24 05:27	03/15/24 00:52	1
NMeFOSA	<1.8		1.8	0.39	ng/L		03/14/24 05:27	03/15/24 00:52	1
NMeFOSAA	<4.5		4.5	1.1	ng/L		03/14/24 05:27	03/15/24 00:52	1
NEtFOSAA	<4.5		4.5	1.2	ng/L		03/14/24 05:27	03/15/24 00:52	1
NMeFOSE	<3.6		3.6	1.3	ng/L		03/14/24 05:27	03/15/24 00:52	1
NEtFOSE	<1.8		1.8	0.76	ng/L		03/14/24 05:27	03/15/24 00:52	1
4:2 FTS	<1.8		1.8	0.22	ng/L		03/14/24 05:27	03/15/24 00:52	1
6:2 FTS	<4.5		4.5	2.2	ng/L		03/14/24 05:27	03/15/24 00:52	1
8:2 FTS	<1.8		1.8	0.41	ng/L		03/14/24 05:27	03/15/24 00:52	1
10:2 FTS	<1.8		1.8	0.60	ng/L		03/14/24 05:27	03/15/24 00:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		03/14/24 05:27	03/15/24 00:52	1
HFPO-DA (GenX)	<3.6		3.6	1.3	ng/L		03/14/24 05:27	03/15/24 00:52	1
9Cl-PF3ONS	<1.8		1.8	0.22	ng/L		03/14/24 05:27	03/15/24 00:52	1
11Cl-PF3OUdS	<1.8		1.8	0.29	ng/L		03/14/24 05:27	03/15/24 00:52	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	97		25 - 150				03/14/24 05:27	03/15/24 00:52	1
13C5 PFPeA	97		25 - 150				03/14/24 05:27	03/15/24 00:52	1
13C2 PFHxA	95		25 - 150				03/14/24 05:27	03/15/24 00:52	1
13C4 PFHpA	95		25 - 150				03/14/24 05:27	03/15/24 00:52	1
13C4 PFOA	103		25 - 150				03/14/24 05:27	03/15/24 00:52	1
13C5 PFNA	99		25 - 150				03/14/24 05:27	03/15/24 00:52	1
13C2 PFDA	106		25 - 150				03/14/24 05:27	03/15/24 00:52	1
13C2 PFUnA	93		25 - 150				03/14/24 05:27	03/15/24 00:52	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: EB-005**

**Lab Sample ID: 500-247230-3**

**Date Collected: 03/07/24 16:50**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFDoA	96		25 - 150	03/14/24 05:27	03/15/24 00:52	1
13C2 PFTeDA	89		25 - 150	03/14/24 05:27	03/15/24 00:52	1
13C2 PFHxDA	95		25 - 150	03/14/24 05:27	03/15/24 00:52	1
13C3 PFBS	93		25 - 150	03/14/24 05:27	03/15/24 00:52	1
18O2 PFHxS	93		25 - 150	03/14/24 05:27	03/15/24 00:52	1
13C4 PFOS	96		25 - 150	03/14/24 05:27	03/15/24 00:52	1
13C8 FOSA	108		10 - 150	03/14/24 05:27	03/15/24 00:52	1
d3-NMeFOSAA	88		25 - 150	03/14/24 05:27	03/15/24 00:52	1
d5-NEtFOSAA	92		25 - 150	03/14/24 05:27	03/15/24 00:52	1
d-N-MeFOSA-M	72		10 - 150	03/14/24 05:27	03/15/24 00:52	1
d-N-EtFOSA-M	80		10 - 150	03/14/24 05:27	03/15/24 00:52	1
d7-N-MeFOSE-M	75		10 - 150	03/14/24 05:27	03/15/24 00:52	1
d9-N-EtFOSE-M	75		10 - 150	03/14/24 05:27	03/15/24 00:52	1
M2-4:2 FTS	90		25 - 150	03/14/24 05:27	03/15/24 00:52	1
M2-6:2 FTS	98		25 - 150	03/14/24 05:27	03/15/24 00:52	1
M2-8:2 FTS	105		25 - 150	03/14/24 05:27	03/15/24 00:52	1
13C3 HFPO-DA	90		25 - 150	03/14/24 05:27	03/15/24 00:52	1
13C2 10:2 FTS	94		25 - 150	03/14/24 05:27	03/15/24 00:52	1

# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: DMW-03\_1X**

**Lab Sample ID: 500-247230-4**

Date Collected: 03/07/24 11:15

Matrix: Water

Date Received: 03/09/24 09:40

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/11/24 08:59	03/29/24 14:54	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Arsenic</b>	<b>0.43</b>	<b>J</b>	1.0	0.23	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Barium</b>	<b>16</b>		2.5	0.73	ug/L		03/11/24 08:59	03/29/24 14:54	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Boron</b>	<b>260</b>		50	13	ug/L		03/11/24 08:59	03/29/24 14:54	1
Cadmium	<0.50		0.50	0.17	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Calcium</b>	<b>74000</b>	<b>B</b>	200	44	ug/L		03/11/24 08:59	03/29/24 14:54	1
Chromium	<5.0		5.0	1.1	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Cobalt</b>	<b>0.55</b>	<b>J</b>	1.0	0.40	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Copper</b>	<b>0.73</b>	<b>J</b>	2.0	0.50	ug/L		03/11/24 08:59	04/01/24 11:45	1
<b>Iron</b>	<b>240</b>		100	47	ug/L		03/11/24 08:59	03/29/24 14:54	1
Lead	<0.50		0.50	0.19	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Magnesium</b>	<b>56000</b>		200	49	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Manganese</b>	<b>8.3</b>		2.5	0.79	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Nickel</b>	<b>1.9</b>	<b>J</b>	2.0	0.63	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Potassium</b>	<b>6000</b>		500	110	ug/L		03/11/24 08:59	03/29/24 14:54	1
Selenium	<2.5		2.5	0.98	ug/L		03/11/24 08:59	03/29/24 14:54	1
Silver	<0.50		0.50	0.12	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Sodium</b>	<b>49000</b>		200	77	ug/L		03/11/24 08:59	03/29/24 14:54	1
<b>Strontium</b>	<b>13000</b>		4.0	0.64	ug/L		03/11/24 08:59	03/29/24 14:54	1
Thallium	<2.0		2.0	0.57	ug/L		03/11/24 08:59	03/29/24 14:54	1
Vanadium	<5.0		5.0	2.2	ug/L		03/11/24 08:59	04/01/24 11:45	1
<b>Zinc</b>	<b>48</b>		20	6.9	ug/L		03/11/24 08:59	03/29/24 14:54	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/28/24 11:25	03/29/24 07:42	1

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Hardness as calcium carbonate</b>	<b>410</b>		0.91	0.46	mg/L		03/11/24 08:59	04/01/24 13:12	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.45</b>	<b>J ^+</b>	1.0	0.18	mg/L			03/09/24 11:43	1
Nitrate as N (SW846 9056A)	<1.0	H	1.0	0.043	mg/L			03/09/24 11:43	1
<b>Chloride (SW846 9056A)</b>	<b>72</b>	<b>B</b>	20	2.3	mg/L			03/26/24 16:37	20
Nitrite as N (SW846 9056A)	<1.0	H	1.0	0.070	mg/L			03/09/24 11:43	1
<b>Fluoride (SW846 9056A)</b>	<b>1.5</b>		1.0	0.19	mg/L			03/09/24 11:43	1
Orthophosphate as P (SW846 9056A)	<1.0	H	1.0	0.13	mg/L			03/09/24 11:43	1
<b>Sulfate (SW846 9056A)</b>	<b>450</b>	<b>B</b>	20	4.1	mg/L			03/26/24 16:37	20
<b>Alkalinity, Total (SM 2320B)</b>	<b>100</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 18:53	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>100</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 18:53	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/19/24 18:53	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: DMW-03\_3X**

**Lab Sample ID: 500-247230-5**

Date Collected: 03/07/24 13:42

Matrix: Water

Date Received: 03/09/24 09:40

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/11/24 08:59	03/29/24 14:57	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/11/24 08:59	03/29/24 14:57	1
Arsenic	<1.0		1.0	0.23	ug/L		03/11/24 08:59	03/29/24 14:57	1
<b>Barium</b>	<b>16</b>		2.5	0.73	ug/L		03/11/24 08:59	03/29/24 14:57	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/11/24 08:59	03/29/24 14:57	1
<b>Boron</b>	<b>270</b>		50	13	ug/L		03/11/24 08:59	03/29/24 14:57	1
Cadmium	<0.50		0.50	0.17	ug/L		03/11/24 08:59	03/29/24 14:57	1
<b>Calcium</b>	<b>69000</b>	<b>B</b>	200	44	ug/L		03/11/24 08:59	03/29/24 14:57	1
Chromium	<5.0		5.0	1.1	ug/L		03/11/24 08:59	03/29/24 14:57	1
Cobalt	<1.0		1.0	0.40	ug/L		03/11/24 08:59	03/29/24 14:57	1
<b>Copper</b>	<b>0.66</b>	<b>J</b>	2.0	0.50	ug/L		03/11/24 08:59	04/01/24 11:49	1
<b>Iron</b>	<b>130</b>		100	47	ug/L		03/11/24 08:59	03/29/24 14:57	1
Lead	<0.50		0.50	0.19	ug/L		03/11/24 08:59	03/29/24 14:57	1
<b>Magnesium</b>	<b>55000</b>		200	49	ug/L		03/11/24 08:59	03/29/24 14:57	1
<b>Manganese</b>	<b>6.5</b>		2.5	0.79	ug/L		03/11/24 08:59	03/29/24 14:57	1
Nickel	<2.0		2.0	0.63	ug/L		03/11/24 08:59	03/29/24 14:57	1
<b>Potassium</b>	<b>5800</b>		500	110	ug/L		03/11/24 08:59	03/29/24 14:57	1
Selenium	<2.5		2.5	0.98	ug/L		03/11/24 08:59	03/29/24 14:57	1
Silver	<0.50		0.50	0.12	ug/L		03/11/24 08:59	03/29/24 14:57	1
<b>Sodium</b>	<b>48000</b>		200	77	ug/L		03/11/24 08:59	03/29/24 14:57	1
<b>Strontium</b>	<b>14000</b>		4.0	0.64	ug/L		03/11/24 08:59	03/29/24 14:57	1
Thallium	<2.0		2.0	0.57	ug/L		03/11/24 08:59	03/29/24 14:57	1
Vanadium	<5.0		5.0	2.2	ug/L		03/11/24 08:59	04/01/24 11:49	1
<b>Zinc</b>	<b>73</b>		20	6.9	ug/L		03/11/24 08:59	03/29/24 14:57	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/28/24 11:25	03/29/24 07:44	1

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Hardness as calcium carbonate</b>	<b>400</b>		0.91	0.46	mg/L		03/11/24 08:59	04/01/24 13:12	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.40</b>	<b>J ^+</b>	1.0	0.18	mg/L			03/09/24 12:13	1
Nitrate as N (SW846 9056A)	<1.0		1.0	0.043	mg/L			03/09/24 12:13	1
<b>Chloride (SW846 9056A)</b>	<b>75</b>	<b>B</b>	20	2.3	mg/L			03/26/24 16:52	20
Nitrite as N (SW846 9056A)	<1.0		1.0	0.070	mg/L			03/09/24 12:13	1
<b>Fluoride (SW846 9056A)</b>	<b>1.6</b>		1.0	0.19	mg/L			03/09/24 12:13	1
Orthophosphate as P (SW846 9056A)	<1.0		1.0	0.13	mg/L			03/09/24 12:13	1
<b>Sulfate (SW846 9056A)</b>	<b>430</b>	<b>B</b>	20	4.1	mg/L			03/26/24 16:52	20
<b>Alkalinity, Total (SM 2320B)</b>	<b>100</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 19:02	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>100</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 19:02	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/19/24 19:02	1

# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: DMW-03\_5X**

**Lab Sample ID: 500-247230-6**

**Date Collected: 03/07/24 16:13**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.4		4.4	2.1	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8	0.43	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.51	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.22	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.75	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.24	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.27	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	0.97	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.48	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorotridecanoic acid (PFTrDA)	<1.8		1.8	1.1	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.64	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.78	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.83	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.26	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.50	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.48	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.33	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.28	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.85	ng/L		03/14/24 05:27	03/15/24 01:02	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.86	ng/L		03/14/24 05:27	03/15/24 01:02	1
NEtFOSA	<1.8		1.8	0.77	ng/L		03/14/24 05:27	03/15/24 01:02	1
NMeFOSA	<1.8		1.8	0.38	ng/L		03/14/24 05:27	03/15/24 01:02	1
NMeFOSAA	<4.4		4.4	1.1	ng/L		03/14/24 05:27	03/15/24 01:02	1
NEtFOSAA	<4.4		4.4	1.1	ng/L		03/14/24 05:27	03/15/24 01:02	1
NMeFOSE	<3.5		3.5	1.2	ng/L		03/14/24 05:27	03/15/24 01:02	1
NEtFOSE	<1.8		1.8	0.75	ng/L		03/14/24 05:27	03/15/24 01:02	1
4:2 FTS	<1.8		1.8	0.21	ng/L		03/14/24 05:27	03/15/24 01:02	1
6:2 FTS	<4.4		4.4	2.2	ng/L		03/14/24 05:27	03/15/24 01:02	1
8:2 FTS	<1.8		1.8	0.41	ng/L		03/14/24 05:27	03/15/24 01:02	1
10:2 FTS	<1.8		1.8	0.59	ng/L		03/14/24 05:27	03/15/24 01:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.35	ng/L		03/14/24 05:27	03/15/24 01:02	1
HFPO-DA (GenX)	<3.5		3.5	1.3	ng/L		03/14/24 05:27	03/15/24 01:02	1
9CI-PF3ONS	<1.8		1.8	0.21	ng/L		03/14/24 05:27	03/15/24 01:02	1
11CI-PF3OUdS	<1.8		1.8	0.28	ng/L		03/14/24 05:27	03/15/24 01:02	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	97		25 - 150				03/14/24 05:27	03/15/24 01:02	1
13C5 PFPeA	95		25 - 150				03/14/24 05:27	03/15/24 01:02	1
13C2 PFHxA	100		25 - 150				03/14/24 05:27	03/15/24 01:02	1
13C4 PFHpA	99		25 - 150				03/14/24 05:27	03/15/24 01:02	1
13C4 PFOA	107		25 - 150				03/14/24 05:27	03/15/24 01:02	1
13C5 PFNA	105		25 - 150				03/14/24 05:27	03/15/24 01:02	1
13C2 PFDA	103		25 - 150				03/14/24 05:27	03/15/24 01:02	1
13C2 PFUnA	92		25 - 150				03/14/24 05:27	03/15/24 01:02	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: DMW-03\_5X**

**Lab Sample ID: 500-247230-6**

**Date Collected: 03/07/24 16:13**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	87		25 - 150	03/14/24 05:27	03/15/24 01:02	1
13C2 PFTeDA	84		25 - 150	03/14/24 05:27	03/15/24 01:02	1
13C2 PFHxDA	82		25 - 150	03/14/24 05:27	03/15/24 01:02	1
13C3 PFBS	99		25 - 150	03/14/24 05:27	03/15/24 01:02	1
18O2 PFHxS	94		25 - 150	03/14/24 05:27	03/15/24 01:02	1
13C4 PFOS	94		25 - 150	03/14/24 05:27	03/15/24 01:02	1
13C8 FOSA	114		10 - 150	03/14/24 05:27	03/15/24 01:02	1
d3-NMeFOSAA	84		25 - 150	03/14/24 05:27	03/15/24 01:02	1
d5-NEtFOSAA	79		25 - 150	03/14/24 05:27	03/15/24 01:02	1
d-N-MeFOSA-M	79		10 - 150	03/14/24 05:27	03/15/24 01:02	1
d-N-EtFOSA-M	79		10 - 150	03/14/24 05:27	03/15/24 01:02	1
d7-N-MeFOSE-M	78		10 - 150	03/14/24 05:27	03/15/24 01:02	1
d9-N-EtFOSE-M	71		10 - 150	03/14/24 05:27	03/15/24 01:02	1
M2-4:2 FTS	99		25 - 150	03/14/24 05:27	03/15/24 01:02	1
M2-6:2 FTS	93		25 - 150	03/14/24 05:27	03/15/24 01:02	1
M2-8:2 FTS	101		25 - 150	03/14/24 05:27	03/15/24 01:02	1
13C3 HFPO-DA	87		25 - 150	03/14/24 05:27	03/15/24 01:02	1
13C2 10:2 FTS	79		25 - 150	03/14/24 05:27	03/15/24 01:02	1

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/11/24 08:59	03/29/24 15:00	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Arsenic</b>	<b>0.86</b>	<b>J</b>	1.0	0.23	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Barium</b>	<b>16</b>		2.5	0.73	ug/L		03/11/24 08:59	03/29/24 15:00	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Boron</b>	<b>270</b>		50	13	ug/L		03/11/24 08:59	03/29/24 15:00	1
Cadmium	<0.50		0.50	0.17	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Calcium</b>	<b>70000</b>	<b>B</b>	200	44	ug/L		03/11/24 08:59	03/29/24 15:00	1
Chromium	<5.0		5.0	1.1	ug/L		03/11/24 08:59	03/29/24 15:00	1
Cobalt	<1.0		1.0	0.40	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Copper</b>	<b>0.71</b>	<b>J</b>	2.0	0.50	ug/L		03/11/24 08:59	04/01/24 11:52	1
<b>Iron</b>	<b>230</b>		100	47	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Lead</b>	<b>0.51</b>		0.50	0.19	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Magnesium</b>	<b>56000</b>		200	49	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Manganese</b>	<b>7.8</b>		2.5	0.79	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Nickel</b>	<b>0.97</b>	<b>J</b>	2.0	0.63	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Potassium</b>	<b>5800</b>		500	110	ug/L		03/11/24 08:59	03/29/24 15:00	1
Selenium	<2.5		2.5	0.98	ug/L		03/11/24 08:59	03/29/24 15:00	1
Silver	<0.50		0.50	0.12	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Sodium</b>	<b>48000</b>		200	77	ug/L		03/11/24 08:59	03/29/24 15:00	1
<b>Strontium</b>	<b>13000</b>		4.0	0.64	ug/L		03/11/24 08:59	03/29/24 15:00	1
Thallium	<2.0		2.0	0.57	ug/L		03/11/24 08:59	03/29/24 15:00	1
Vanadium	<5.0		5.0	2.2	ug/L		03/11/24 08:59	04/01/24 11:52	1
<b>Zinc</b>	<b>120</b>		20	6.9	ug/L		03/11/24 08:59	03/29/24 15:00	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/28/24 11:25	03/29/24 07:46	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: DMW-03\_5X**

**Lab Sample ID: 500-247230-6**

Date Collected: 03/07/24 16:13

Matrix: Water

Date Received: 03/09/24 09:40

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	400		0.91	0.46	mg/L		03/11/24 08:59	04/01/24 13:12	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.43</b>	<b>J ^+</b>	1.0	0.18	mg/L			03/09/24 12:29	1
Nitrate as N (SW846 9056A)	<1.0		1.0	0.043	mg/L			03/09/24 12:29	1
<b>Chloride (SW846 9056A)</b>	<b>75</b>	<b>B</b>	20	2.3	mg/L			03/26/24 17:07	20
Nitrite as N (SW846 9056A)	<1.0		1.0	0.070	mg/L			03/09/24 12:29	1
<b>Fluoride (SW846 9056A)</b>	<b>1.7</b>		1.0	0.19	mg/L			03/09/24 12:29	1
Orthophosphate as P (SW846 9056A)	<1.0		1.0	0.13	mg/L			03/09/24 12:29	1
<b>Sulfate (SW846 9056A)</b>	<b>430</b>	<b>B</b>	20	4.1	mg/L			03/26/24 17:07	20
<b>Alkalinity, Total (SM 2320B)</b>	<b>98</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 19:20	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>98</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 19:20	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/19/24 19:20	1

# Definitions/Glossary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
^1+	Initial Calibration Verification (ICV) is outside acceptance limits, high biased.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### General Chemistry

Qualifier	Qualifier Description
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: 537 (modified) - Fluorinated Alkyl Substances

**Lab Sample ID: MB 320-746924/1-A**  
**Matrix: Water**  
**Analysis Batch: 747259**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 746924**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	1.3	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		03/14/24 05:27	03/15/24 00:01	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		03/14/24 05:27	03/15/24 00:01	1
NEtFOSA	<2.0		2.0	0.87	ng/L		03/14/24 05:27	03/15/24 00:01	1
NMeFOSA	<2.0		2.0	0.43	ng/L		03/14/24 05:27	03/15/24 00:01	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		03/14/24 05:27	03/15/24 00:01	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		03/14/24 05:27	03/15/24 00:01	1
NMeFOSE	<4.0		4.0	1.4	ng/L		03/14/24 05:27	03/15/24 00:01	1
NEtFOSE	<2.0		2.0	0.85	ng/L		03/14/24 05:27	03/15/24 00:01	1
4:2 FTS	<2.0		2.0	0.24	ng/L		03/14/24 05:27	03/15/24 00:01	1
6:2 FTS	<5.0		5.0	2.5	ng/L		03/14/24 05:27	03/15/24 00:01	1
8:2 FTS	<2.0		2.0	0.46	ng/L		03/14/24 05:27	03/15/24 00:01	1
10:2 FTS	<2.0		2.0	0.67	ng/L		03/14/24 05:27	03/15/24 00:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		03/14/24 05:27	03/15/24 00:01	1
HFPO-DA (GenX)	<4.0		4.0	1.5	ng/L		03/14/24 05:27	03/15/24 00:01	1
9Cl-PF3ONS	<2.0		2.0	0.24	ng/L		03/14/24 05:27	03/15/24 00:01	1
11Cl-PF3OUdS	<2.0		2.0	0.32	ng/L		03/14/24 05:27	03/15/24 00:01	1
Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac			
	%Recovery	Qualifier							
13C4 PFBA	88		25 - 150	03/14/24 05:27	03/15/24 00:01	1			
13C5 PFPeA	87		25 - 150	03/14/24 05:27	03/15/24 00:01	1			
13C2 PFHxA	92		25 - 150	03/14/24 05:27	03/15/24 00:01	1			
13C4 PFHpA	90		25 - 150	03/14/24 05:27	03/15/24 00:01	1			
13C4 PFOA	98		25 - 150	03/14/24 05:27	03/15/24 00:01	1			
13C5 PFNA	93		25 - 150	03/14/24 05:27	03/15/24 00:01	1			

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: MB 320-746924/1-A**  
**Matrix: Water**  
**Analysis Batch: 747259**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 746924**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFDA	99		25 - 150	03/14/24 05:27	03/15/24 00:01	1
13C2 PFUnA	85		25 - 150	03/14/24 05:27	03/15/24 00:01	1
13C2 PFDoA	87		25 - 150	03/14/24 05:27	03/15/24 00:01	1
13C2 PFTeDA	87		25 - 150	03/14/24 05:27	03/15/24 00:01	1
13C2 PFHxDA	88		25 - 150	03/14/24 05:27	03/15/24 00:01	1
13C3 PFBS	88		25 - 150	03/14/24 05:27	03/15/24 00:01	1
18O2 PFHxS	86		25 - 150	03/14/24 05:27	03/15/24 00:01	1
13C4 PFOS	89		25 - 150	03/14/24 05:27	03/15/24 00:01	1
13C8 FOSA	99		10 - 150	03/14/24 05:27	03/15/24 00:01	1
d3-NMeFOSAA	81		25 - 150	03/14/24 05:27	03/15/24 00:01	1
d5-NEtFOSAA	81		25 - 150	03/14/24 05:27	03/15/24 00:01	1
d-N-MeFOSA-M	72		10 - 150	03/14/24 05:27	03/15/24 00:01	1
d-N-EtFOSA-M	73		10 - 150	03/14/24 05:27	03/15/24 00:01	1
d7-N-MeFOSE-M	82		10 - 150	03/14/24 05:27	03/15/24 00:01	1
d9-N-EtFOSE-M	68		10 - 150	03/14/24 05:27	03/15/24 00:01	1
M2-4:2 FTS	91		25 - 150	03/14/24 05:27	03/15/24 00:01	1
M2-6:2 FTS	89		25 - 150	03/14/24 05:27	03/15/24 00:01	1
M2-8:2 FTS	96		25 - 150	03/14/24 05:27	03/15/24 00:01	1
13C3 HFPO-DA	87		25 - 150	03/14/24 05:27	03/15/24 00:01	1
13C2 10:2 FTS	82		25 - 150	03/14/24 05:27	03/15/24 00:01	1

**Lab Sample ID: LLCS 320-746924/2-A**  
**Matrix: Water**  
**Analysis Batch: 747259**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 746924**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	8.00	9.65		ng/L		121	50 - 150
Perfluorohexanoic acid (PFHxA)	8.00	9.20		ng/L		115	50 - 150
Perfluoroheptanoic acid (PFHpA)	8.00	9.52		ng/L		119	50 - 150
Perfluorooctanoic acid (PFOA)	8.00	9.19		ng/L		115	50 - 150
Perfluorononanoic acid (PFNA)	8.00	9.29		ng/L		116	50 - 150
Perfluorodecanoic acid (PFDA)	8.00	9.34		ng/L		117	50 - 150
Perfluoroundecanoic acid (PFUnA)	8.00	9.63		ng/L		120	50 - 150
Perfluorododecanoic acid (PFDoA)	8.00	9.09		ng/L		114	50 - 150
Perfluorotridecanoic acid (PFTTrDA)	8.00	7.90		ng/L		99	50 - 150
Perfluorotetradecanoic acid (PFTeA)	8.00	7.93		ng/L		99	50 - 150
Perfluoro-n-hexadecanoic acid (PFHxDA)	8.00	8.90		ng/L		111	50 - 150
Perfluoro-n-octadecanoic acid (PFODA)	8.00	6.62		ng/L		83	50 - 150
Perfluorobutanesulfonic acid (PFBS)	7.10	7.93		ng/L		112	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	7.52	8.17		ng/L		109	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	7.30	7.96		ng/L		109	50 - 150

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LLCS 320-746924/2-A**  
**Matrix: Water**  
**Analysis Batch: 747259**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 746924**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanesulfonic acid (PFHpS)	7.63	8.55		ng/L		112	50 - 150
Perfluorooctanesulfonic acid (PFOS)	7.44	7.87		ng/L		106	50 - 150
Perfluorononanesulfonic acid (PFNS)	7.70	8.29		ng/L		108	50 - 150
Perfluorodecanesulfonic acid (PFDS)	7.71	7.79		ng/L		101	50 - 150
Perfluorododecanesulfonic acid (PFDoS)	7.76	6.76		ng/L		87	50 - 150
Perfluorooctanesulfonamide (FOSA)	8.00	9.13		ng/L		114	50 - 150
NEtFOSA	8.00	7.69		ng/L		96	50 - 150
NMeFOSA	8.00	8.70		ng/L		109	50 - 150
NMeFOSAA	8.00	9.12		ng/L		114	50 - 150
NEtFOSAA	8.00	8.49		ng/L		106	50 - 150
NMeFOSE	8.00	9.77		ng/L		122	50 - 150
NEtFOSE	8.00	9.37		ng/L		117	50 - 150
4:2 FTS	7.50	8.57		ng/L		114	50 - 150
6:2 FTS	7.62	8.26		ng/L		108	50 - 150
8:2 FTS	7.68	9.53		ng/L		124	50 - 150
10:2 FTS	7.73	7.86		ng/L		102	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.57	9.00		ng/L		119	50 - 150
HFPO-DA (GenX)	8.00	9.21		ng/L		115	50 - 150
9Cl-PF3ONS	7.47	8.65		ng/L		116	50 - 150
11Cl-PF3OUdS	7.55	7.75		ng/L		103	50 - 150

Isotope Dilution	LLCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	96		25 - 150
13C5 PFPeA	91		25 - 150
13C2 PFHxA	99		25 - 150
13C4 PFHpA	99		25 - 150
13C4 PFOA	105		25 - 150
13C5 PFNA	99		25 - 150
13C2 PFDA	101		25 - 150
13C2 PFUnA	92		25 - 150
13C2 PFDoA	94		25 - 150
13C2 PFTeDA	90		25 - 150
13C2 PFHxDA	88		25 - 150
13C3 PFBS	95		25 - 150
18O2 PFHxS	92		25 - 150
13C4 PFOS	92		25 - 150
13C8 FOSA	99		10 - 150
d3-NMeFOSAA	83		25 - 150
d5-NEtFOSAA	85		25 - 150
d-N-MeFOSA-M	74		10 - 150
d-N-EtFOSA-M	72		10 - 150
d7-N-MeFOSE-M	77		10 - 150
d9-N-EtFOSE-M	68		10 - 150

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LLCS 320-746924/2-A**  
**Matrix: Water**  
**Analysis Batch: 747259**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 746924**

<i>Isotope Dilution</i>	<i>LLCS %Recovery</i>	<i>LLCS Qualifier</i>	<i>Limits</i>
M2-4:2 FTS	93		25 - 150
M2-6:2 FTS	99		25 - 150
M2-8:2 FTS	102		25 - 150
13C3 HFPO-DA	88		25 - 150
13C2 10:2 FTS	87		25 - 150

**Lab Sample ID: LLCSD 320-746924/3-A**  
**Matrix: Water**  
**Analysis Batch: 747259**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 746924**

<i>Analyte</i>	<i>Spike Added</i>	<i>LLCSD Result</i>	<i>LLCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorobutanoic acid (PFBA)	8.00	9.25		ng/L		116	50 - 150	3	30
Perfluoropentanoic acid (PFPeA)	8.00	9.97		ng/L		125	50 - 150	3	30
Perfluorohexanoic acid (PFHxA)	8.00	9.74		ng/L		122	50 - 150	6	30
Perfluoroheptanoic acid (PFHpA)	8.00	10.0		ng/L		125	50 - 150	5	30
Perfluorooctanoic acid (PFOA)	8.00	9.49		ng/L		119	50 - 150	3	30
Perfluorononanoic acid (PFNA)	8.00	9.99		ng/L		125	50 - 150	7	30
Perfluorodecanoic acid (PFDA)	8.00	9.64		ng/L		120	50 - 150	3	30
Perfluoroundecanoic acid (PFUnA)	8.00	9.68		ng/L		121	50 - 150	0.5	30
Perfluorododecanoic acid (PFDoA)	8.00	10.4		ng/L		130	50 - 150	14	30
Perfluorotridecanoic acid (PFTrDA)	8.00	8.58		ng/L		107	50 - 150	8	30
Perfluorotetradecanoic acid (PFTeA)	8.00	8.26		ng/L		103	50 - 150	4	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	8.00	9.45		ng/L		118	50 - 150	6	30
Perfluoro-n-octadecanoic acid (PFODA)	8.00	6.57		ng/L		82	50 - 150	0.7	30
Perfluorobutanesulfonic acid (PFBS)	7.10	8.60		ng/L		121	50 - 150	8	30
Perfluoropentanesulfonic acid (PFPeS)	7.52	8.65		ng/L		115	50 - 150	6	30
Perfluorohexanesulfonic acid (PFHxS)	7.30	7.76		ng/L		106	50 - 150	3	30
Perfluoroheptanesulfonic acid (PFHpS)	7.63	9.66		ng/L		127	50 - 150	12	30
Perfluorooctanesulfonic acid (PFOS)	7.44	8.70		ng/L		117	50 - 150	10	30
Perfluorononanesulfonic acid (PFNS)	7.70	8.90		ng/L		116	50 - 150	7	30
Perfluorodecanesulfonic acid (PFDS)	7.71	8.18		ng/L		106	50 - 150	5	30
Perfluorododecanesulfonic acid (PFDoS)	7.76	7.50		ng/L		97	50 - 150	10	30
Perfluorooctanesulfonamide (FOSA)	8.00	9.63		ng/L		120	50 - 150	5	30
NEtFOSA	8.00	8.44		ng/L		105	50 - 150	9	30
NMeFOSA	8.00	9.11		ng/L		114	50 - 150	5	30
NMeFOSAA	8.00	10.6		ng/L		132	50 - 150	15	30
NEtFOSAA	8.00	9.39		ng/L		117	50 - 150	10	30
NMeFOSE	8.00	10.5		ng/L		131	50 - 150	7	30

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LLCSD 320-746924/3-A  
 Matrix: Water  
 Analysis Batch: 747259

Client Sample ID: Lab Control Sample Dup  
 Prep Type: Total/NA  
 Prep Batch: 746924

Analyte	Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NETFOSE	8.00	9.71		ng/L		121	50 - 150	4	30
4:2 FTS	7.50	9.54		ng/L		127	50 - 150	11	30
6:2 FTS	7.62	10.1		ng/L		133	50 - 150	20	30
8:2 FTS	7.68	8.40		ng/L		109	50 - 150	13	30
10:2 FTS	7.73	9.08		ng/L		118	50 - 150	14	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.57	9.23		ng/L		122	50 - 150	2	30
HFPO-DA (GenX)	8.00	9.41		ng/L		118	50 - 150	2	30
9CI-PF3ONS	7.47	9.28		ng/L		124	50 - 150	7	30
11CI-PF3OUdS	7.55	8.99		ng/L		119	50 - 150	15	30

Isotope Dilution	LLCSD %Recovery	LLCSD Qualifier	LLCSD Limits
13C4 PFBA	97		25 - 150
13C5 PFPeA	93		25 - 150
13C2 PFHxA	96		25 - 150
13C4 PFHpA	96		25 - 150
13C4 PFOA	104		25 - 150
13C5 PFNA	95		25 - 150
13C2 PFDA	102		25 - 150
13C2 PFUnA	94		25 - 150
13C2 PFDoA	95		25 - 150
13C2 PFTeDA	85		25 - 150
13C2 PFHxDA	86		25 - 150
13C3 PFBS	93		25 - 150
18O2 PFHxS	93		25 - 150
13C4 PFOS	89		25 - 150
13C8 FOSA	103		10 - 150
d3-NMeFOSAA	84		25 - 150
d5-NEtFOSAA	84		25 - 150
d-N-MeFOSA-M	75		10 - 150
d-N-EtFOSA-M	76		10 - 150
d7-N-MeFOSE-M	78		10 - 150
d9-N-EtFOSE-M	70		10 - 150
M2-4:2 FTS	93		25 - 150
M2-6:2 FTS	88		25 - 150
M2-8:2 FTS	104		25 - 150
13C3 HFPO-DA	87		25 - 150
13C2 10:2 FTS	87		25 - 150

## Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 500-757637/1-A  
 Matrix: Water  
 Analysis Batch: 760859

Client Sample ID: Method Blank  
 Prep Type: Total Recoverable  
 Prep Batch: 757637

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/11/24 08:59	03/29/24 14:16	1
Antimony	<3.0	^1+	3.0	1.3	ug/L		03/11/24 08:59	03/29/24 14:16	1
Arsenic	<1.0		1.0	0.23	ug/L		03/11/24 08:59	03/29/24 14:16	1

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: 6020B - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 500-757637/1-A**  
**Matrix: Water**  
**Analysis Batch: 760859**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757637**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Barium	<2.5		2.5	0.73	ug/L		03/11/24 08:59	03/29/24 14:16	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/11/24 08:59	03/29/24 14:16	1
Boron	<50		50	13	ug/L		03/11/24 08:59	03/29/24 14:16	1
Cadmium	<0.50		0.50	0.17	ug/L		03/11/24 08:59	03/29/24 14:16	1
Calcium	52.8	J	200	44	ug/L		03/11/24 08:59	03/29/24 14:16	1
Chromium	<5.0		5.0	1.1	ug/L		03/11/24 08:59	03/29/24 14:16	1
Cobalt	<1.0		1.0	0.40	ug/L		03/11/24 08:59	03/29/24 14:16	1
Iron	<100		100	47	ug/L		03/11/24 08:59	03/29/24 14:16	1
Lead	<0.50		0.50	0.19	ug/L		03/11/24 08:59	03/29/24 14:16	1
Magnesium	<200		200	49	ug/L		03/11/24 08:59	03/29/24 14:16	1
Manganese	<2.5		2.5	0.79	ug/L		03/11/24 08:59	03/29/24 14:16	1
Nickel	<2.0		2.0	0.63	ug/L		03/11/24 08:59	03/29/24 14:16	1
Potassium	<500		500	110	ug/L		03/11/24 08:59	03/29/24 14:16	1
Selenium	<2.5		2.5	0.98	ug/L		03/11/24 08:59	03/29/24 14:16	1
Silver	<0.50		0.50	0.12	ug/L		03/11/24 08:59	03/29/24 14:16	1
Sodium	<200		200	77	ug/L		03/11/24 08:59	03/29/24 14:16	1
Strontium	<4.0		4.0	0.64	ug/L		03/11/24 08:59	03/29/24 14:16	1
Thallium	<2.0		2.0	0.57	ug/L		03/11/24 08:59	03/29/24 14:16	1
Zinc	<20		20	6.9	ug/L		03/11/24 08:59	03/29/24 14:16	1

**Lab Sample ID: MB 500-757637/1-A**  
**Matrix: Water**  
**Analysis Batch: 760928**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757637**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Copper	<2.0		2.0	0.50	ug/L		03/11/24 08:59	04/01/24 11:21	1
Vanadium	<5.0		5.0	2.2	ug/L		03/11/24 08:59	04/01/24 11:21	1

**Lab Sample ID: LCS 500-757637/2-A**  
**Matrix: Water**  
**Analysis Batch: 760859**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757637**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec	
							Limits	
Aluminum	2000	1930		ug/L		96	80 - 120	
Antimony	500	530	^1+	ug/L		106	80 - 120	
Arsenic	100	97.4		ug/L		97	80 - 120	
Barium	500	471		ug/L		94	80 - 120	
Beryllium	50.0	55.0	^1+	ug/L		110	80 - 120	
Boron	1000	1090		ug/L		109	80 - 120	
Cadmium	50.0	49.6		ug/L		99	80 - 120	
Calcium	10000	10200		ug/L		102	80 - 120	
Chromium	200	197		ug/L		99	80 - 120	
Cobalt	500	497		ug/L		99	80 - 120	
Iron	1000	1020		ug/L		102	80 - 120	
Lead	100	97.4		ug/L		97	80 - 120	
Magnesium	10000	10100		ug/L		101	80 - 120	
Manganese	500	497		ug/L		99	80 - 120	
Nickel	500	510		ug/L		102	80 - 120	
Potassium	10000	9570		ug/L		96	80 - 120	

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: 6020B - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCS 500-757637/2-A**  
**Matrix: Water**  
**Analysis Batch: 760859**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757637**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Selenium	100	99.6		ug/L		100	80 - 120
Silver	50.0	49.4		ug/L		99	80 - 120
Sodium	10000	9640		ug/L		96	80 - 120
Strontium	1000	927		ug/L		93	80 - 120
Thallium	100	98.2		ug/L		98	80 - 120
Zinc	500	517		ug/L		103	80 - 120

**Lab Sample ID: LCS 500-757637/2-A**  
**Matrix: Water**  
**Analysis Batch: 760928**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757637**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	250	247		ug/L		99	80 - 120
Vanadium	500	499		ug/L		100	80 - 120

**Lab Sample ID: 500-247230-1 MS**  
**Matrix: Water**  
**Analysis Batch: 760859**

**Client Sample ID: DUP-005**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757637**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	<100		2000	1820		ug/L		91	75 - 125
Antimony	<3.0	^1+	500	490	^1+	ug/L		98	75 - 125
Arsenic	<1.0		100	88.7		ug/L		89	75 - 125
Barium	16		500	456		ug/L		88	75 - 125
Beryllium	<1.0	^1+	50.0	46.6	^1+	ug/L		93	75 - 125
Boron	260		1000	1280		ug/L		103	75 - 125
Cadmium	<0.50		50.0	44.7		ug/L		89	75 - 125
Calcium	68000	B	10000	77900	4	ug/L		102	75 - 125
Chromium	<5.0		200	187		ug/L		94	75 - 125
Cobalt	<1.0		500	438		ug/L		88	75 - 125
Iron	150		1000	1040		ug/L		90	75 - 125
Lead	<0.50		100	92.4		ug/L		92	75 - 125
Magnesium	54000		10000	63800	4	ug/L		100	75 - 125
Manganese	6.4		500	461		ug/L		91	75 - 125
Nickel	<2.0		500	454		ug/L		91	75 - 125
Potassium	5800		10000	14800		ug/L		90	75 - 125
Selenium	<2.5		100	91.0		ug/L		91	75 - 125
Silver	<0.50		50.0	44.4		ug/L		89	75 - 125
Sodium	46000		10000	56500	4	ug/L		102	75 - 125
Strontium	14000		1000	14500	4	ug/L		77	75 - 125
Thallium	<2.0		100	91.4		ug/L		91	75 - 125
Zinc	15	J	500	469		ug/L		91	75 - 125

**Lab Sample ID: 500-247230-1 MS**  
**Matrix: Water**  
**Analysis Batch: 760928**

**Client Sample ID: DUP-005**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757637**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	<2.0		250	230		ug/L		92	75 - 125

Eurofins Chicago

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: 6020B - Metals (ICP/MS) (Continued)

**Lab Sample ID: 500-247230-1 MS**  
**Matrix: Water**  
**Analysis Batch: 760928**

**Client Sample ID: DUP-005**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757637**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Vanadium	<5.0		500	471		ug/L		94	75 - 125

**Lab Sample ID: 500-247230-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 760859**

**Client Sample ID: DUP-005**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757637**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	<100		2000	1870		ug/L		93	75 - 125	3	20
Antimony	<3.0	^1+	500	505	^1+	ug/L		101	75 - 125	3	20
Arsenic	<1.0		100	93.8		ug/L		94	75 - 125	6	20
Barium	16		500	472		ug/L		91	75 - 125	4	20
Beryllium	<1.0	^1+	50.0	57.2	^1+	ug/L		114	75 - 125	20	20
Boron	260		1000	1350		ug/L		110	75 - 125	5	20
Cadmium	<0.50		50.0	46.7		ug/L		93	75 - 125	4	20
Calcium	68000	B	10000	73900	4	ug/L		62	75 - 125	5	20
Chromium	<5.0		200	193		ug/L		96	75 - 125	3	20
Cobalt	<1.0		500	469		ug/L		94	75 - 125	7	20
Iron	150		1000	1100		ug/L		95	75 - 125	5	20
Lead	<0.50		100	96.2		ug/L		96	75 - 125	4	20
Magnesium	54000		10000	61700	4	ug/L		79	75 - 125	3	20
Manganese	6.4		500	485		ug/L		96	75 - 125	5	20
Nickel	<2.0		500	472		ug/L		94	75 - 125	4	20
Potassium	5800		10000	14700		ug/L		89	75 - 125	1	20
Selenium	<2.5		100	96.2		ug/L		96	75 - 125	6	20
Silver	<0.50		50.0	46.1		ug/L		92	75 - 125	4	20
Sodium	46000		10000	55900	4	ug/L		95	75 - 125	1	20
Strontium	14000		1000	13900	4	ug/L		24	75 - 125	4	20
Thallium	<2.0		100	95.5		ug/L		96	75 - 125	4	20
Zinc	15	J	500	492		ug/L		95	75 - 125	5	20

**Lab Sample ID: 500-247230-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 760928**

**Client Sample ID: DUP-005**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757637**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	<2.0		250	240		ug/L		96	75 - 125	4	20
Vanadium	<5.0		500	480		ug/L		96	75 - 125	2	20

**Lab Sample ID: 500-247230-1 DU**  
**Matrix: Water**  
**Analysis Batch: 760859**

**Client Sample ID: DUP-005**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757637**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	<100		<100		ug/L		NC	20
Antimony	<3.0	^1+	<3.0	^1+	ug/L		NC	20
Arsenic	<1.0		<1.0		ug/L		NC	20
Barium	16		15.9		ug/L		1	20
Beryllium	<1.0	^1+	<1.0	^1+	ug/L		NC	20
Boron	260		265		ug/L		3	20

Eurofins Chicago

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 500-247230-1 DU  
 Matrix: Water  
 Analysis Batch: 760859

Client Sample ID: DUP-005  
 Prep Type: Total Recoverable  
 Prep Batch: 757637

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Cadmium	<0.50		<0.50		ug/L		NC	20
Calcium	68000	B	72500		ug/L		7	20
Chromium	<5.0		<5.0		ug/L		NC	20
Cobalt	<1.0		<1.0		ug/L		NC	20
Iron	150		140		ug/L		4	20
Lead	<0.50		<0.50		ug/L		NC	20
Magnesium	54000		55700		ug/L		3	20
Manganese	6.4		6.22		ug/L		2	20
Nickel	<2.0		<2.0		ug/L		NC	20
Potassium	5800		5920		ug/L		2	20
Selenium	<2.5		<2.5		ug/L		NC	20
Silver	<0.50		<0.50		ug/L		NC	20
Sodium	46000		48400		ug/L		4	20
Strontium	14000		13500		ug/L		1	20
Thallium	<2.0		<2.0		ug/L		NC	20
Zinc	15	J	14.7	J	ug/L		3	20

Lab Sample ID: 500-247230-1 DU  
 Matrix: Water  
 Analysis Batch: 760928

Client Sample ID: DUP-005  
 Prep Type: Total Recoverable  
 Prep Batch: 757637

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Copper	<2.0		<2.0		ug/L		NC	20
Vanadium	<5.0		<5.0		ug/L		NC	20

## Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 500-760414/12-A  
 Matrix: Water  
 Analysis Batch: 760641

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 760414

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	<0.20		0.20	0.079	ug/L		03/28/24 11:25	03/29/24 07:04	1

Lab Sample ID: LCS 500-760414/13-A  
 Matrix: Water  
 Analysis Batch: 760641

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 760414

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits

## Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 500-757496/3  
 Matrix: Water  
 Analysis Batch: 757496

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Bromide	<1.0	^+	1.0	0.18	mg/L			03/09/24 11:13	1
Chloride	<1.0		1.0	0.12	mg/L			03/09/24 11:13	1

Eurofins Chicago

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: 9056A - Anions, Ion Chromatography (Continued)

**Lab Sample ID: MB 500-757496/3**  
**Matrix: Water**  
**Analysis Batch: 757496**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<1.0		1.0	0.19	mg/L			03/09/24 11:13	1
Sulfate	<1.0		1.0	0.21	mg/L			03/09/24 11:13	1

**Lab Sample ID: LCS 500-757496/4**  
**Matrix: Water**  
**Analysis Batch: 757496**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromide	20.0	20.7	^+	mg/L		103	80 - 120
Chloride	20.0	22.1		mg/L		110	80 - 120
Fluoride	20.0	20.8		mg/L		104	80 - 120
Sulfate	20.0	22.0		mg/L		110	80 - 120

**Lab Sample ID: MB 500-757497/3**  
**Matrix: Water**  
**Analysis Batch: 757497**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<1.0		1.0	0.043	mg/L			03/09/24 11:13	1
Nitrite as N	<1.0		1.0	0.070	mg/L			03/09/24 11:13	1
Orthophosphate as P	<1.0		1.0	0.13	mg/L			03/09/24 11:13	1

**Lab Sample ID: LCS 500-757497/4**  
**Matrix: Water**  
**Analysis Batch: 757497**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	20.0	21.5		mg/L		108	80 - 120
Nitrite as N	20.0	21.5		mg/L		107	80 - 120
Orthophosphate as P	20.0	21.0		mg/L		105	80 - 120

**Lab Sample ID: MB 500-760013/3**  
**Matrix: Water**  
**Analysis Batch: 760013**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.216	J	1.0	0.12	mg/L			03/26/24 12:04	1
Sulfate	0.731	J	1.0	0.21	mg/L			03/26/24 12:04	1

**Lab Sample ID: LCS 500-760013/4**  
**Matrix: Water**  
**Analysis Batch: 760013**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	20.0	20.7		mg/L		104	80 - 120
Sulfate	20.0	20.4		mg/L		102	80 - 120

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: SM 2320B - Alkalinity

**Lab Sample ID: MB 500-759131/28**  
**Matrix: Water**  
**Analysis Batch: 759131**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Total	8.23		5.0	3.7	mg/L			03/19/24 20:44	1
Bicarbonate Alkalinity as CaCO3	8.23		5.0	3.7	mg/L			03/19/24 20:44	1
Carbonate Alkalinity as CaCO3	<5.0		5.0	3.7	mg/L			03/19/24 20:44	1

**Lab Sample ID: LCS 500-759131/4**  
**Matrix: Water**  
**Analysis Batch: 759131**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity, Total	100	115		mg/L		115	95 - 121

**Lab Sample ID: 500-247230-5 DU**  
**Matrix: Water**  
**Analysis Batch: 759131**

**Client Sample ID: DMW-03\_3X**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity, Total	100	B	100		mg/L		0.2	20
Bicarbonate Alkalinity as CaCO3	100	B	100		mg/L		0.2	20
Carbonate Alkalinity as CaCO3	<5.0		<5.0		mg/L		NC	20

# Lab Chronicle

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: DUP-005**

**Lab Sample ID: 500-247230-1**

**Date Collected: 03/07/24 00:00**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			746924	HJA	EET SAC	03/14/24 05:27
Total/NA	Analysis	537 (modified)		1	747259	P1P	EET SAC	03/15/24 00:31
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760859	RN	EET CHI	03/29/24 14:23
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760928	RN	EET CHI	04/01/24 11:28
Total/NA	Prep	7470A			760414	MJG	EET CHI	03/28/24 11:25 - 03/28/24 13:25 <sup>1</sup>
Total/NA	Analysis	7470A		1	760641	MJG	EET CHI	03/29/24 07:40
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	760900	RN	EET CHI	04/01/24 13:12
Total/NA	Analysis	9056A		1	757496	W1T	EET CHI	03/09/24 11:58
Total/NA	Analysis	9056A		1	757497	NMB	EET CHI	03/09/24 11:58
Total/NA	Analysis	9056A		20	760013	NMB	EET CHI	03/26/24 16:21
Total/NA	Analysis	SM 2320B		1	759131	SO	EET CHI	03/19/24 18:44

**Client Sample ID: Field Blank-03-07-2024-DW**

**Lab Sample ID: 500-247230-2**

**Date Collected: 03/07/24 16:15**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			746924	HJA	EET SAC	03/14/24 05:27
Total/NA	Analysis	537 (modified)		1	747259	P1P	EET SAC	03/15/24 00:42

**Client Sample ID: EB-005**

**Lab Sample ID: 500-247230-3**

**Date Collected: 03/07/24 16:50**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			746924	HJA	EET SAC	03/14/24 05:27
Total/NA	Analysis	537 (modified)		1	747259	P1P	EET SAC	03/15/24 00:52

**Client Sample ID: DMW-03\_1X**

**Lab Sample ID: 500-247230-4**

**Date Collected: 03/07/24 11:15**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760859	RN	EET CHI	03/29/24 14:54
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760928	RN	EET CHI	04/01/24 11:45
Total/NA	Prep	7470A			760414	MJG	EET CHI	03/28/24 11:25 - 03/28/24 13:25 <sup>1</sup>
Total/NA	Analysis	7470A		1	760641	MJG	EET CHI	03/29/24 07:42
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	760900	RN	EET CHI	04/01/24 13:12
Total/NA	Analysis	9056A		1	757496	W1T	EET CHI	03/09/24 11:43

Eurofins Chicago

# Lab Chronicle

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Client Sample ID: DMW-03\_1X**

**Lab Sample ID: 500-247230-4**

**Date Collected: 03/07/24 11:15**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	757497	NMB	EET CHI	03/09/24 11:43
Total/NA	Analysis	9056A		20	760013	NMB	EET CHI	03/26/24 16:37
Total/NA	Analysis	SM 2320B		1	759131	SO	EET CHI	03/19/24 18:53

**Client Sample ID: DMW-03\_3X**

**Lab Sample ID: 500-247230-5**

**Date Collected: 03/07/24 13:42**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760859	RN	EET CHI	03/29/24 14:57
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760928	RN	EET CHI	04/01/24 11:49
Total/NA	Prep	7470A			760414	MJG	EET CHI	03/28/24 11:25 - 03/28/24 13:25 <sup>1</sup>
Total/NA	Analysis	7470A		1	760641	MJG	EET CHI	03/29/24 07:44
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	760900	RN	EET CHI	04/01/24 13:12
Total/NA	Analysis	9056A		1	757496	W1T	EET CHI	03/09/24 12:13
Total/NA	Analysis	9056A		1	757497	NMB	EET CHI	03/09/24 12:13
Total/NA	Analysis	9056A		20	760013	NMB	EET CHI	03/26/24 16:52
Total/NA	Analysis	SM 2320B		1	759131	SO	EET CHI	03/19/24 19:02

**Client Sample ID: DMW-03\_5X**

**Lab Sample ID: 500-247230-6**

**Date Collected: 03/07/24 16:13**

**Matrix: Water**

**Date Received: 03/09/24 09:40**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			746924	HJA	EET SAC	03/14/24 05:27
Total/NA	Analysis	537 (modified)		1	747259	P1P	EET SAC	03/15/24 01:02
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760859	RN	EET CHI	03/29/24 15:00
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	760928	RN	EET CHI	04/01/24 11:52
Total/NA	Prep	7470A			760414	MJG	EET CHI	03/28/24 11:25 - 03/28/24 13:25 <sup>1</sup>
Total/NA	Analysis	7470A		1	760641	MJG	EET CHI	03/29/24 07:46
Total Recoverable	Prep	3005A			757637	BDE	EET CHI	03/11/24 08:59 - 03/11/24 14:59 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	760900	RN	EET CHI	04/01/24 13:12
Total/NA	Analysis	9056A		1	757496	W1T	EET CHI	03/09/24 12:29
Total/NA	Analysis	9056A		1	757497	NMB	EET CHI	03/09/24 12:29
Total/NA	Analysis	9056A		20	760013	NMB	EET CHI	03/26/24 17:07
Total/NA	Analysis	SM 2320B		1	759131	SO	EET CHI	03/19/24 19:20

<sup>1</sup> This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

# Lab Chronicle

Client: Arcadis U.S., Inc.

Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

**Laboratory References:**

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Accreditation/Certification Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Laboratory: Eurofins Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-24

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-24

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

# Chain of Custody Record

Tracking #  
7044 8941 9709

eurofins

Environment  
to Air

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica



500-247230 COC

**Client Contact**  
Arcadis U S , Inc  
126 North Jefferson Street, Suite 400  
Milwaukee, WI 53202  
Phone  
FAX  
Project Name Marinette, WI  
Site Marinette, WI  
P O # 30168807-29-30168809 1.4.1

Regulatory Program:  DW  NPDES  RCRA  Other

**Project Manager: Lisa Rutkowski**  
Email: N/A  
Tel/Fax: N/A  
**Analysis Turnaround Time**  
 CALENDAR DAYS  WORKING DAYS  
TAT if different from Below: **STANDARD**  
 2 weeks  
 1 week  
 2 days  
 1 day

**Site Contact:**  
Lab Contact: Sandie Fredrick  
Date: 3/7/24  
Carrier: FedEx

**COC No**  
1 of 1 COCs

**Sampler**  
For Lab Use Only:  
Walk-in Client  
Lab Sampling

**Lab Project Number**  
50020194 50021668

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 Modified (36 Compounds)	Rad 226 903	Rad 228 904	TAL Metals 6020A / 7470A	Hardness SM234B	Sulfur 6010D	Total Sulfide SM4500	Anions 9056A	Uranium 6020B	Alkalinity 2320B
<del>WS R</del>			G	W		N											
<del>WS-R POST</del>			G	W		N											
DUP- 005	3/7/24		G	W	5	N	N	X			X	X			X	X	
Field Blank- 03-07-2024 -DW	3/7/24	1015	G	W	2	N	N	X			X						
EB-005	3/7/24	1050	G	W	2	N	N	X									
DMW-03-1X	3/7/24	1115	G	W	3	N	N				X	X		X	X		
DMW-03-3X	3/7/24	1342	G	W	3	N	N				X	X		X	X		
DMW-03-5X	3/7/24	1013	G	W	5	N	N	X			X	X		X	X		

Sample Specific Notes  
500-247230  
Duplicate  
Field Blank  
Equipment Blank

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other - Zn Acetate/NaOH; 7=None

7 4 4 4 4 4 6 7 4 7

**Possible Hazard Identification:**  
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Special Instructions/QC Requirements & Comments:**  
Level 4, Questions call L. Rutkowski  
TAT: Standard

Custody Seals Intact. <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No	Cooler Temp (°C) Obs'd	Corr'd	Therm ID No
Relinquished by <i>[Signature]</i>	Company, Arcadis 3/8/24 1030	Date/Time 3/8/24 1030	Received by	Company
Relinquished by	Company	Date/Time	Received by	Company
Relinquished by	Company	Date/Time	Received in Laboratory by <i>[Signature]</i>	Company <i>[Signature]</i> Date/Time 3/9/24 0940



500-247230 Waybi

ORIGIN ID:RRLA (262) 202-5955  
ATTENTION: ARCALIS (DEEP WELL)  
JCI  
2700 INDUSTRIAL PARKWAY  
BUILDING 112-RECEIVING STATION 5  
MARINETTE, WI 54143  
UNITED STATES US

SHIP DATE 05OCT23  
ACTWGT. 25 00 LB MAN  
CAD. 0269688/CAFE3753

TO **SAMPLE RECIEPT**  
**EUROFINS CHICAGO**  
**2417 BOND STREET**

**UNIVERSITY PARK IL 60484**

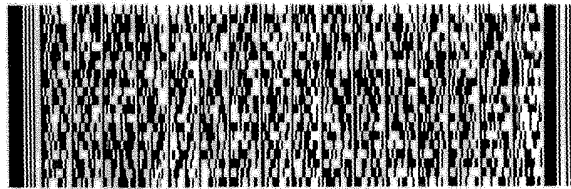
(700) 534-5200

REF:

INVT:  
PO:

DEPT:

RMA. ||| ||| |||



**FedEx**  
Express



J233023051201 IN

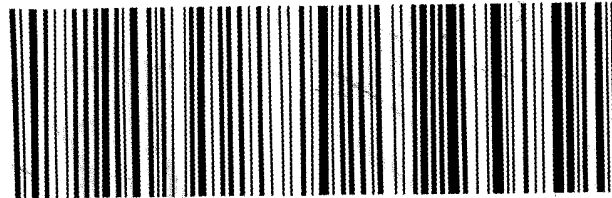


TRK# 7044 8941 9709  
0221

**SATURDAY 12:00P**  
**PRIORITY OVERNIGHT**

**X0 JOTA**

**60484**  
IL-US  
**ORD**



3602251 08Mar2024 GRBA 581G2/B538/C088

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# Login Sample Receipt Checklist

Client: Arcadis U.S., Inc.

Job Number: 500-247230-1

**Login Number: 247230**

**List Number: 1**

**Creator: Scott, Sherri L**

**List Source: Eurofins Chicago**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are 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 is acceptable.	True	
Cooler Temperature is recorded.	True	0.8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Login Sample Receipt Checklist

Client: Arcadis U.S., Inc.

Job Number: 500-247230-1

**Login Number: 247230**

**List Number: 2**

**Creator: Simmons, Jason C**

**List Source: Eurofins Sacramento**

**List Creation: 03/13/24 04:27 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2370600
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.4c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Isotope Dilution Summary

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30219428.1.4.1

Job ID: 500-247230-1

## Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-247230-1	DUP-005	99	98	96	96	108	100	101	89
500-247230-2	Field Blank-03-07-2024-DW	99	95	99	102	108	100	110	94
500-247230-3	EB-005	97	97	95	95	103	99	106	93
500-247230-6	DMW-03_5X	97	95	100	99	107	105	103	92
LLCS 320-746924/2-A	Lab Control Sample	96	91	99	99	105	99	101	92
LLCSD 320-746924/3-A	Lab Control Sample Dup	97	93	96	96	104	95	102	94
MB 320-746924/1-A	Method Blank	88	87	92	90	98	93	99	85

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-247230-1	DUP-005	83	84	83	95	91	94	106	85
500-247230-2	Field Blank-03-07-2024-DW	88	85	81	96	96	101	103	90
500-247230-3	EB-005	96	89	95	93	93	96	108	88
500-247230-6	DMW-03_5X	87	84	82	99	94	94	114	84
LLCS 320-746924/2-A	Lab Control Sample	94	90	88	95	92	92	99	83
LLCSD 320-746924/3-A	Lab Control Sample Dup	95	85	86	93	93	89	103	84
MB 320-746924/1-A	Method Blank	87	87	88	88	86	89	99	81

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-247230-1	DUP-005	83	75	71	84	70	89	96	102
500-247230-2	Field Blank-03-07-2024-DW	82	81	79	79	73	97	94	109
500-247230-3	EB-005	92	72	80	75	75	90	98	105
500-247230-6	DMW-03_5X	79	79	79	78	71	99	93	101
LLCS 320-746924/2-A	Lab Control Sample	85	74	72	77	68	93	99	102
LLCSD 320-746924/3-A	Lab Control Sample Dup	84	75	76	78	70	93	88	104
MB 320-746924/1-A	Method Blank	81	72	73	82	68	91	89	96

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-247230-1	DUP-005	87	81
500-247230-2	Field Blank-03-07-2024-DW	92	86
500-247230-3	EB-005	90	94
500-247230-6	DMW-03_5X	87	79
LLCS 320-746924/2-A	Lab Control Sample	88	87
LLCSD 320-746924/3-A	Lab Control Sample Dup	87	87
MB 320-746924/1-A	Method Blank	87	82

### Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA

# Isotope Dilution Summary

Client: Arcadis U.S., Inc.

Job ID: 500-247230-1

Project/Site: Marinette, WI Deep Well 30219428.1.4.1

PFHxDA = 13C2 PFHxDA  
C3PFBS = 13C3 PFBS  
PFHxS = 18O2 PFHxS  
PFOS = 13C4 PFOS  
PFOSA = 13C8 FOSA  
d3NMFOS = d3-NMeFOSAA  
d5NEFOS = d5-NEtFOSAA  
dMeFOSA = d-N-MeFOSA-M  
dEtFOSA = d-N-EtFOSA-M  
NMFm = d7-N-MeFOSE-M  
NEFM = d9-N-EtFOSE-M  
M242FTS = M2-4:2 FTS  
M262FTS = M2-6:2 FTS  
M282FTS = M2-8:2 FTS  
HFPODA = 13C3 HFPO-DA  
M102FTS = 13C2 10:2 FTS

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# ANALYTICAL REPORT

## PREPARED FOR

Attn: Lisa Rutkowski  
Arcadis U.S., Inc.  
126 North Jefferson Street  
Suite 400  
Milwaukee, Wisconsin 53202

Generated 3/28/2024 3:24:02 PM

## JOB DESCRIPTION

Marinette, WI Deep Well 30168809.1.4.1

## JOB NUMBER

500-247084-1

# Eurofins Chicago

## Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

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

## Compliance Statement

The LOD and LOQ reported are adjusted by the dilution factor when a dilution factor greater than 1 is needed. Additionally, where results are indicated as being reported on a dry weight basis, the LOD and LOQ are adjusted for moisture content as well.

### Definitions of Limits

- LOD = Limit of Detection = MDL as defined by 40 CFR part 136 Appendix B
- LOQ = Limit of Quantitation = 3.33 x LOD as defined by Wisconsin
- RL = Report Limit = a concentration supported by a standard in the calibration curves

## Authorization



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Authorized for release by  
Jodie Bracken, Project Manager I  
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# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Case Narrative . . . . .	4
Method Summary . . . . .	5
Sample Summary . . . . .	6
Client Sample Results . . . . .	7
Definitions . . . . .	14
QC Sample Results . . . . .	15
Chronicle . . . . .	24
Certification Summary . . . . .	26
Chain of Custody . . . . .	27
Receipt Checklists . . . . .	30
Field Data Sheets . . . . .	32
Isotope Dilution Summary . . . . .	33

# Case Narrative

Client: Arcadis U.S., Inc.  
Project: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

**Job ID: 500-247084-1**

**Eurofins Chicago**

## Job Narrative 500-247084-1

### Receipt

The samples were received on 3/7/2024 9:55 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 was 2.9° C.

### Receipt Exceptions

The following sample(s) was received outside of holding time: for 9056- N2,N3, and OP04. Sampled 3/5 0905 received 3/7 0955.

The following samples were received at the laboratory outside the required temperature criteria: 500-247084-1 and 500-247084-4. Samples 1 & 4, samples received in Sacramento (two 250mL unpreserved containers A & B) were received out of temp at 11.6C. Only water in cooler indicates ice melted. FedEx tag has delivery for FRI - 08 MAR but were received on 3/11/24.

### Metals

Method 6020B: The method blank for preparation batch 500-757635 and analytical batch 500-758908 contained Sodium above the reporting limit (RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

Method 6020B: The initial low level calibration verification (ICVL) result for 759098 was above the upper control limit. The affected analytes are: Be. Sample results were non-detects, and have been reported as qualified data.

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

### LCMS

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

### General Chemistry

Method 9056A: The continuing calibration verification (CCV) associated with batch 500-757329 recovered above the upper control limit for Bromide. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 500-247084-2, 500-247084-3, 500-247084-4, CCV 500-757329/1 and CCV 500-757329/13.

Method 9056A: The following sample was received outside of holding time: 500-247084-2.

Method SM 2320B: The method blank for analytical batch 500-759131 contained Alkalinity above the reporting limit (RL). Associated sample(s) were not re-analyzed because results were greater than 10X the value found in the method blank.

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

### Organic Prep

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

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# Method Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
6020B	Metals (ICP/MS)	SW846	EET CHI
7470A	Mercury (CVAA)	SW846	EET CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	EET CHI
9056A	Anions, Ion Chromatography	SW846	EET CHI
SM 2320B	Alkalinity	SM	EET CHI
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET CHI
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC
7470A	Preparation, Mercury	SW846	EET CHI

#### Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Sample Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-247084-1	Field Blank-03-06-2024-DW	Water	03/06/24 13:30	03/07/24 09:55
500-247084-2	DMW-04_1X	Water	03/05/24 09:05	03/07/24 09:55
500-247084-3	DMW-04_2X	Water	03/05/24 17:30	03/07/24 09:55
500-247084-4	DMW-04_3X	Water	03/06/24 13:20	03/07/24 09:55

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

**Client Sample ID: Field Blank-03-06-2024-DW**

**Lab Sample ID: 500-247084-1**

**Date Collected: 03/06/24 13:30**

**Matrix: Water**

**Date Received: 03/07/24 09:55**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.6		4.6	2.2	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8	0.45	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.53	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.23	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.78	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.25	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.28	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	1.0	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.51	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorotridecanoic acid (PFTrDA)	<1.8		1.8	1.2	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.67	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.82	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.86	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.28	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.52	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.50	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.34	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.89	ng/L		03/12/24 08:02	03/15/24 12:14	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.90	ng/L		03/12/24 08:02	03/15/24 12:14	1
NEtFOSA	<1.8		1.8	0.80	ng/L		03/12/24 08:02	03/15/24 12:14	1
NMeFOSA	<1.8		1.8	0.40	ng/L		03/12/24 08:02	03/15/24 12:14	1
NMeFOSAA	<4.6		4.6	1.1	ng/L		03/12/24 08:02	03/15/24 12:14	1
NEtFOSAA	<4.6		4.6	1.2	ng/L		03/12/24 08:02	03/15/24 12:14	1
NMeFOSE	<3.7		3.7	1.3	ng/L		03/12/24 08:02	03/15/24 12:14	1
NEtFOSE	<1.8		1.8	0.78	ng/L		03/12/24 08:02	03/15/24 12:14	1
4:2 FTS	<1.8		1.8	0.22	ng/L		03/12/24 08:02	03/15/24 12:14	1
6:2 FTS	<4.6		4.6	2.3	ng/L		03/12/24 08:02	03/15/24 12:14	1
8:2 FTS	<1.8		1.8	0.42	ng/L		03/12/24 08:02	03/15/24 12:14	1
10:2 FTS	<1.8		1.8	0.62	ng/L		03/12/24 08:02	03/15/24 12:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.37	ng/L		03/12/24 08:02	03/15/24 12:14	1
HFPO-DA (GenX)	<3.7		3.7	1.4	ng/L		03/12/24 08:02	03/15/24 12:14	1
9Cl-PF3ONS	<1.8		1.8	0.22	ng/L		03/12/24 08:02	03/15/24 12:14	1
11Cl-PF3OUdS	<1.8		1.8	0.29	ng/L		03/12/24 08:02	03/15/24 12:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	97		25 - 150				03/12/24 08:02	03/15/24 12:14	1
13C5 PFPeA	92		25 - 150				03/12/24 08:02	03/15/24 12:14	1
13C2 PFHxA	96		25 - 150				03/12/24 08:02	03/15/24 12:14	1
13C4 PFHpA	95		25 - 150				03/12/24 08:02	03/15/24 12:14	1
13C4 PFOA	103		25 - 150				03/12/24 08:02	03/15/24 12:14	1
13C5 PFNA	97		25 - 150				03/12/24 08:02	03/15/24 12:14	1
13C2 PFDA	102		25 - 150				03/12/24 08:02	03/15/24 12:14	1
13C2 PFUnA	92		25 - 150				03/12/24 08:02	03/15/24 12:14	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

**Client Sample ID: Field Blank-03-06-2024-DW**

**Lab Sample ID: 500-247084-1**

**Date Collected: 03/06/24 13:30**

**Matrix: Water**

**Date Received: 03/07/24 09:55**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFDoA	96		25 - 150	03/12/24 08:02	03/15/24 12:14	1
13C2 PFTeDA	90		25 - 150	03/12/24 08:02	03/15/24 12:14	1
13C2 PFHxDA	89		25 - 150	03/12/24 08:02	03/15/24 12:14	1
13C3 PFBS	94		25 - 150	03/12/24 08:02	03/15/24 12:14	1
18O2 PFHxS	92		25 - 150	03/12/24 08:02	03/15/24 12:14	1
13C4 PFOS	95		25 - 150	03/12/24 08:02	03/15/24 12:14	1
13C8 FOSA	102		10 - 150	03/12/24 08:02	03/15/24 12:14	1
d3-NMeFOSAA	92		25 - 150	03/12/24 08:02	03/15/24 12:14	1
d5-NEtFOSAA	90		25 - 150	03/12/24 08:02	03/15/24 12:14	1
d-N-MeFOSA-M	79		10 - 150	03/12/24 08:02	03/15/24 12:14	1
d-N-EtFOSA-M	84		10 - 150	03/12/24 08:02	03/15/24 12:14	1
d7-N-MeFOSE-M	83		10 - 150	03/12/24 08:02	03/15/24 12:14	1
d9-N-EtFOSE-M	76		10 - 150	03/12/24 08:02	03/15/24 12:14	1
M2-4:2 FTS	85		25 - 150	03/12/24 08:02	03/15/24 12:14	1
M2-6:2 FTS	91		25 - 150	03/12/24 08:02	03/15/24 12:14	1
M2-8:2 FTS	107		25 - 150	03/12/24 08:02	03/15/24 12:14	1
13C3 HFPO-DA	87		25 - 150	03/12/24 08:02	03/15/24 12:14	1
13C2 10:2 FTS	89		25 - 150	03/12/24 08:02	03/15/24 12:14	1



# Client Sample Results

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

**Client Sample ID: DMW-04\_1X**

**Lab Sample ID: 500-247084-2**

Date Collected: 03/05/24 09:05

Matrix: Water

Date Received: 03/07/24 09:55

## Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Aluminum</b>	<b>28</b>	<b>J</b>	100	25	ug/L		03/11/24 08:58	03/15/24 21:41	1
Antimony	<3.0		3.0	1.3	ug/L		03/11/24 08:58	03/15/24 21:41	1
<b>Arsenic</b>	<b>0.62</b>	<b>J</b>	1.0	0.23	ug/L		03/11/24 08:58	03/15/24 21:41	1
<b>Barium</b>	<b>17</b>		2.5	0.73	ug/L		03/11/24 08:58	03/15/24 21:41	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/11/24 08:58	03/19/24 12:09	1
<b>Boron</b>	<b>230</b>		50	13	ug/L		03/11/24 08:58	03/19/24 12:09	1
Cadmium	<0.50		0.50	0.17	ug/L		03/11/24 08:58	03/15/24 21:41	1
<b>Calcium</b>	<b>110000</b>	<b>B</b>	200	44	ug/L		03/11/24 08:58	03/15/24 21:41	1
Chromium	<5.0		5.0	1.1	ug/L		03/11/24 08:58	03/15/24 21:41	1
<b>Cobalt</b>	<b>0.57</b>	<b>J</b>	1.0	0.40	ug/L		03/11/24 08:58	03/18/24 19:05	1
<b>Copper</b>	<b>1.9</b>	<b>J</b>	2.0	0.50	ug/L		03/11/24 08:58	03/15/24 21:41	1
<b>Iron</b>	<b>2100</b>		100	47	ug/L		03/11/24 08:58	03/15/24 21:41	1
<b>Lead</b>	<b>0.20</b>	<b>J</b>	0.50	0.19	ug/L		03/11/24 08:58	03/15/24 21:41	1
<b>Magnesium</b>	<b>43000</b>		200	49	ug/L		03/11/24 08:58	03/15/24 21:41	1
<b>Manganese</b>	<b>30</b>		2.5	0.79	ug/L		03/11/24 08:58	03/15/24 21:41	1
<b>Nickel</b>	<b>2.7</b>		2.0	0.63	ug/L		03/11/24 08:58	03/18/24 19:05	1
<b>Potassium</b>	<b>6300</b>		500	110	ug/L		03/11/24 08:58	03/15/24 21:41	1
Selenium	<2.5		2.5	0.98	ug/L		03/11/24 08:58	03/15/24 21:41	1
Silver	<0.50		0.50	0.12	ug/L		03/11/24 08:58	03/15/24 21:41	1
<b>Sodium</b>	<b>47000</b>	<b>B ^2</b>	200	77	ug/L		03/11/24 08:58	03/18/24 19:05	1
<b>Strontium</b>	<b>12000</b>		4.0	0.64	ug/L		03/11/24 08:58	03/15/24 21:41	1
Thallium	<2.0		2.0	0.57	ug/L		03/11/24 08:58	03/18/24 19:05	1
Vanadium	<5.0		5.0	2.2	ug/L		03/11/24 08:58	03/15/24 21:41	1
<b>Zinc</b>	<b>67</b>		20	6.9	ug/L		03/11/24 08:58	03/18/24 19:05	1

## Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/26/24 10:45	03/27/24 06:59	1

## Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Hardness as calcium carbonate</b>	<b>450</b>		0.91	0.46	mg/L		03/11/24 08:58	03/18/24 09:59	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.34</b>	<b>J ^+</b>	1.0	0.18	mg/L			03/07/24 14:11	1
Nitrate as N (SW846 9056A)	<1.0	H3	1.0	0.043	mg/L			03/07/24 14:11	1
<b>Chloride (SW846 9056A)</b>	<b>56</b>		10	1.2	mg/L			03/09/24 20:34	10
Nitrite as N (SW846 9056A)	<1.0	H3	1.0	0.070	mg/L			03/07/24 14:11	1
<b>Fluoride (SW846 9056A)</b>	<b>1.3</b>		1.0	0.19	mg/L			03/07/24 14:11	1
Orthophosphate as P (SW846 9056A)	<1.0	H3	1.0	0.13	mg/L			03/07/24 14:11	1
<b>Sulfate (SW846 9056A)</b>	<b>370</b>		10	2.1	mg/L			03/09/24 20:34	10
<b>Alkalinity, Total (SM 2320B)</b>	<b>100</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 17:11	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>100</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 17:11	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/19/24 17:11	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

**Client Sample ID: DMW-04\_2X**

**Lab Sample ID: 500-247084-3**

Date Collected: 03/05/24 17:30

Matrix: Water

Date Received: 03/07/24 09:55

## Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/11/24 08:58	03/15/24 21:45	1
Antimony	<3.0		3.0	1.3	ug/L		03/11/24 08:58	03/15/24 21:45	1
<b>Arsenic</b>	<b>0.63</b>	<b>J</b>	1.0	0.23	ug/L		03/11/24 08:58	03/15/24 21:45	1
<b>Barium</b>	<b>17</b>		2.5	0.73	ug/L		03/11/24 08:58	03/15/24 21:45	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/11/24 08:58	03/19/24 12:12	1
<b>Boron</b>	<b>250</b>		50	13	ug/L		03/11/24 08:58	03/19/24 12:12	1
Cadmium	<0.50		0.50	0.17	ug/L		03/11/24 08:58	03/15/24 21:45	1
<b>Calcium</b>	<b>110000</b>	<b>B</b>	200	44	ug/L		03/11/24 08:58	03/15/24 21:45	1
Chromium	<5.0		5.0	1.1	ug/L		03/11/24 08:58	03/15/24 21:45	1
Cobalt	<1.0		1.0	0.40	ug/L		03/11/24 08:58	03/18/24 19:09	1
<b>Copper</b>	<b>1.7</b>	<b>J</b>	2.0	0.50	ug/L		03/11/24 08:58	03/15/24 21:45	1
<b>Iron</b>	<b>540</b>		100	47	ug/L		03/11/24 08:58	03/15/24 21:45	1
Lead	<0.50		0.50	0.19	ug/L		03/11/24 08:58	03/15/24 21:45	1
<b>Magnesium</b>	<b>44000</b>		200	49	ug/L		03/11/24 08:58	03/15/24 21:45	1
<b>Manganese</b>	<b>16</b>		2.5	0.79	ug/L		03/11/24 08:58	03/15/24 21:45	1
<b>Nickel</b>	<b>0.86</b>	<b>J</b>	2.0	0.63	ug/L		03/11/24 08:58	03/18/24 19:09	1
<b>Potassium</b>	<b>6400</b>		500	110	ug/L		03/11/24 08:58	03/15/24 21:45	1
Selenium	<2.5		2.5	0.98	ug/L		03/11/24 08:58	03/15/24 21:45	1
Silver	<0.50		0.50	0.12	ug/L		03/11/24 08:58	03/15/24 21:45	1
<b>Sodium</b>	<b>50000</b>	<b>B ^2</b>	200	77	ug/L		03/11/24 08:58	03/18/24 19:09	1
<b>Strontium</b>	<b>11000</b>		4.0	0.64	ug/L		03/11/24 08:58	03/15/24 21:45	1
Thallium	<2.0		2.0	0.57	ug/L		03/11/24 08:58	03/18/24 19:09	1
Vanadium	<5.0		5.0	2.2	ug/L		03/11/24 08:58	03/15/24 21:45	1
<b>Zinc</b>	<b>56</b>		20	6.9	ug/L		03/11/24 08:58	03/18/24 19:09	1

## Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/26/24 10:45	03/27/24 07:01	1

## Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Hardness as calcium carbonate</b>	<b>460</b>		0.91	0.46	mg/L		03/11/24 08:58	03/18/24 09:59	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.27</b>	<b>J ^+</b>	1.0	0.18	mg/L			03/07/24 14:26	1
Nitrate as N (SW846 9056A)	<1.0		1.0	0.043	mg/L			03/07/24 14:26	1
<b>Chloride (SW846 9056A)</b>	<b>47</b>		1.0	0.12	mg/L			03/07/24 14:26	1
Nitrite as N (SW846 9056A)	<1.0		1.0	0.070	mg/L			03/07/24 14:26	1
<b>Fluoride (SW846 9056A)</b>	<b>1.0</b>		1.0	0.19	mg/L			03/07/24 14:26	1
Orthophosphate as P (SW846 9056A)	<1.0		1.0	0.13	mg/L			03/07/24 14:26	1
<b>Sulfate (SW846 9056A)</b>	<b>370</b>		10	2.1	mg/L			03/09/24 21:04	10
<b>Alkalinity, Total (SM 2320B)</b>	<b>110</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 17:20	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>110</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 17:20	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/19/24 17:20	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

**Client Sample ID: DMW-04\_3X**

**Lab Sample ID: 500-247084-4**

**Date Collected: 03/06/24 13:20**

**Matrix: Water**

**Date Received: 03/07/24 09:55**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.6		4.6	2.2	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8	0.45	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.53	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.23	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.78	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.25	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.28	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	1.0	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.50	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorotridecanoic acid (PFTrDA)	<1.8		1.8	1.2	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.67	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.81	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.86	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.27	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.52	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.49	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.34	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.89	ng/L		03/12/24 08:02	03/15/24 12:44	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.89	ng/L		03/12/24 08:02	03/15/24 12:44	1
NEtFOSA	<1.8		1.8	0.79	ng/L		03/12/24 08:02	03/15/24 12:44	1
NMeFOSA	<1.8		1.8	0.39	ng/L		03/12/24 08:02	03/15/24 12:44	1
NMeFOSAA	<4.6		4.6	1.1	ng/L		03/12/24 08:02	03/15/24 12:44	1
NEtFOSAA	<4.6		4.6	1.2	ng/L		03/12/24 08:02	03/15/24 12:44	1
NMeFOSE	<3.7		3.7	1.3	ng/L		03/12/24 08:02	03/15/24 12:44	1
NEtFOSE	<1.8		1.8	0.78	ng/L		03/12/24 08:02	03/15/24 12:44	1
4:2 FTS	<1.8		1.8	0.22	ng/L		03/12/24 08:02	03/15/24 12:44	1
6:2 FTS	<4.6		4.6	2.3	ng/L		03/12/24 08:02	03/15/24 12:44	1
8:2 FTS	<1.8		1.8	0.42	ng/L		03/12/24 08:02	03/15/24 12:44	1
10:2 FTS	<1.8		1.8	0.61	ng/L		03/12/24 08:02	03/15/24 12:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.37	ng/L		03/12/24 08:02	03/15/24 12:44	1
HFPO-DA (GenX)	<3.7		3.7	1.4	ng/L		03/12/24 08:02	03/15/24 12:44	1
9Cl-PF3ONS	<1.8		1.8	0.22	ng/L		03/12/24 08:02	03/15/24 12:44	1
11Cl-PF3OUdS	<1.8		1.8	0.29	ng/L		03/12/24 08:02	03/15/24 12:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	93		25 - 150				03/12/24 08:02	03/15/24 12:44	1
13C5 PFPeA	90		25 - 150				03/12/24 08:02	03/15/24 12:44	1
13C2 PFHxA	96		25 - 150				03/12/24 08:02	03/15/24 12:44	1
13C4 PFHpA	96		25 - 150				03/12/24 08:02	03/15/24 12:44	1
13C4 PFOA	103		25 - 150				03/12/24 08:02	03/15/24 12:44	1
13C5 PFNA	98		25 - 150				03/12/24 08:02	03/15/24 12:44	1
13C2 PFDA	103		25 - 150				03/12/24 08:02	03/15/24 12:44	1
13C2 PFUnA	90		25 - 150				03/12/24 08:02	03/15/24 12:44	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

**Client Sample ID: DMW-04\_3X**

**Lab Sample ID: 500-247084-4**

**Date Collected: 03/06/24 13:20**

**Matrix: Water**

**Date Received: 03/07/24 09:55**

**Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	95		25 - 150	03/12/24 08:02	03/15/24 12:44	1
13C2 PFTeDA	90		25 - 150	03/12/24 08:02	03/15/24 12:44	1
13C2 PFHxDA	89		25 - 150	03/12/24 08:02	03/15/24 12:44	1
13C3 PFBS	90		25 - 150	03/12/24 08:02	03/15/24 12:44	1
18O2 PFHxS	94		25 - 150	03/12/24 08:02	03/15/24 12:44	1
13C4 PFOS	93		25 - 150	03/12/24 08:02	03/15/24 12:44	1
13C8 FOSA	107		10 - 150	03/12/24 08:02	03/15/24 12:44	1
d3-NMeFOSAA	89		25 - 150	03/12/24 08:02	03/15/24 12:44	1
d5-NEtFOSAA	86		25 - 150	03/12/24 08:02	03/15/24 12:44	1
d-N-MeFOSA-M	81		10 - 150	03/12/24 08:02	03/15/24 12:44	1
d-N-EtFOSA-M	82		10 - 150	03/12/24 08:02	03/15/24 12:44	1
d7-N-MeFOSE-M	87		10 - 150	03/12/24 08:02	03/15/24 12:44	1
d9-N-EtFOSE-M	77		10 - 150	03/12/24 08:02	03/15/24 12:44	1
M2-4:2 FTS	86		25 - 150	03/12/24 08:02	03/15/24 12:44	1
M2-6:2 FTS	87		25 - 150	03/12/24 08:02	03/15/24 12:44	1
M2-8:2 FTS	107		25 - 150	03/12/24 08:02	03/15/24 12:44	1
13C3 HFPO-DA	85		25 - 150	03/12/24 08:02	03/15/24 12:44	1
13C2 10:2 FTS	86		25 - 150	03/12/24 08:02	03/15/24 12:44	1

**Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/11/24 08:58	03/15/24 21:48	1
Antimony	<3.0		3.0	1.3	ug/L		03/11/24 08:58	03/15/24 21:48	1
<b>Arsenic</b>	<b>0.69</b>	<b>J</b>	1.0	0.23	ug/L		03/11/24 08:58	03/15/24 21:48	1
<b>Barium</b>	<b>17</b>		2.5	0.73	ug/L		03/11/24 08:58	03/15/24 21:48	1
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/11/24 08:58	03/19/24 12:16	1
<b>Boron</b>	<b>250</b>		50	13	ug/L		03/11/24 08:58	03/19/24 12:16	1
Cadmium	<0.50		0.50	0.17	ug/L		03/11/24 08:58	03/15/24 21:48	1
<b>Calcium</b>	<b>110000</b>	<b>B</b>	200	44	ug/L		03/11/24 08:58	03/15/24 21:48	1
Chromium	<5.0		5.0	1.1	ug/L		03/11/24 08:58	03/15/24 21:48	1
Cobalt	<1.0		1.0	0.40	ug/L		03/11/24 08:58	03/18/24 19:12	1
<b>Copper</b>	<b>0.94</b>	<b>J</b>	2.0	0.50	ug/L		03/11/24 08:58	03/15/24 21:48	1
<b>Iron</b>	<b>1700</b>		100	47	ug/L		03/11/24 08:58	03/15/24 21:48	1
Lead	<0.50		0.50	0.19	ug/L		03/11/24 08:58	03/15/24 21:48	1
<b>Magnesium</b>	<b>44000</b>		200	49	ug/L		03/11/24 08:58	03/15/24 21:48	1
<b>Manganese</b>	<b>24</b>		2.5	0.79	ug/L		03/11/24 08:58	03/15/24 21:48	1
<b>Nickel</b>	<b>0.97</b>	<b>J</b>	2.0	0.63	ug/L		03/11/24 08:58	03/18/24 19:12	1
<b>Potassium</b>	<b>6300</b>		500	110	ug/L		03/11/24 08:58	03/15/24 21:48	1
Selenium	<2.5		2.5	0.98	ug/L		03/11/24 08:58	03/15/24 21:48	1
Silver	<0.50		0.50	0.12	ug/L		03/11/24 08:58	03/15/24 21:48	1
<b>Sodium</b>	<b>50000</b>	<b>B ^2</b>	200	77	ug/L		03/11/24 08:58	03/18/24 19:12	1
<b>Strontium</b>	<b>12000</b>		4.0	0.64	ug/L		03/11/24 08:58	03/15/24 21:48	1
Thallium	<2.0		2.0	0.57	ug/L		03/11/24 08:58	03/18/24 19:12	1
Vanadium	<5.0		5.0	2.2	ug/L		03/11/24 08:58	03/15/24 21:48	1
<b>Zinc</b>	<b>50</b>		20	6.9	ug/L		03/11/24 08:58	03/18/24 19:12	1

**Method: SW846 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/26/24 10:45	03/27/24 07:03	1

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# Client Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

**Client Sample ID: DMW-04\_3X**

**Lab Sample ID: 500-247084-4**

Date Collected: 03/06/24 13:20

Matrix: Water

Date Received: 03/07/24 09:55

**Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	460		0.91	0.46	mg/L		03/11/24 08:58	03/18/24 09:59	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Bromide (SW846 9056A)</b>	<b>0.24</b>	<b>J ^+</b>	1.0	0.18	mg/L			03/07/24 14:41	1
Nitrate as N (SW846 9056A)	<1.0		1.0	0.043	mg/L			03/07/24 14:41	1
<b>Chloride (SW846 9056A)</b>	<b>47</b>		1.0	0.12	mg/L			03/07/24 14:41	1
Nitrite as N (SW846 9056A)	<1.0		1.0	0.070	mg/L			03/07/24 14:41	1
<b>Fluoride (SW846 9056A)</b>	<b>1.0</b>		1.0	0.19	mg/L			03/07/24 14:41	1
Orthophosphate as P (SW846 9056A)	<1.0		1.0	0.13	mg/L			03/07/24 14:41	1
<b>Sulfate (SW846 9056A)</b>	<b>340</b>		10	2.1	mg/L			03/21/24 19:43	10
<b>Alkalinity, Total (SM 2320B)</b>	<b>110</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 17:29	1
<b>Bicarbonate Alkalinity as CaCO3 (SM 2320B)</b>	<b>110</b>	<b>B</b>	5.0	3.7	mg/L			03/19/24 17:29	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	<5.0		5.0	3.7	mg/L			03/19/24 17:29	1

# Definitions/Glossary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
^1+	Initial Calibration Verification (ICV) is outside acceptance limits, high biased.
^2	Calibration Blank (ICB and/or CCB) is outside acceptance limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### General Chemistry

Qualifier	Qualifier Description
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Method: 537 (modified) - Fluorinated Alkyl Substances

**Lab Sample ID: MB 320-746255/1-A**  
**Matrix: Water**  
**Analysis Batch: 747357**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 746255**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	1.3	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		03/12/24 08:02	03/15/24 10:42	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		03/12/24 08:02	03/15/24 10:42	1
NEtFOSA	<2.0		2.0	0.87	ng/L		03/12/24 08:02	03/15/24 10:42	1
NMeFOSA	<2.0		2.0	0.43	ng/L		03/12/24 08:02	03/15/24 10:42	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		03/12/24 08:02	03/15/24 10:42	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		03/12/24 08:02	03/15/24 10:42	1
NMeFOSE	<4.0		4.0	1.4	ng/L		03/12/24 08:02	03/15/24 10:42	1
NEtFOSE	<2.0		2.0	0.85	ng/L		03/12/24 08:02	03/15/24 10:42	1
4:2 FTS	<2.0		2.0	0.24	ng/L		03/12/24 08:02	03/15/24 10:42	1
6:2 FTS	<5.0		5.0	2.5	ng/L		03/12/24 08:02	03/15/24 10:42	1
8:2 FTS	<2.0		2.0	0.46	ng/L		03/12/24 08:02	03/15/24 10:42	1
10:2 FTS	<2.0		2.0	0.67	ng/L		03/12/24 08:02	03/15/24 10:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		03/12/24 08:02	03/15/24 10:42	1
HFPO-DA (GenX)	<4.0		4.0	1.5	ng/L		03/12/24 08:02	03/15/24 10:42	1
9Cl-PF3ONS	<2.0		2.0	0.24	ng/L		03/12/24 08:02	03/15/24 10:42	1
11Cl-PF3OUdS	<2.0		2.0	0.32	ng/L		03/12/24 08:02	03/15/24 10:42	1
Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac			
	%Recovery	Qualifier							
13C4 PFBA	103		25 - 150	03/12/24 08:02	03/15/24 10:42	1			
13C5 PFPeA	95		25 - 150	03/12/24 08:02	03/15/24 10:42	1			
13C2 PFHxA	98		25 - 150	03/12/24 08:02	03/15/24 10:42	1			
13C4 PFHpA	95		25 - 150	03/12/24 08:02	03/15/24 10:42	1			
13C4 PFOA	104		25 - 150	03/12/24 08:02	03/15/24 10:42	1			
13C5 PFNA	100		25 - 150	03/12/24 08:02	03/15/24 10:42	1			

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: MB 320-746255/1-A**  
**Matrix: Water**  
**Analysis Batch: 747357**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 746255**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFDA	99		25 - 150	03/12/24 08:02	03/15/24 10:42	1
13C2 PFUnA	86		25 - 150	03/12/24 08:02	03/15/24 10:42	1
13C2 PFDoA	92		25 - 150	03/12/24 08:02	03/15/24 10:42	1
13C2 PFTeDA	87		25 - 150	03/12/24 08:02	03/15/24 10:42	1
13C2 PFHxDA	85		25 - 150	03/12/24 08:02	03/15/24 10:42	1
13C3 PFBS	92		25 - 150	03/12/24 08:02	03/15/24 10:42	1
18O2 PFHxS	95		25 - 150	03/12/24 08:02	03/15/24 10:42	1
13C4 PFOS	97		25 - 150	03/12/24 08:02	03/15/24 10:42	1
13C8 FOSA	103		10 - 150	03/12/24 08:02	03/15/24 10:42	1
d3-NMeFOSAA	91		25 - 150	03/12/24 08:02	03/15/24 10:42	1
d5-NEtFOSAA	93		25 - 150	03/12/24 08:02	03/15/24 10:42	1
d-N-MeFOSA-M	74		10 - 150	03/12/24 08:02	03/15/24 10:42	1
d-N-EtFOSA-M	73		10 - 150	03/12/24 08:02	03/15/24 10:42	1
d7-N-MeFOSE-M	84		10 - 150	03/12/24 08:02	03/15/24 10:42	1
d9-N-EtFOSE-M	77		10 - 150	03/12/24 08:02	03/15/24 10:42	1
M2-4:2 FTS	90		25 - 150	03/12/24 08:02	03/15/24 10:42	1
M2-6:2 FTS	91		25 - 150	03/12/24 08:02	03/15/24 10:42	1
M2-8:2 FTS	124		25 - 150	03/12/24 08:02	03/15/24 10:42	1
13C3 HFPO-DA	89		25 - 150	03/12/24 08:02	03/15/24 10:42	1
13C2 10:2 FTS	90		25 - 150	03/12/24 08:02	03/15/24 10:42	1

**Lab Sample ID: LCS 320-746255/2-A**  
**Matrix: Water**  
**Analysis Batch: 747357**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 746255**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec	Limits
Perfluoropentanoic acid (PFPeA)	40.0	44.0		ng/L		110	60 - 135	
Perfluorohexanoic acid (PFHxA)	40.0	45.6		ng/L		114	60 - 135	
Perfluoroheptanoic acid (PFHpA)	40.0	45.8		ng/L		114	60 - 135	
Perfluorooctanoic acid (PFOA)	40.0	42.1		ng/L		105	60 - 135	
Perfluorononanoic acid (PFNA)	40.0	45.8		ng/L		115	60 - 135	
Perfluorodecanoic acid (PFDA)	40.0	44.9		ng/L		112	60 - 135	
Perfluoroundecanoic acid (PFUnA)	40.0	47.5		ng/L		119	60 - 135	
Perfluorododecanoic acid (PFDoA)	40.0	41.7		ng/L		104	60 - 135	
Perfluorotridecanoic acid (PFTTrDA)	40.0	38.3		ng/L		96	60 - 135	
Perfluorotetradecanoic acid (PFTeA)	40.0	43.5		ng/L		109	60 - 135	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.2		ng/L		113	60 - 135	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	29.8		ng/L		74	60 - 135	
Perfluorobutanesulfonic acid (PFBS)	35.5	38.9		ng/L		110	60 - 135	
Perfluoropentanesulfonic acid (PFPeS)	37.6	41.4		ng/L		110	60 - 135	
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.0		ng/L		104	60 - 135	

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LCS 320-746255/2-A**  
**Matrix: Water**  
**Analysis Batch: 747357**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 746255**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanesulfonic acid (PFHpS)	38.2	46.6		ng/L		122	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	42.5		ng/L		114	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	42.5		ng/L		111	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	40.3		ng/L		105	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	36.5		ng/L		94	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	45.2		ng/L		113	60 - 135
NEtFOSA	40.0	43.8		ng/L		109	60 - 135
NMeFOSA	40.0	47.8		ng/L		120	60 - 135
NMeFOSAA	40.0	47.7		ng/L		119	60 - 135
NEtFOSAA	40.0	44.8		ng/L		112	60 - 135
NMeFOSE	40.0	46.3		ng/L		116	60 - 135
NEtFOSE	40.0	48.7		ng/L		122	60 - 135
4:2 FTS	37.5	46.1		ng/L		123	60 - 135
6:2 FTS	38.1	39.8		ng/L		105	60 - 135
8:2 FTS	38.4	41.2		ng/L		107	60 - 135
10:2 FTS	38.6	40.9		ng/L		106	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	47.4		ng/L		125	60 - 135
HFPO-DA (GenX)	40.0	49.9		ng/L		125	60 - 135
9Cl-PF3ONS	37.4	40.9		ng/L		109	60 - 135
11Cl-PF3OUdS	37.8	40.7		ng/L		108	60 - 135

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	91		25 - 150
13C5 PFPeA	90		25 - 150
13C2 PFHxA	87		25 - 150
13C4 PFHpA	93		25 - 150
13C4 PFOA	92		25 - 150
13C5 PFNA	91		25 - 150
13C2 PFDA	90		25 - 150
13C2 PFUnA	79		25 - 150
13C2 PFDoA	95		25 - 150
13C2 PFTeDA	84		25 - 150
13C2 PFHxDA	87		25 - 150
13C3 PFBS	90		25 - 150
18O2 PFHxS	91		25 - 150
13C4 PFOS	86		25 - 150
13C8 FOSA	90		10 - 150
d3-NMeFOSAA	80		25 - 150
d5-NEtFOSAA	82		25 - 150
d-N-MeFOSA-M	58		10 - 150
d-N-EtFOSA-M	59		10 - 150
d7-N-MeFOSE-M	73		10 - 150
d9-N-EtFOSE-M	63		10 - 150

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LCS 320-746255/2-A**  
**Matrix: Water**  
**Analysis Batch: 747357**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 746255**

<i>Isotope Dilution</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
M2-4:2 FTS	78		25 - 150
M2-6:2 FTS	99		25 - 150
M2-8:2 FTS	118		25 - 150
13C3 HFPO-DA	75		25 - 150
13C2 10:2 FTS	86		25 - 150

**Lab Sample ID: LCSD 320-746255/3-A**  
**Matrix: Water**  
**Analysis Batch: 747357**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 746255**

<b>Analyte</b>	<b>Spike Added</b>	<b>LCSD Result</b>	<b>LCSD Qualifier</b>	<b>Unit</b>	<b>D</b>	<b>%Rec</b>	<b>%Rec Limits</b>	<b>RPD</b>	<b>RPD Limit</b>
Perfluorobutanoic acid (PFBA)	40.0	43.3		ng/L		108	60 - 135	0	30
Perfluoropentanoic acid (PFPeA)	40.0	48.2		ng/L		121	60 - 135	9	30
Perfluorohexanoic acid (PFHxA)	40.0	43.0		ng/L		108	60 - 135	6	30
Perfluoroheptanoic acid (PFHpA)	40.0	44.8		ng/L		112	60 - 135	2	30
Perfluorooctanoic acid (PFOA)	40.0	41.8		ng/L		105	60 - 135	1	30
Perfluorononanoic acid (PFNA)	40.0	44.6		ng/L		111	60 - 135	3	30
Perfluorodecanoic acid (PFDA)	40.0	45.7		ng/L		114	60 - 135	2	30
Perfluoroundecanoic acid (PFUnA)	40.0	47.4		ng/L		118	60 - 135	0	30
Perfluorododecanoic acid (PFDoA)	40.0	44.6		ng/L		112	60 - 135	7	30
Perfluorotridecanoic acid (PFTrDA)	40.0	40.0		ng/L		100	60 - 135	4	30
Perfluorotetradecanoic acid (PFTeA)	40.0	46.1		ng/L		115	60 - 135	6	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	44.6		ng/L		112	60 - 135	1	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	31.0		ng/L		78	60 - 135	4	30
Perfluorobutanesulfonic acid (PFBS)	35.5	40.3		ng/L		113	60 - 135	3	30
Perfluoropentanesulfonic acid (PFPeS)	37.6	41.6		ng/L		111	60 - 135	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.9		ng/L		104	60 - 135	0	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	44.1		ng/L		115	60 - 135	6	30
Perfluorooctanesulfonic acid (PFOS)	37.2	39.8		ng/L		107	60 - 135	7	30
Perfluorononanesulfonic acid (PFNS)	38.5	41.4		ng/L		107	60 - 135	3	30
Perfluorodecanesulfonic acid (PFDS)	38.6	37.2		ng/L		96	60 - 135	8	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	37.2		ng/L		96	60 - 135	2	30
Perfluorooctanesulfonamide (FOSA)	40.0	44.4		ng/L		111	60 - 135	2	30
NEtFOSA	40.0	41.5		ng/L		104	60 - 135	5	30
NMeFOSA	40.0	47.3		ng/L		118	60 - 135	1	30
NMeFOSAA	40.0	45.7		ng/L		114	60 - 135	4	30
NEtFOSAA	40.0	44.2		ng/L		110	60 - 135	2	30
NMeFOSE	40.0	49.1		ng/L		123	60 - 135	6	30

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: LCSD 320-746255/3-A**  
**Matrix: Water**  
**Analysis Batch: 747357**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 746255**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NETFOSE	40.0	48.9		ng/L		122	60 - 135	1	30
4:2 FTS	37.5	45.9		ng/L		122	60 - 135	0	30
6:2 FTS	38.1	40.6		ng/L		107	60 - 135	2	30
8:2 FTS	38.4	42.9		ng/L		112	60 - 135	4	30
10:2 FTS	38.6	43.1		ng/L		112	60 - 135	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	47.2		ng/L		125	60 - 135	0	30
HFPO-DA (GenX)	40.0	44.2		ng/L		111	60 - 135	12	30
9CI-PF3ONS	37.4	42.1		ng/L		113	60 - 135	3	30
11CI-PF3OUdS	37.8	38.9		ng/L		103	60 - 135	5	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	89		25 - 150
13C5 PFPeA	83		25 - 150
13C2 PFHxA	89		25 - 150
13C4 PFHpA	93		25 - 150
13C4 PFOA	93		25 - 150
13C5 PFNA	94		25 - 150
13C2 PFDA	92		25 - 150
13C2 PFUnA	77		25 - 150
13C2 PFDoA	92		25 - 150
13C2 PFTeDA	84		25 - 150
13C2 PFHxDA	87		25 - 150
13C3 PFBS	86		25 - 150
18O2 PFHxS	86		25 - 150
13C4 PFOS	86		25 - 150
13C8 FOSA	90		10 - 150
d3-NMeFOSAA	77		25 - 150
d5-NEtFOSAA	81		25 - 150
d-N-MeFOSA-M	53		10 - 150
d-N-EtFOSA-M	54		10 - 150
d7-N-MeFOSE-M	68		10 - 150
d9-N-EtFOSE-M	63		10 - 150
M2-4:2 FTS	78		25 - 150
M2-6:2 FTS	97		25 - 150
M2-8:2 FTS	112		25 - 150
13C3 HFPO-DA	79		25 - 150
13C2 10:2 FTS	79		25 - 150

## Method: 6020B - Metals (ICP/MS)

**Lab Sample ID: MB 500-757635/1-A**  
**Matrix: Water**  
**Analysis Batch: 758708**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757635**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<100		100	25	ug/L		03/11/24 08:58	03/15/24 21:00	1
Antimony	<3.0		3.0	1.3	ug/L		03/11/24 08:58	03/15/24 21:00	1
Arsenic	<1.0		1.0	0.23	ug/L		03/11/24 08:58	03/15/24 21:00	1

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Method: 6020B - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 500-757635/1-A**  
**Matrix: Water**  
**Analysis Batch: 758708**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757635**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Barium	<2.5		2.5	0.73	ug/L		03/11/24 08:58	03/15/24 21:00	1
Cadmium	<0.50		0.50	0.17	ug/L		03/11/24 08:58	03/15/24 21:00	1
Calcium	70.7	J	200	44	ug/L		03/11/24 08:58	03/15/24 21:00	1
Copper	<2.0		2.0	0.50	ug/L		03/11/24 08:58	03/15/24 21:00	1
Magnesium	<200		200	49	ug/L		03/11/24 08:58	03/15/24 21:00	1
Potassium	<500		500	110	ug/L		03/11/24 08:58	03/15/24 21:00	1
Selenium	1.09	J	2.5	0.98	ug/L		03/11/24 08:58	03/15/24 21:00	1
Silver	<0.50		0.50	0.12	ug/L		03/11/24 08:58	03/15/24 21:00	1
Strontium	<4.0		4.0	0.64	ug/L		03/11/24 08:58	03/15/24 21:00	1

**Lab Sample ID: MB 500-757635/1-A**  
**Matrix: Water**  
**Analysis Batch: 758908**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757635**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cobalt	<1.0		1.0	0.40	ug/L		03/11/24 08:58	03/18/24 18:30	1
Nickel	<2.0		2.0	0.63	ug/L		03/11/24 08:58	03/18/24 18:30	1
Sodium	207		200	77	ug/L		03/11/24 08:58	03/18/24 18:30	1
Thallium	<2.0		2.0	0.57	ug/L		03/11/24 08:58	03/18/24 18:30	1
Zinc	<20		20	6.9	ug/L		03/11/24 08:58	03/18/24 18:30	1

**Lab Sample ID: MB 500-757635/1-A**  
**Matrix: Water**  
**Analysis Batch: 759098**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757635**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Beryllium	<1.0	^1+	1.0	0.53	ug/L		03/11/24 08:58	03/19/24 12:01	1
Boron	<50		50	13	ug/L		03/11/24 08:58	03/19/24 12:01	1

**Lab Sample ID: LCS 500-757635/2-A**  
**Matrix: Water**  
**Analysis Batch: 758708**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 757635**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	500	534		ug/L		107	80 - 120
Arsenic	100	97.9		ug/L		98	80 - 120
Barium	500	513		ug/L		103	80 - 120
Cadmium	50.0	47.9		ug/L		96	80 - 120
Calcium	10000	11300		ug/L		113	80 - 120
Copper	250	266		ug/L		107	80 - 120
Magnesium	10000	10800		ug/L		108	80 - 120
Potassium	10000	10300		ug/L		103	80 - 120
Selenium	100	102		ug/L		102	80 - 120
Silver	50.0	49.8		ug/L		100	80 - 120
Strontium	1000	1000		ug/L		100	80 - 120

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 500-757635/2-A  
 Matrix: Water  
 Analysis Batch: 758908

Client Sample ID: Lab Control Sample  
 Prep Type: Total Recoverable  
 Prep Batch: 757635

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cobalt	500	529		ug/L		106	80 - 120
Nickel	500	558		ug/L		112	80 - 120
Sodium	10000	10600		ug/L		106	80 - 120
Thallium	100	104		ug/L		104	80 - 120
Zinc	500	573		ug/L		115	80 - 120

Lab Sample ID: LCS 500-757635/2-A  
 Matrix: Water  
 Analysis Batch: 759098

Client Sample ID: Lab Control Sample  
 Prep Type: Total Recoverable  
 Prep Batch: 757635

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Beryllium	50.0	45.8	^1+	ug/L		92	80 - 120
Boron	1000	941		ug/L		94	80 - 120

## Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 500-760008/12-A  
 Matrix: Water  
 Analysis Batch: 760249

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 760008

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20	0.079	ug/L		03/26/24 10:45	03/27/24 06:48	1

Lab Sample ID: LCS 500-760008/13-A  
 Matrix: Water  
 Analysis Batch: 760249

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 760008

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	2.01	2.02		ug/L		101	80 - 120

## Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 500-757329/3  
 Matrix: Water  
 Analysis Batch: 757329

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	<1.0	^+	1.0	0.18	mg/L			03/07/24 13:40	1
Chloride	<1.0		1.0	0.12	mg/L			03/07/24 13:40	1
Fluoride	<1.0		1.0	0.19	mg/L			03/07/24 13:40	1

Lab Sample ID: LCS 500-757329/4  
 Matrix: Water  
 Analysis Batch: 757329

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromide	20.0	21.5	^+	mg/L		107	80 - 120
Chloride	20.0	23.3		mg/L		116	80 - 120
Fluoride	20.0	21.1		mg/L		106	80 - 120

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# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Method: 9056A - Anions, Ion Chromatography (Continued)

**Lab Sample ID: MB 500-757330/3**  
**Matrix: Water**  
**Analysis Batch: 757330**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	<1.0		1.0	0.043	mg/L			03/07/24 13:40	1
Nitrite as N	<1.0		1.0	0.070	mg/L			03/07/24 13:40	1
Orthophosphate as P	<1.0		1.0	0.13	mg/L			03/07/24 13:40	1

**Lab Sample ID: LCS 500-757330/4**  
**Matrix: Water**  
**Analysis Batch: 757330**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	20.0	22.2		mg/L		111	80 - 120
Nitrite as N	20.0	21.8		mg/L		109	80 - 120
Orthophosphate as P	20.0	21.4		mg/L		107	80 - 120

**Lab Sample ID: MB 500-757486/3**  
**Matrix: Water**  
**Analysis Batch: 757486**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.0		1.0	0.12	mg/L			03/09/24 19:48	1
Sulfate	<1.0		1.0	0.21	mg/L			03/09/24 19:48	1

**Lab Sample ID: LCS 500-757486/4**  
**Matrix: Water**  
**Analysis Batch: 757486**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	20.0	22.3		mg/L		111	80 - 120
Sulfate	20.0	21.8		mg/L		109	80 - 120

**Lab Sample ID: MB 500-759367/3**  
**Matrix: Water**  
**Analysis Batch: 759367**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<1.0		1.0	0.21	mg/L			03/21/24 12:39	1

**Lab Sample ID: LCS 500-759367/4**  
**Matrix: Water**  
**Analysis Batch: 759367**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	20.0	21.7		mg/L		109	80 - 120

# QC Sample Results

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Method: SM 2320B - Alkalinity

**Lab Sample ID: MB 500-759131/28**  
**Matrix: Water**  
**Analysis Batch: 759131**

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Alkalinity, Total	8.23		5.0	3.7	mg/L			03/19/24 20:44	1
Bicarbonate Alkalinity as CaCO3	8.23		5.0	3.7	mg/L			03/19/24 20:44	1
Carbonate Alkalinity as CaCO3	<5.0		5.0	3.7	mg/L			03/19/24 20:44	1

**Lab Sample ID: LCS 500-759131/4**  
**Matrix: Water**  
**Analysis Batch: 759131**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits

# Lab Chronicle

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Client Sample ID: Field Blank-03-06-2024-DW

## Lab Sample ID: 500-247084-1

Date Collected: 03/06/24 13:30

Matrix: Water

Date Received: 03/07/24 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			746255	M1G	EET SAC	03/12/24 08:02
Total/NA	Analysis	537 (modified)		1	747357	K1S	EET SAC	03/15/24 12:14

## Client Sample ID: DMW-04\_1X

## Lab Sample ID: 500-247084-2

Date Collected: 03/05/24 09:05

Matrix: Water

Date Received: 03/07/24 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	758708	RN	EET CHI	03/15/24 21:41
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	758908	RN	EET CHI	03/18/24 19:05
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	759098	RN	EET CHI	03/19/24 12:09
Total/NA	Prep	7470A			760008	MJG	EET CHI	03/26/24 10:45 - 03/26/24 12:45 <sup>1</sup>
Total/NA	Analysis	7470A		1	760249	MJG	EET CHI	03/27/24 06:59
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	758731	RN	EET CHI	03/18/24 09:59
Total/NA	Analysis	9056A		1	757329	W1T	EET CHI	03/07/24 14:11
Total/NA	Analysis	9056A		1	757330	W1T	EET CHI	03/07/24 14:11
Total/NA	Analysis	9056A		10	757486	W1T	EET CHI	03/09/24 20:34
Total/NA	Analysis	SM 2320B		1	759131	SO	EET CHI	03/19/24 17:11

## Client Sample ID: DMW-04\_2X

## Lab Sample ID: 500-247084-3

Date Collected: 03/05/24 17:30

Matrix: Water

Date Received: 03/07/24 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	758708	RN	EET CHI	03/15/24 21:45
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	758908	RN	EET CHI	03/18/24 19:09
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	759098	RN	EET CHI	03/19/24 12:12
Total/NA	Prep	7470A			760008	MJG	EET CHI	03/26/24 10:45 - 03/26/24 12:45 <sup>1</sup>
Total/NA	Analysis	7470A		1	760249	MJG	EET CHI	03/27/24 07:01
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	758731	RN	EET CHI	03/18/24 09:59
Total/NA	Analysis	9056A		1	757329	W1T	EET CHI	03/07/24 14:26
Total/NA	Analysis	9056A		1	757330	W1T	EET CHI	03/07/24 14:26
Total/NA	Analysis	9056A		10	757486	W1T	EET CHI	03/09/24 21:04
Total/NA	Analysis	SM 2320B		1	759131	SO	EET CHI	03/19/24 17:20



# Lab Chronicle

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

**Client Sample ID: DMW-04\_3X**

**Lab Sample ID: 500-247084-4**

**Date Collected: 03/06/24 13:20**

**Matrix: Water**

**Date Received: 03/07/24 09:55**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			746255	M1G	EET SAC	03/12/24 08:02
Total/NA	Analysis	537 (modified)		1	747357	K1S	EET SAC	03/15/24 12:44
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	758708	RN	EET CHI	03/15/24 21:48
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	758908	RN	EET CHI	03/18/24 19:12
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	6020B		1	759098	RN	EET CHI	03/19/24 12:16
Total/NA	Prep	7470A			760008	MJG	EET CHI	03/26/24 10:45 - 03/26/24 12:45 <sup>1</sup>
Total/NA	Analysis	7470A		1	760249	MJG	EET CHI	03/27/24 07:03
Total Recoverable	Prep	3005A			757635	BDE	EET CHI	03/11/24 08:58 - 03/11/24 14:58 <sup>1</sup>
Total Recoverable	Analysis	SM 2340B		1	758731	RN	EET CHI	03/18/24 09:59
Total/NA	Analysis	9056A		1	757329	W1T	EET CHI	03/07/24 14:41
Total/NA	Analysis	9056A		1	757330	W1T	EET CHI	03/07/24 14:41
Total/NA	Analysis	9056A		10	759367	W1T	EET CHI	03/21/24 19:43
Total/NA	Analysis	SM 2320B		1	759131	SO	EET CHI	03/19/24 17:29

<sup>1</sup> This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

**Laboratory References:**

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Accreditation/Certification Summary

Client: Arcadis U.S., Inc.  
Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Laboratory: Eurofins Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-24

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-24

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500-247084 COC

# Chain of Custody Rec

Ref:  
Dep:

Date: 20Feb24  
Wgt: 25.00 LBS

SHIPPING: 0.00  
SPECIAL: 0.00  
HANDLING: 0.00  
TOTAL: 0.00

Svcs PRIORITY OVERNIGHT Master 7252 5233 9574  
TRCK 7262 5233 9596

ORIGIN ID:RRLA (920) 261-1660 | SHIP DATE: 20FEB24

Regulatory Program: DW NPDES RCRA Other

Project Manager: Lisa Rutkowski

Client Contact		Email: N/A		Site Contact:		Date: 3/6/24		COC No	
Arcadis U S , Inc		Tel/Fax: N/A		Lab Contact: Sandie Fredrick		Carrier: FedEx		1 of 1 COCs	
126 North Jefferson Street, Suite 400		Analysis Turnaround Time						Sampler:	
Milwaukee, WI 53202		<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS						For Lab Use Only:	
Phone		TAT if different from Below <b>STANDARD</b>						Walk-in Client	
FAX		<input type="checkbox"/> 2 weeks						Lab Sampling	
Project Name Marinette, WI		<input type="checkbox"/> 1 week							
Site Marinette, WI		<input type="checkbox"/> 2 days						Lab Project Number	
P O # 30168807.1.2.3 30168809.1.4.1		<input type="checkbox"/> 1 day						50020404 50021668	

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 Modified (35 Compounds)	Rad 226 903	Rad 228 904	TAL Metals 6020A / 7470A	Hardness SM234B	Sulfur 6010D	Total Sulfide SM4500	Anions 9056A	Uranium 6020B	Alkalinity 2320B	Sample Specific Notes
<del>WS-R</del>			G	W		N												
<del>WS-R-POST</del>			G	W		N												
<del>DUP</del>			G	W		N												
1 Field Blank-03-06-2024-DW	3/6/24	1330	G	W	2	N	M	X										
2 DMW-04_1X	3/5/24	0905	G	W	4	N	N				X	X		X	X			
3 DMW-04_2X	3/5/24	1730	G	W	4	N	N				X	X		X	X			
4 DMW-04_3X	3/6/24	1320	G	W	5	N	N	X			X	X		X	X			

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other - Zn Acetate/NaOH; 7=None 7 4 4 4 4 4 6 7 4 7

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

Non Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:  
Level 4, Questions call L. Rutkowski  
TAT: Standard

Custody Seals Intact  Yes  No

Custody Seal No \_\_\_\_\_ Cooler Temp (°C) Obs'd 3.4 Corr'd 2.9 Therm ID No \_\_\_\_\_

Relinquished by: <i>[Signature]</i>	Company Arcadis	Date/Time 3/6/24 1400	Received by:	Company	Date/Time
Relinquished by:	Company	Date/Time	Received by:	Company	Date/Time
Relinquished by:	Company	Date/Time	Received in Laboratory by: <i>Stephanie Hernandez</i>	Company EEIA	Date/Time 3/7/24 0955

HEATH PARMENTER (DEEP WELL)  
JCI/ARCADIS  
2700 INDUSTRIAL PARKWAY S  
BUILDING 112 - RECEIVING STATION 5  
MARINETTE, WI 54143  
UNITED STATES US

ACTWGT: 25.00 LB MAN  
CAD: 0780307/CAFE3755



500-247084 Waybi

TO **SAMPLE RECEIPT**  
**EUROFINS CHICAGO**  
**2417 BOND ST.**

588FC/148R/AF77

**UNIVERSITY PARK IL 60484**

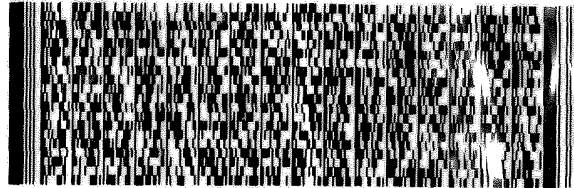
(708) 634-6200  
PH:

REF:

PO:

DEPT:

RMA:

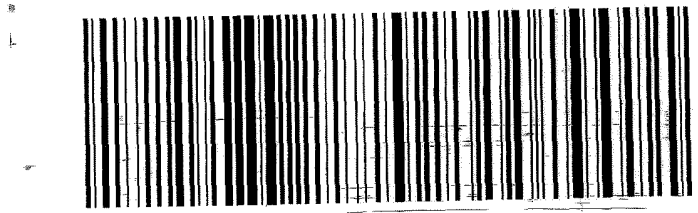


TRK# 7252 5233 9596  
0221

THU - 07 MAR AA  
PRIORITY OVERNIGHT

**XP JOTA**

**60484**  
IL-US  
ORD



4280993 06Mar2024 GRBA 581G2/8538/C088

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# Login Sample Receipt Checklist

Client: Arcadis U.S., Inc.

Job Number: 500-247084-1

**Login Number: 247084**

**List Source: Eurofins Chicago**

**List Number: 1**

**Creator: Hernandez, Stephanie**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are 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 is acceptable.	True	
Cooler Temperature is recorded.	True	2.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	False	Refer to Job Narrative for details.
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	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Login Sample Receipt Checklist

Client: Arcadis U.S., Inc.

Job Number: 500-247084-1

**Login Number: 247084**

**List Number: 2**

**Creator: Oropeza, Salvador**

**List Source: Eurofins Sacramento**

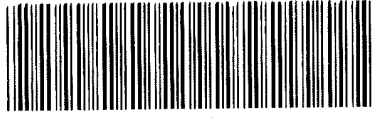
**List Creation: 03/11/24 11:29 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2370577
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Refer to Job Narrative for details.
Cooler Temperature is recorded.	True	11.6C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Environment Testing

Sacramento Sample Receiving Notes (SSRN)



Job \_\_\_\_\_ 500-247084 Field Sheet

Tracking # 7051 7618 9841

SO (PO) / FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSL / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations  
File in the job folder with the COC

Therm. ID: LO7 Corr. Factor: (+/-) N/A °C

Ice \_\_\_\_\_ Wet  Gel \_\_\_\_\_ Other \_\_\_\_\_

Cooler Custody Seal: 2370527

Cooler ID: -

Temp Observed: 11.6 °C Corrected: 11.6 °C  
From: Temp Blank  Sample

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Frozen samples show signs of thaw?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: SO Date: 3/11/24

Unpacking/Labeling The Samples	Yes	No	NA
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
COC is complete w/o discrepancies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the Field Sampler's name on COC?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials SO Date 3/11/24

Notes: \_\_\_\_\_

Water warn

Field Ex temp FBI-08 MAR

Rec on 3/11/24

Trizma Lot #(s): \_\_\_\_\_

Ammonium

Acetate Lot #(s): \_\_\_\_\_

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials SO Date 3/11/24

WR3-234





# Isotope Dilution Summary

Client: Arcadis U.S., Inc.  
 Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

## Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-247084-1	Field Blank-03-06-2024-DW	97	92	96	95	103	97	102	92
500-247084-4	DMW-04_3X	93	90	96	96	103	98	103	90
LCS 320-746255/2-A	Lab Control Sample	91	90	87	93	92	91	90	79
LCSD 320-746255/3-A	Lab Control Sample Dup	89	83	89	93	93	94	92	77
MB 320-746255/1-A	Method Blank	103	95	98	95	104	100	99	86

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-247084-1	Field Blank-03-06-2024-DW	96	90	89	94	92	95	102	92
500-247084-4	DMW-04_3X	95	90	89	90	94	93	107	89
LCS 320-746255/2-A	Lab Control Sample	95	84	87	90	91	86	90	80
LCSD 320-746255/3-A	Lab Control Sample Dup	92	84	87	86	86	86	90	77
MB 320-746255/1-A	Method Blank	92	87	85	92	95	97	103	91

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-247084-1	Field Blank-03-06-2024-DW	90	79	84	83	76	85	91	107
500-247084-4	DMW-04_3X	86	81	82	87	77	86	87	107
LCS 320-746255/2-A	Lab Control Sample	82	58	59	73	63	78	99	118
LCSD 320-746255/3-A	Lab Control Sample Dup	81	53	54	68	63	78	97	112
MB 320-746255/1-A	Method Blank	93	74	73	84	77	90	91	124

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-247084-1	Field Blank-03-06-2024-DW	87	89
500-247084-4	DMW-04_3X	85	86
LCS 320-746255/2-A	Lab Control Sample	75	86
LCSD 320-746255/3-A	Lab Control Sample Dup	79	79
MB 320-746255/1-A	Method Blank	89	90

#### Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M

# Isotope Dilution Summary

Client: Arcadis U.S., Inc.

Project/Site: Marinette, WI Deep Well 30168809.1.4.1

Job ID: 500-247084-1

dEtFOSA = d-N-EtFOSA-M  
NMFM = d7-N-MeFOSE-M  
NEFM = d9-N-EtFOSE-M  
M242FTS = M2-4:2 FTS  
M262FTS = M2-6:2 FTS  
M282FTS = M2-8:2 FTS  
HFPODA = 13C3 HFPO-DA  
M102FTS = 13C2 10:2 FTS

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