

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.

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)

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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 Ziska	First Jim	MI	Organization/ Business Name Arcadis
Mailing Address 126 N Jefferson Street, Suite 400		City Milwaukee	State WI
		ZIP Code 53202	
Phone # (include area code) (612) 339-9434	Fax # (include area code)	Email james.ziska@arcadis.com	

Environmental Consultant (if applicable)

Contact Last Name Ziska	First Jim	MI	Organization/ Business Name Arcadis
Mailing Address 126 N Jefferson Street, Suite 400		City Milwaukee	State WI
		ZIP Code 53202	
Phone # (include area code) (612) 339-9434	Fax # (include area code)	Email james.ziska@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

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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

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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: Ditch A Semi-Annual Operation, Maintenance, Optimization Progress Report

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.

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

4/28/2023
Date Signed

Senior Environmental Specialist
Title

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

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

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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

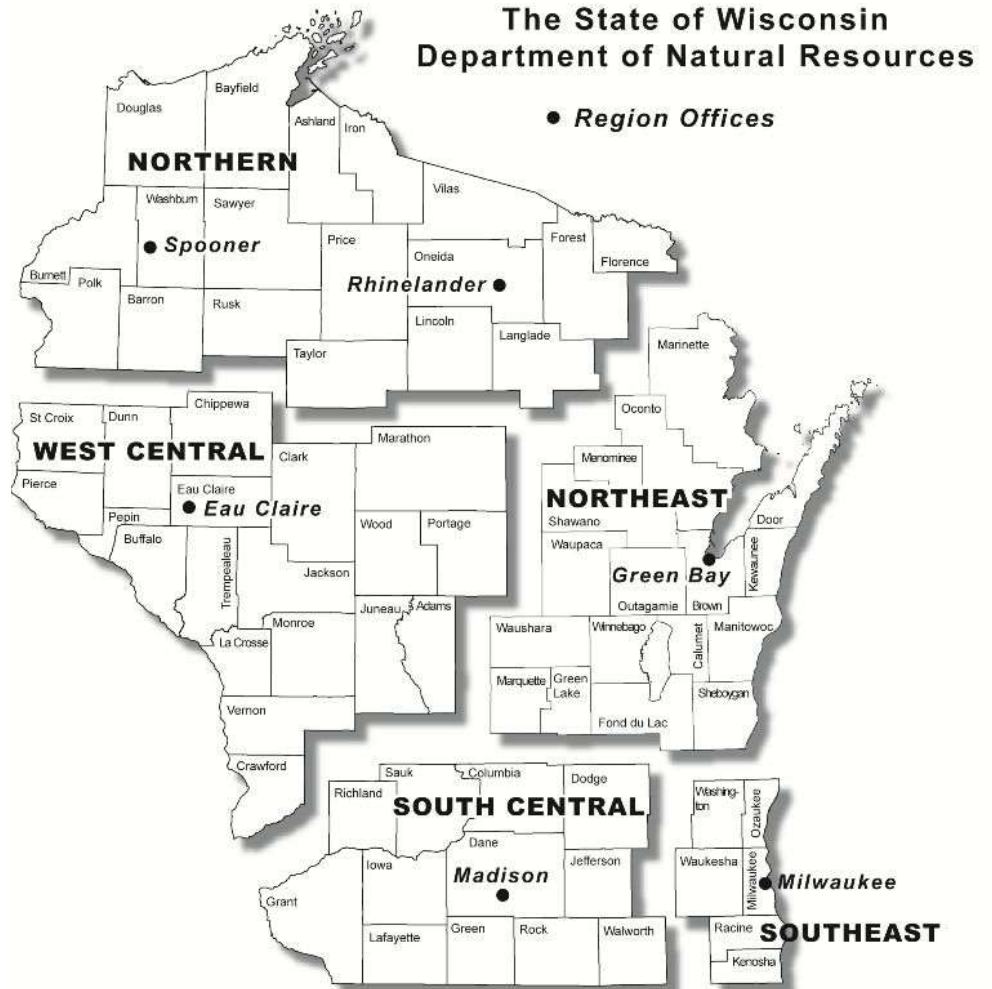
Attn: RR Program Assistant
Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg WI 53711

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		

Tyco Fire Products LP

Semi-Annual Operation, Maintenance, and Optimization Progress Report #8

Tyco Fire Technology Center
Ditch A Interim Action Treatment System
BRRTS# 02-38-580694
July 1, 2022 – December 31, 2022

April 2023

Semi-Annual Operation, Maintenance, and Optimization Progress Report #8
Tyco Fire Technology Center Ditch A Interim Action Treatment System
BRRTS# 02-38-580694

Semi-Annual Operation, Maintenance, and Optimization Progress Report #8

Tyco Fire Technology Center
Ditch A Interim Action Treatment System
BRRTS# 02-38-580694
July 1, 2022 – December 31, 2022

April 28, 2023

Prepared By:

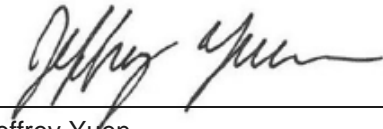
Arcadis U.S., Inc.
126 North Jefferson Street, Suite 400
Milwaukee
Wisconsin 53202
Phone: 414 276 7742
Fax: 414 276 7603

Prepared For:

Tyco Fire Products LP
2700 Industrial Parkway South
Marinette
Wisconsin 54143

Our Ref.:

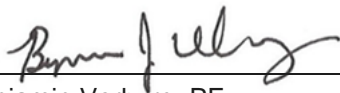
30171092.4.1.1



Jeffrey Yuen
Project Environmental Engineer



Joe Darby
Technical Expert - Engineer



Benjamin Verburg, PE
Principal Engineer

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Figure 2. Ditch A Site Plan

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B. WPDES Laboratory Analytical Reports

C. Ditch A Flow Monitoring and Reporting Methods

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E. Waste Management Documentation

F. Ditch A Maintenance Documentation

Executive Summary

Arcadis U.S., Inc. (Arcadis) has prepared this *Semi-Annual Operation, Maintenance and Optimization Progress Report #8* (Progress Report #8) for the Tyco Fire Technology Center Ditch A Interim Action Treatment System (the Ditch A System) located at 2700 Industrial Parkway South in Marinette, Wisconsin (the Site), on behalf of Tyco Fire Products LP (Tyco) for the July 1, 2022 to December 31, 2022 reporting period. Progress Report #8 is submitted in accordance with S. NR 724.13(3), Wisconsin Administrative Code.

The Tyco Fire Technology Center has been a fire suppressant training, testing, research and development facility since the 1960s. Historically, aqueous film-forming foams have been used as part of the firefighting, development, and quality testing activities at the Site. Per Natural Resources Ch. 708.11 Wisconsin Administration Code, Tyco evaluated the on-Site surface water data and determined that an interim action was appropriate to limit the discharge of per- and polyfluoroalkyl substances (PFAS) in on-Site surface water to off-Site surface water. The interim action focuses on the removal of PFAS, which encompass both perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), in on-Site surface water using best available technology.

The treatment technology chosen to remediate PFAS in surface water from Ditch A is granular activated carbon (GAC). Water is pumped from Ditch A upstream of a check dam through an equalization tank, bag filters, and GAC vessels before being discharged to Ditch A downstream of the check dam.

The Ditch A System was operated throughout the reporting period with limited downtime for system maintenance activities, and did not require operation for several months due to dry/frozen channel conditions in Ditch A. The Ditch A System operated a total of 32 days during the reporting period. During this reporting period 3,700,350 gallons of surface water were treated and PFOA and PFOS were removed from the Ditch A influent at nearly 100% efficiency. The system removed approximately 0.006 pounds of PFOA and 0.002 pounds of PFOS during the reporting period, and approximately 0.82 pounds of PFOA and 0.43 pounds of PFOS since startup in January 2019.

Surface water flow in Ditch A was intermittent during the reporting period and no overtopping of the check dam occurred. Dry channel conditions were present during portions of July and August, 2022. Dry and/or frozen conditions persisted in Ditch A throughout September, October, November, and December, 2022. PFOA and PFOS concentrations upstream of the Ditch A System have fluctuated since system sampling began in January 2019 and have largely been below baseline concentrations since August 2020. Surface water samples downstream of the Ditch A System were collected in July and August 2022. Both samples were below the PFOA surface water standard of 95 nanograms per liter (ng/L) and the PFOS surface water standard of 8 ng/L.

The Ditch A System was operated in accordance with the Operation, Maintenance, and Long-Term Monitoring Plan (submitted on July 22, 2021) during the reporting period. All discharges from the treatment system were in compliance with the applicable Wisconsin Pollutant Discharge Elimination System permit limits. Maintenance to the in-stream check dam was completed on October 20, 2022, in conformance with state and federal permits.

Overall, the Ditch A System is effective as an interim action. It removes PFOA and PFOS efficiently from processed surface water and is effective at reducing the surface water concentrations of PFOA and PFOS to below the applicable surface water standards in Ditch A immediately downstream of the system.

1 Introduction

Arcadis U.S., Inc. (Arcadis) has prepared this *Semi-Annual Operation, Maintenance and Optimization Progress Report #8* (Progress Report #8) for the Tyco Fire Technology Center (FTC) Interim Action Treatment System (the Ditch A System) located at 2700 Industrial Parkway South in Marinette, Wisconsin (the Site), on behalf of Tyco Fire Products LP (Tyco). The system was started up in January 2019 to address per- and polyfluoroalkyl substances (PFAS) in Ditch A surface water. Progress Report #8 summarizes system design and construction details; operations, maintenance, and monitoring activities; and an evaluation of system performance over the reporting period (July 1, 2022 through December 31, 2022).

2 Site Background

The Site is located along the southern border of the City of Marinette, Marinette County, Wisconsin, depicted in **Figure 1**. The Site is a fire suppressant training, testing, research and development facility built in the 1960s. Historically, aqueous film-forming foams (AFFF) were used at the Site as part of research and development, quality testing and firefighting training activities. Site investigation activities have been conducted to define the nature and extent of PFAS related to the use of PFAS-containing AFFF.

The Ditch A System is located south of the Site and north of University Drive, also described as being in the SE1/4 of the NE1/4 of Section 13, Township 30 North, Range 23 East; and is within the Wisconsin Department of Natural Resources (WDNR) Northeast Region. The location of the Ditch A System and the Site plan are shown in **Figure 1** and **Figure 2**, respectively. The Ditch A System is continuously operated (except for dry or frozen conditions) and managed by Arcadis with operational support from Tyco's contractors.

The system discharge is regulated by the WDNR under Wisconsin Pollutant Discharge Elimination System (WPDES) Permit No. WI-0046566-07-0 (the WPDES Permit) and the associated revised coverage letter issued by WDNR on June 4, 2021 (the Coverage Letter). The WDNR Bureau for Remediation and Redevelopment Tracking System identification number for the Site is 02-38-580694. Electronic discharge monitoring reports (eDMRs) are submitted to the WDNR monthly.

3 Site Specific Information

3.1 Relevant Contaminants

PFAS in surface water related to historical activities at the Site are the primary contaminants of concern treated by the Ditch A System. Additional compounds sampled on a quarterly basis as required by the WPDES Permit include oil and grease; total suspended solids (TSS); polycyclic aromatic hydrocarbons (PAHs); pH; total residual chlorine; and benzene, toluene, ethylbenzene, and xylene (BTEX).

3.2 Basis of Design and Ditch A System Overview

Arcadis completed a detailed Site review utilizing preliminary hydraulic data (e.g., stream gauging), desktop research, and select analytical modeling to evaluate base flow conditions. From this data set, the base flow during non-frozen conditions in Ditch A was estimated to be 100 gallons per minute (gpm). The Ditch A System was designed to treat flow rates up to base flow conditions. Seasonal variability in flow conditions were expected and initial estimates were made using United States Geological Survey Streamstats. Wetland and waterway boundaries within the project area were determined by conducting a wetland and waterbody delineation survey. The resulting boundaries were incorporated into engineering and design plans to minimize wetland and waterway impacts to the extent practicable while still accomplishing the engineering design objectives for the project (Arcadis 2018).

A permeable check dam was placed perpendicular to water flow in order to route surface water from Ditch A to the Ditch A System clear well (located adjacent to the ditch and installed to an invert elevation approximately 11 feet below the natural bottom of the ditch) without restricting surface water flow. Flow to the Ditch A System is regulated by a submersible pump installed in the clear well. The pump operates based on the level condition in the clear well; once the water level in the ditch reaches the programmed set point, the pump conveys water to the equalization tank (T-01).

Water from the equalization tank is conveyed to two identical treatment trains consisting of bag filters (F-01/F-02, F-03/F-04, F-05, and F-06) and three granular activated carbon vessels (GAC-101 through GAC-103 and GAC-201 through GAC-203) connected in series using a feed pump (P-01A/P-01B) controlled by a variable frequency drive, which allows operators to control the speed of the pump. Flow meters are also included downstream of the feed pump. The bag filters are in place to remove particulates in the influent water. Pressure gauges and transmitters are used to determine when bag filters need to be replaced and when the GAC vessels need to be backwashed. The treated water is discharged to Ditch A immediately downstream of the check dam.

Piping and instrumentation diagrams of the Ditch A System is included in **Appendix A**.

3.3 System Size and Remediation Method

The Ditch A Treatment System is primarily contained within three structures consisting of two 320-square foot (Container 1 and Container 3) and one 160-square foot (Container 2) Conex boxes. Additional system components are in the clear well, and valve vault, as shown in **Figure 2**.

The Ditch A System was designed to treat flow rates up to base flow conditions (100 gpm) in Ditch A. PFAS are removed from the process flow via adsorption onto GAC media in six 2,000-pound vessels that run concurrently in

two parallel treatment trains. GAC was selected as the treatment technology option due to advantages in ease of operation, ability to reactivate and regenerate carbon, flexibility to modify the system in the field, and the ability to add pre-treatment unit operations in the field if needed to address water chemistry.

3.4 System Modifications and Maintenance Activities

On September 22, 2022, Tyco notified WDNR and US Army Corps of Engineers (USACE) that work in Ditch A would be required to maintain the Ditch A check dam and that all work would be completed per the conditions of the original check dam construction permit (Permit # IP-NE-2018-38-02939). Concurrence that no additional permits or approvals would be required to perform the check dam maintenance was received from WDNR and USACE on October 3, 2022.

On October 20, 2022, Tyco completed the following maintenance activities on the Ditch A check dam. All work was completed within the original construction footprint of the check dam and while the conditions in Ditch A were dry. A technical memorandum of the maintenance is included as **Appendix F**.

1. The existing geotextile covering and sandbag berm were removed;
2. The existing rip-rap base for the check dam was reconfigured to provide a level surface;
3. Approximately 170 new sandbags were placed on top of the newly leveled base;
4. A portion of the sandbags were wrapped with a new geotextile cover;
5. Approximately 170 original sandbags were transported to the soil staging area at the FTC pending proper disposal; and
6. Colman Engineering surveyed the elevations of the check dam and surrounding structures following completion of the maintenance activities.

On December 28, 2022, three carbon vessels (GAC-101, GAC-102, and GAC-103) were removed and shipped to Resist-A-Line in Joliet, Illinois, for vessel inspection and maintenance. All work was completed while the Ditch A system was offline due to dry/frozen conditions in Ditch A; however, the other three vessels (GAC-201, GAC-202, and GAC-203) remained on-line during this time period to treat water in Ditch A if it became available. The repaired vessels were returned to the site and reinstalled on March 3, 2023. A full description of vessel maintenance activities will be provided during the next reporting period (Progress Report #9).

4 System Effectiveness Evaluation

4.1 Ditch A System Operation

The Ditch A System operational data and calculation details are presented in **Table 1**. The system was operated for 32 days over the reporting period and discharged 3,700,350 gallons of water. System utilization over the reporting period, as calculated per WDNR Form 4400-194 daily, was 17%. Dry channel conditions were present during portions of July and August, 2022. Dry and/or frozen conditions persisted in Ditch A throughout September, October, November, and December, 2022. The system operated for 32 days when surface water flow conditions were sufficient to support system operation. Therefore, the utilization rate accounting for days the system was operated and adequate stream flow conditions were present was 100%.

System utilization calculated on an hourly basis and accounting for adequate stream flow conditions in Ditch A was 97%. System downtime was primarily associated with planned maintenance (i.e., GAC changeouts), and bag filter replacements. All alarm-related shutdowns were responded to within one day.

The system was designed to operate at up to 100 gpm (144,000 gallons per day [gpd]). The average system flow rate, as calculated per WDNR Form 4400-194 daily, was 20,111 gpd. The average system flow rate, accounting for actual operating time, was 138,266 gpd. The system operated within the design specifications over the reporting period.

4.2 Ditch A Surface Water Levels

A level transmitter installed in a stilling well upstream of the Ditch A check dam continuously measures the water level in Ditch A. A high-level alarm is activated when the water level nears the top of the check dam. WDNR, Arcadis, and Tyco are notified via an automatically generated email. High-level events are generally caused by heavy precipitation. Water levels recorded during the reporting period upstream of the check dam are presented in **Figure 3**, which also includes data referenced to an updated survey completed by Coleman Engineering on October 20, 2022, as discussed in Section 3.4. The water level in Ditch A did not overtop the check dam during the reporting period, as shown in **Figure 3** and **Table 5**.

Ditch A was dry/frozen from August 31, 2022 through December 31, 2022 during the reporting period.

4.3 Treatment System Sampling

4.3.1 Sample Collection

Weekly PFAS samples and quarterly oil and grease, TSS, BTEX, and PAHs samples are collected at the effluent sampling port, V-900-A, in accordance with the WPDES Permit and Coverage Letter. The results for the reporting periods were submitted to WDNR in monthly eDMRs.

The pH is measured quarterly in the field using a calibrated pH meter. Total residual chlorine measurements are collected in the field quarterly with a calibrated meter when chlorine tablets are added to the system. All other WPDES sampling parameters are collected directly into clean, laboratory provided sample containers and immediately stored on ice in preparation of shipment to a WDNR-certified laboratory for analysis.

4.3.2 Laboratory Analytical Methods

WPDES Discharge compliance samples were analyzed for the following analytes and methods:

- PFAS using United States Environmental Protection Agency (U.S. EPA) Method 537 Modified
- Oil and Grease using U.S. EPA Method 1664
- TSS using Standard Methods 2540D
- BTEX using U.S. EPA Method 624
- PAHs using U.S. EPA Method 625.

Samples were submitted to the following laboratories under standard chain-of-custody procedures:

- Oil and Grease/TSS/BTEX/PAHs: Eurofins TestAmerica in University Park, Illinois (TestAmerica Chicago).
- PFAS: Eurofins TestAmerica in West Sacramento, California (TestAmerica Sacramento).

4.3.3 WPDES Permit Exceedances and Sampling Omissions

Laboratory analytical results for WPDES samples are presented in **Table 2** and compared to the system effluent limitations per the Coverage Letter. Laboratory analytical reports are included as **Appendix B**.

There were no WPDES Permit exceedance or sampling omissions during the reporting period.

4.4 Quantity of Contaminants Treated and System Efficiency

As shown in **Figure 4** and **Table 3**, the system removed approximately 0.006 pounds of PFOA and 0.002 pounds of perfluorooctanesulfonic acid (PFOS) over the reporting period. The system has removed approximately 0.82 pounds of PFOA and 0.43 pounds of PFOS since startup in January 2019. On average, the system removed PFOA and PFOS at near 100% efficiency from the Ditch A System influent over the reporting period, as shown in **Table 4**.

All discharge from the treatment system contained concentrations below applicable WPDES permit limits. As discussed below, none of the whole-stream monthly surface water samples were above the surface water standards of 95 nanograms per liter (ng/L) for PFOA or 8 ng/L for PFOS.

A comparison of the weekly Ditch A system discharge volume (since startup in January 2019) and weekly Ditch A stream flow volume (since tracking began in July 2021) is presented in **Table 5**. The Ditch A stream flow volumes were estimated per the methods outlined in **Appendix C**.

5 Ditch A Surface Water PFAS Trend Evaluation

5.1 Upstream of Treatment System

Baseline PFOA and PFOS concentrations were collected from Ditch A near the proposed Ditch A System location in May 2018 and July 2018 (prior to system startup). PFOA concentrations in samples collected from location SW-27 ranged from 2,200 ng/L in May 2018 to 990 ng/L in July 2018 (Arcadis 2018). PFOS concentrations in samples collected from location SW-27 ranged from 570 ng/L in May 2018 to 1,100 ng/L in July 2018. The PFOA and PFOS concentration from samples collected from the Ditch A System influent from startup (January 2019) through the end of the reporting period (June 2022) are shown in **Figure 5** in comparison to baseline samples.

Ditch A is a surface water body and is subject to a variety of intermittent inputs (rainfall, snowmelt, stormwater discharge, surface runoff, etc.) and groundwater seepage that impact the PFAS concentrations in the Ditch A surface water. The interconnected nature of these factors is expected to result in varying PFAS concentrations in Ditch A surface water. For example, during normal baseflow conditions, the PFAS concentration is primarily driven by groundwater entering the ditch from the bottom and sides. However, during periods of high flow generated by storm events, the hydraulic pressure of the increased surface water loading minimizes groundwater seepage and the PFAS concentration is driven primarily by the various non-groundwater sources. As shown in **Figure 5**, PFOA and PFOS concentrations in Ditch A have fluctuated since system sampling began in January 2019 but have historically remained within the range observed during baseline sampling. However, PFOA and PFOS have largely been below baseline concentrations in Ditch A since August 2020.

5.2 Downstream of Treatment System

Monthly surface water sample collection downstream of the Ditch A System began in August 2021. During the reporting period, monthly samples were collected on July 6 and August, 2022 at SW-40 (**Figure 6**). No natural flow was observed in Ditch A throughout September, October, November, and December 2022; therefore, no downstream samples were collected. Samples were collected directly into clean, laboratory provided sample containers and immediately stored on ice in preparation of shipment to TestAmerica Sacramento under standard chain-of-custody procedures for analysis of PFAS by U.S. EPA Method 537 Modified. Analytical results of the downstream surface water samples collected during the reporting period are presented in **Table 6** and **Figure 7**. Laboratory analytical reports are included in **Appendix D**.

Monthly surface water sample results were compared to the following surface water standards (per NR 102.04 (8d), effective August 1, 2022):

- PFOA: The surface water standard is 20 ng/L in waters classified as public water supplies under ch. NR 104, and 95 ng/L for other surface waters. Tributaries to the Menominee River or Green Bay are not included in the list of sources subject to the public water supply standard under NR 104.07, therefore the surface water standard applicable to PFOA in Ditch A is 95 ng/L.
- PFOS: The surface water standard is 8 ng/L for all waters except those that cannot naturally support fish and do not have downstream waters that support fish.

PFOA and PFOS concentrations in all downstream surface water samples collected during the reporting period were below the applicable WPDES permit limits and surface water standards.

5.3 Upstream and Downstream Analytical Results

A summary of monthly surface water PFAS analytical results from samples collected upstream and downstream of the Ditch A system are presented in **Table 7**. The upstream results were calculated as the average of the weekly samples collected from the Ditch A System influent, per the Ditch A System OM&M Plan submitted on July 22, 2021. The monthly upstream and downstream analytical results support the system effectiveness evaluation presented in this Progress Report #8, as discussed in Sections 4.4, 5.1 and 5.2. Overall, the Ditch A System is effective as an interim action and removes PFOA and PFOS efficiently from processed surface water. The Ditch A System is also effective at reducing the surface water concentrations of PFOA and PFOS in Ditch A to below the applicable surface water standards immediately downstream of the system.

6 Waste Management

PFAS-impacted materials generated by the Ditch A System include bag filters, sediments/solids generated from backwashing the GAC vessels, and spent GAC. These materials are managed per the Ditch A System OM&M Plan submitted in July 2021 and additional details are provided below.

6.1 Bag Filters

Used bag filters are containerized in 55-gallon drums and staged at the FTC prior to transport by Endpoint Solutions Corporation (Endpoint) to their waste transfer facility located in Hartford, Wisconsin. The drum contents are consolidated with similar material generated by the Ditch B system at Endpoint's facility for more efficient transportation and disposal. Manifests documenting transport from the FTC to Endpoint's facility and from Endpoint's facility to the final hazardous waste disposal facility (Chemical Waste Management, Inc. in Arlington, Oregon) are included in **Appendix E**.

6.2 Sediment and Solids

Backwashing the GAC vessels during the reporting period generated a minimal amount of sediment and solids. All sediment and solids are consolidated in the decant tank (T-03) pending removal and disposal.

Approximately 170 sandbags generated from the check dam maintenance described in Section 3.4 are staged at the FTC pending disposal.

6.3 Spent GAC

Spent GAC removed from the Ditch A System is consolidated with similar material from the Ditch B System and transported to TetraSolv Filtration, Inc. for reactivation at a facility operated by Cabot Corporation in Pryor, Oklahoma. Certificates of recycling confirming proper re-activation of spent carbon generated by the Ditch A and Ditch B systems are included in **Appendix E**. During the reporting period, 300,000 pounds of spent GAC generated from the Ditch A and Ditch B systems were re-activated for re-use in the Ditch A and Ditch B Systems.

7 Summary

The Ditch A System was operated throughout the reporting period with limited downtime for system maintenance activities. Over the reporting period, the Ditch A System operated a total of 32 days and treated 3,700,350 gallons of surface water while removing PFOA and PFOS from the Ditch A influent at nearly 100% efficiency. The system removed approximately 0.006 pounds of PFOA and 0.002 pounds of PFOS over the reporting period. The system has removed approximately 0.82 pounds of PFOA and 0.43 pounds of PFOS since startup in January 2019.

Surface water flow in Ditch A was intermittent during the reporting period and no overtopping of the check dam occurred. Dry channel conditions were present during portions of July and August, 2022. Dry and/or frozen conditions persisted in Ditch A throughout September, October, November, and December, 2022. PFOA and PFOS concentrations upstream of the Ditch A System have fluctuated since system sampling began in January 2019 and have largely been below baseline concentrations since August 2020. Surface water samples downstream of the Ditch A System were collected in July and August 2022. Both samples were below the PFOA surface water standard of 95 ng/L and the PFOS surface water standard of 8 ng/L.

The Ditch A System operated per the OM&M Plan during the reporting period and no exceedances of the WPDES permit were observed. Maintenance to the in-stream check dam was completed on October 20 in conformance with state and federal permits.

Overall, the Ditch A System is effective as an interim action and removes PFOA and PFOS efficiently from processed surface water. The Ditch A System is also effective at reducing the surface water concentrations of PFOA and PFOS to below the applicable surface water standards in Ditch A immediately downstream of the system.

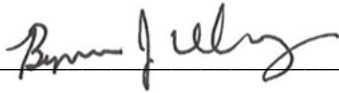
Semi-Annual Operation, Maintenance, and Optimization Progress Report #8
Tyco Fire Technology Center Ditch A Interim Action Treatment System
BRRTS# 02-38-580694

8 References

Arcadis. 2018. Discharge Management Plan for WPDES Permit No. WI-0046566-07-0. August 2018.

9 Professional Certification

I, Benjamin Verburg, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



Principal Engineer, 31794

Signature, title, and P.E. number



P.E. stamp

Tables

Table 1
Ditch A System Operational Data
Tyco Fire Fire Products LP
Marinette, Wisconsin



Month-Year	Total Volume of Treated Water Discharged (gallons)	Days in Period	Potential Operating Days (with Adequate Stream Flow Conditions) ¹	Potential Operating Hours (with Adequate Stream Flow Conditions) ²	Reporting Statistics					Operational Statistics			Comments
					Actual Operating Days ³	Utilization (Days in Period) ⁴	Utilization (Operating Days) ⁵	Average System Flow Rate (Days in Period) ⁶ [GPD]	Average System Flow Rate (Actual Operating Days) ⁷ [GPD]	Actual Operating Hours	Utilization (Operating Hours with Adequate Stream Flow Conditions) ⁸	Average System Flow Rate (Actual Operating Hours) ⁹ [GPD]	
Jul-22	1,629,650	31	13	288	13	42%	100%	52,569	125,358	276	96%	141,863	The system was offline 7/14/22 - 7/31/22 due to dry conditions in Ditch A.
Aug-22	2,070,700	31	19	374	19	61%	100%	66,797	108,984	367	98%	135,561	The system was offline 8/4/22 - 8/14/22 and 8/31/22 due to dry conditions in Ditch A.
Sep-22	0	30	0	0	0	0%	0%	0	0	0	0%	0	The system was offline 9/1/22 - 9/30/22 due to dry conditions in Ditch A.
Oct-22	0	31	0	0	0	0%	0%	0	0	0	0%	0	The system was offline 10/1/22 - 10/31/22 due to dry conditions in Ditch A.
Nov-22	0	30	0	0	0	0%	0%	0	0	0	0%	0	The system was offline 11/1/22 - 11/30/22 due to dry conditions in Ditch A.
Dec-22	0	31	0	0	0	0%	0%	0	0	0	0%	0	The system was offline 12/1/22 - 12/31/22 due to dry conditions in Ditch A.
Total:	3,700,350	184	32	662	32	17%	100%	20,111	115,636	642	97%	138,266	

Notes:

- 1 = Days in period during which weather and flow conditions in Ditch A could support system operation
- 2 = Hours in period during which weather and flow conditions in Ditch A could support system operation
- 3 = Days during which system operation occurred
- 4 = Utilization (Days in Period) = Actual Operating Days / Days in Period (per WDNR form 4400-194)
- 5 = Utilization (Operating Days) = Actual Days of Operation / Potential Operating Days (with Adequate Stream Flow Conditions)
- 6 = Average Flow Rate (Days in Period) = Volume Discharged / Days in Period (per WDNR form 4400-194)
- 7 = Average Flow Rate (Actual Operating Days) = Volume Discharged / Actual Operating Days
- 8 = Utilization (Operating Hours) = Actual Operating Hours / Potential Operating Hours with Adequate Stream Flow Conditions
- 9 = Average Flow Rate (Actual Operating Hours) = Volume Discharged / ([Actual Operating Hours] * 24)

Abbreviations:

- eDMR = electronic discharge monitoring report
- GPD = gallons per day
- NA = not available
- WDNR = Wisconsin Department of Natural Resources

Table 2
Ditch A System WPDES Laboratory Analytical Results
Tyco Fire Fire Products LP
Marinette, Wisconsin



		Total Suspended Solids (TSS)	Oil & Grease	BTEX, total		PAH, total	Perfluorooctanesulfonic Acid (PFOS)	Perfluorooctanoic Acid (PFOA)	pH		Chlorine, Total Residual			
Units:		mg/L	mg/L	µg/L		µg/L	µg/L	µg/L	s.u.		µg/L			
Effluent Limitations:		40	10		750		0.1		0.011		0.42	6	9	19
Location	Sample Date	Daily Max	Daily Max		Monthly Average		Monthly Average		Monthly Average		Monthly Average	Daily Min	Daily Max	Daily Max
V-900-A	7/1/2022	NS	NS	NS		NS		< 0.00046 U		< 0.00073 U		NS		X
V-900-A	7/6/2022	< 1.9 U	2.4 J	< 0.4	0.0000	< 0.36	0.0000	< 0.00047 U	0.0000	< 0.00075 U	0.0000	7.07		X
V-900-A	7/11/2022	NS	NS	NS		NS		< 0.00045 U		< 0.00071 U		NS		X
V-900-A	8/1/2022	NS	NS	NS		NS		< 0.0005 U		< 0.00079 U		NS		X
V-900-A	8/15/2022	NS	NS	NS	NS	NS	NS	< 0.00048 U	0	< 0.00075 U	0	NS		X
V-900-A	8/22/2022	NS	NS	NS		NS		< 0.00047 U		< 0.00074 U		NS		X
V-900-A	8/29/2022	NS	NS	NS		NS		< 0.00044 U		< 0.00069 U		NS		X

Notes:

B = Compound was found in blank and sample

Bold and Yellow = Result exceeds effluent limitation

BTEX = Benzene, ethylbenzene, toluene, and xylenes

J = Result is less than the reporting limit (RL) and greater than the MDL. The result is estimated.

µg/L = micrograms per liter

mg/L = milligrams per liter

NA = not available

ng/L = nanograms per liter

NS = not sampled

PAH = Polycyclic aromatic hydrocarbons

s.u. = standard units

U = Result is less than the method detection limit (MDL)

X = Chlorine not added to system

V-900-A is the Ditch A System WPDES discharge sampling location.

Effluent Limitations per Coverage Letter dated June 4, 2021 (under WPDES General Permit No. WI-0046566-07-0).

Per the coverage letter dated June 4, 2021, TSS, oil & grease, BTEX, PAH, pH, and total residual chlorine samples are collected quarterly.

Table 3
Ditch A System PFOA and PFOS Mass Removal
Tyco Fire Products LP
Marinette, Wisconsin



Month-Year	Ditch A Treatment System PFOA and PFOS Mass Removal			
	Monthly		Cumulative	
	PFOS	PFOA	PFOS	PFOA
	lbs	lbs	lbs	lbs
Jan-19	0.0003	0.0007	0.0003	0.0007
Feb-19	0.0000	0.0000	0.0003	0.0007
Mar-19	0.0030	0.0044	0.0033	0.0051
Apr-19	0.0099	0.0220	0.0132	0.0270
May-19	0.0122	0.0327	0.0254	0.0598
Jun-19	0.0144	0.0339	0.0398	0.0937
Jul-19	0.0175	0.0318	0.0573	0.1255
Aug-19	0.0132	0.0189	0.0705	0.1443
Sep-19	0.0184	0.0285	0.0889	0.1728
Oct-19	0.0242	0.0422	0.1131	0.2150
Nov-19	0.0217	0.0474	0.1347	0.2623
Dec-19	0.0252	0.0494	0.1600	0.3118
Jan-20	0.0216	0.0417	0.1816	0.3535
Feb-20	0.0138	0.0327	0.1954	0.3862
Mar-20	0.0280	0.0518	0.2234	0.4381
Apr-20	0.0168	0.0327	0.2402	0.4708
May-20	0.0205	0.0359	0.2606	0.5067
Jun-20	0.0246	0.0424	0.2852	0.5491
Jul-20	0.0327	0.0561	0.3179	0.6053
Aug-20	0.0119	0.0219	0.3299	0.6272
Sep-20	0.0026	0.0031	0.3325	0.6303
Oct-20	0.0016	0.0015	0.3341	0.6317
Nov-20	0.0057	0.0077	0.3398	0.6394
Dec-20	0.0024	0.0033	0.3422	0.6427
Jan-21	0.0001	0.0001	0.3424	0.6428
Feb-21	0.0000	0.0000	0.3424	0.6428
Mar-21	0.0037	0.0042	0.3461	0.6470
Apr-21	0.0128	0.0219	0.3589	0.6689
May-21	0.0061	0.0108	0.3650	0.6797
Jun-21	0.0004	0.0005	0.3653	0.6802
Jul-21	0.0170	0.0279	0.3823	0.7081
Aug-21	0.0070	0.0111	0.3893	0.7192
Sep-21	0.0000	0.0000	0.3893	0.7192
Oct-21	0.0000	0.0000	0.3893	0.7192
Nov-21	0.0000	0.0000	0.3893	0.7192
Dec-21	0.0001	0.0047	0.3894	0.7239
Jan-22	0.0003	0.0030	0.3897	0.7269

Table 3
Ditch A System PFOA and PFOS Mass Removal
Tyco Fire Products LP
Marinette, Wisconsin



Month-Year	Ditch A Treatment System PFOA and PFOS Mass Removal			
	Monthly		Cumulative	
	PFOS	PFOA	PFOS	PFOA
	lbs	lbs	lbs	lbs
Feb-22	0.0001	0.0013	0.3898	0.7282
Mar-22	0.0018	0.0045	0.3916	0.7326
Apr-22	0.0122	0.0238	0.4038	0.7564
May-22	0.0127	0.0284	0.4166	0.7848
Jun-22	0.0085	0.0262	0.4251	0.8110
Jul-22	0.0013	0.0039	0.4264	0.8149
Aug-22	0.0011	0.0017	0.4275	0.8166
Sep-22	0.0000	0.0000	0.4275	0.8166
Oct-22	0.0000	0.0000	0.4275	0.8166
Nov-22	0.0000	0.0000	0.4275	0.8166
Dec-22	0.0000	0.0000	0.4275	0.8166

Abbreviations:

-- = Not Quantified

lbs = Pounds

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctane sulfonic acid

Table 4
Ditch A System PFAS Treatment Efficiency
Tyco Fire Products LP
Marinette, Wisconsin



Date	PFOS			PFOA			
	Influent	Effluent	Efficiency	Influent	Effluent	Efficiency	
	(µg/L)	(µg/L)	(%)	(µg/L)	(µg/L)	(%)	
7/1/2022	0.032	< 0.00046 U	100.0	0.071	< 0.00073 U	100.0	
7/6/2022	0.16	< 0.00047 U	100.0	0.47 D	< 0.00075 U	100.0	
7/11/2022	< 0.00046 U	< 0.00045 U	100.0	< 0.00073 U	< 0.00071 U	100.0	
Average:			100.0	Average:			100.0
8/1/2022	0.15	< 0.0005 U	100.0	0.18	< 0.00079 U	100.0	
8/15/2022	0.11	< 0.00048 U	100.0	0.17	< 0.00075 U	100.0	
8/22/2022	0.01	< 0.00047 U	100.0	0.017	< 0.00074 U	100.0	
8/29/2022	0.078	< 0.00044 U	100.0	0.11	< 0.00069 U	100.0	
Average:			100.0	Average:			100.0
Overall Average:			100.0	Overall Average:			100.0

Notes: 100.00
 - = The associated numerical value is expected to have a negative or low bias
 < = Result is less than the method detection limit (MDL)

Abbreviations:
 µg/L = Micrograms per liter
 NA = Not Available
 PFOA = Perfluorooctanoic acid
 PFOS = Perfluorooctanesulfonic acid
 U = Result is less than the method detection limit (MDL)

Table 5
Weekly Ditch A Treatment System and Stream Flow Volumes
Tyco Fire Products LP
Marinette, Wisconsin



Week Start Date	Week End Date	Ditch A Treatment System Discharge Volume	Ditch A Stream Flow Volume	Comments
		gallons	gallons	
Sunday, January 13, 2019	Saturday, January 19, 2019	746,980	Not Quantified	--
Sunday, January 20, 2019	Saturday, January 26, 2019	975,180	Not Quantified	--
Sunday, January 27, 2019	Saturday, February 2, 2019	444,670	Not Quantified	--
Sunday, February 3, 2019	Saturday, February 9, 2019	0	Not Quantified	--
Sunday, February 10, 2019	Saturday, February 16, 2019	0	Not Quantified	--
Sunday, February 17, 2019	Saturday, February 23, 2019	0	Not Quantified	--
Sunday, February 24, 2019	Saturday, March 2, 2019	0	Not Quantified	--
Sunday, March 3, 2019	Saturday, March 9, 2019	0	Not Quantified	--
Sunday, March 10, 2019	Saturday, March 16, 2019	496,070	Not Quantified	--
Sunday, March 17, 2019	Saturday, March 23, 2019	954,830	Not Quantified	--
Sunday, March 24, 2019	Saturday, March 30, 2019	908,290	Not Quantified	--
Sunday, March 31, 2019	Saturday, April 6, 2019	747,220	Not Quantified	--
Sunday, April 7, 2019	Saturday, April 13, 2019	958,080	Not Quantified	--
Sunday, April 14, 2019	Saturday, April 20, 2019	796,100	Not Quantified	--
Sunday, April 21, 2019	Saturday, April 27, 2019	765,820	Not Quantified	--
Sunday, April 28, 2019	Saturday, May 4, 2019	626,240	Not Quantified	--
Sunday, May 5, 2019	Saturday, May 11, 2019	710,160	Not Quantified	--
Sunday, May 12, 2019	Saturday, May 18, 2019	769,040	Not Quantified	--
Sunday, May 19, 2019	Saturday, May 25, 2019	748,130	Not Quantified	--
Sunday, May 26, 2019	Saturday, June 1, 2019	588,420	Not Quantified	--
Sunday, June 2, 2019	Saturday, June 8, 2019	400,460	Not Quantified	--
Sunday, June 9, 2019	Saturday, June 15, 2019	651,820	Not Quantified	--
Sunday, June 16, 2019	Saturday, June 22, 2019	566,290	Not Quantified	--
Sunday, June 23, 2019	Saturday, June 29, 2019	560,850	Not Quantified	--
Sunday, June 30, 2019	Saturday, July 6, 2019	694,990	Not Quantified	--
Sunday, July 7, 2019	Saturday, July 13, 2019	741,820	Not Quantified	--
Sunday, July 14, 2019	Saturday, July 20, 2019	562,290	Not Quantified	--
Sunday, July 21, 2019	Saturday, July 27, 2019	671,110	Not Quantified	--
Sunday, July 28, 2019	Saturday, August 3, 2019	672,540	Not Quantified	--
Sunday, August 4, 2019	Saturday, August 10, 2019	732,500	Not Quantified	--
Sunday, August 11, 2019	Saturday, August 17, 2019	675,020	Not Quantified	--
Sunday, August 18, 2019	Saturday, August 24, 2019	590,400	Not Quantified	--
Sunday, August 25, 2019	Saturday, August 31, 2019	785,670	Not Quantified	--
Sunday, September 1, 2019	Saturday, September 7, 2019	778,040	Not Quantified	--
Sunday, September 8, 2019	Saturday, September 14, 2019	757,080	Not Quantified	--
Sunday, September 15, 2019	Saturday, September 21, 2019	643,670	Not Quantified	--
Sunday, September 22, 2019	Saturday, September 28, 2019	568,370	Not Quantified	--
Sunday, September 29, 2019	Saturday, October 5, 2019	774,090	Not Quantified	--
Sunday, October 6, 2019	Saturday, October 12, 2019	682,050	Not Quantified	--
Sunday, October 13, 2019	Saturday, October 19, 2019	705,380	Not Quantified	--
Sunday, October 20, 2019	Saturday, October 26, 2019	425,900	Not Quantified	--
Sunday, October 27, 2019	Saturday, November 2, 2019	511,360	Not Quantified	--
Sunday, November 3, 2019	Saturday, November 9, 2019	691,000	Not Quantified	--
Sunday, November 10, 2019	Saturday, November 16, 2019	741,510	Not Quantified	--
Sunday, November 17, 2019	Saturday, November 23, 2019	572,690	Not Quantified	--
Sunday, November 24, 2019	Saturday, November 30, 2019	776,610	Not Quantified	--
Sunday, December 1, 2019	Saturday, December 7, 2019	923,570	Not Quantified	--
Sunday, December 8, 2019	Saturday, December 14, 2019	966,260	Not Quantified	--
Sunday, December 15, 2019	Saturday, December 21, 2019	646,910	Not Quantified	--
Sunday, December 22, 2019	Saturday, December 28, 2019	862,980	Not Quantified	--
Sunday, December 29, 2019	Saturday, January 4, 2020	940,640	Not Quantified	--
Sunday, January 5, 2020	Saturday, January 11, 2020	935,890	Not Quantified	--
Sunday, January 12, 2020	Saturday, January 18, 2020	924,470	Not Quantified	--
Sunday, January 19, 2020	Saturday, January 25, 2020	605,560	Not Quantified	--

Table 5
Weekly Ditch A Treatment System and Stream Flow Volumes
Tyco Fire Products LP
Marinette, Wisconsin



Week Start Date	Week End Date	Ditch A Treatment System Discharge Volume	Ditch A Stream Flow Volume	Comments
		gallons	gallons	
Sunday, January 26, 2020	Saturday, February 1, 2020	653,510	Not Quantified	--
Sunday, February 2, 2020	Saturday, February 8, 2020	925,610	Not Quantified	--
Sunday, February 9, 2020	Saturday, February 15, 2020	954,610	Not Quantified	--
Sunday, February 16, 2020	Saturday, February 22, 2020	972,220	Not Quantified	--
Sunday, February 23, 2020	Saturday, February 29, 2020	830,470	Not Quantified	--
Sunday, March 1, 2020	Saturday, March 7, 2020	948,410	Not Quantified	--
Sunday, March 8, 2020	Saturday, March 14, 2020	954,390	Not Quantified	--
Sunday, March 15, 2020	Saturday, March 21, 2020	930,780	Not Quantified	--
Sunday, March 22, 2020	Saturday, March 28, 2020	703,260	Not Quantified	--
Sunday, March 29, 2020	Saturday, April 4, 2020	861,640	Not Quantified	--
Sunday, April 5, 2020	Saturday, April 11, 2020	766,820	Not Quantified	--
Sunday, April 12, 2020	Saturday, April 18, 2020	383,520	Not Quantified	--
Sunday, April 19, 2020	Saturday, April 25, 2020	271,890	Not Quantified	--
Sunday, April 26, 2020	Saturday, May 2, 2020	218,510	Not Quantified	--
Sunday, May 3, 2020	Saturday, May 9, 2020	246,820	Not Quantified	--
Sunday, May 10, 2020	Saturday, May 16, 2020	775,230	Not Quantified	--
Sunday, May 17, 2020	Saturday, May 23, 2020	590,680	Not Quantified	--
Sunday, May 24, 2020	Saturday, May 30, 2020	651,170	Not Quantified	--
Sunday, May 31, 2020	Saturday, June 6, 2020	784,660	Not Quantified	--
Sunday, June 7, 2020	Saturday, June 13, 2020	690,470	Not Quantified	--
Sunday, June 14, 2020	Saturday, June 20, 2020	613,140	Not Quantified	--
Sunday, June 21, 2020	Saturday, June 27, 2020	580,250	Not Quantified	--
Sunday, June 28, 2020	Saturday, July 4, 2020	941,070	Not Quantified	--
Sunday, July 5, 2020	Saturday, July 11, 2020	812,520	Not Quantified	--
Sunday, July 12, 2020	Saturday, July 18, 2020	749,320	Not Quantified	--
Sunday, July 19, 2020	Saturday, July 25, 2020	749,480	Not Quantified	--
Sunday, July 26, 2020	Saturday, August 1, 2020	860,940	Not Quantified	--
Sunday, August 2, 2020	Saturday, August 8, 2020	935,600	Not Quantified	--
Sunday, August 9, 2020	Saturday, August 15, 2020	911,510	Not Quantified	--
Sunday, August 16, 2020	Saturday, August 22, 2020	879,620	Not Quantified	--
Sunday, August 23, 2020	Saturday, August 29, 2020	988,730	Not Quantified	--
Sunday, August 30, 2020	Saturday, September 5, 2020	980,170	Not Quantified	--
Sunday, September 6, 2020	Saturday, September 12, 2020	379,840	Not Quantified	--
Sunday, September 13, 2020	Saturday, September 19, 2020	612,690	Not Quantified	--
Sunday, September 20, 2020	Saturday, September 26, 2020	187,340	Not Quantified	--
Sunday, September 27, 2020	Saturday, October 3, 2020	0	Not Quantified	--
Sunday, October 4, 2020	Saturday, October 10, 2020	0	Not Quantified	--
Sunday, October 11, 2020	Saturday, October 17, 2020	0	Not Quantified	--
Sunday, October 18, 2020	Saturday, October 24, 2020	226,530	Not Quantified	--
Sunday, October 25, 2020	Saturday, October 31, 2020	1,008,160	Not Quantified	--
Sunday, November 1, 2020	Saturday, November 7, 2020	807,250	Not Quantified	--
Sunday, November 8, 2020	Saturday, November 14, 2020	617,810	Not Quantified	--
Sunday, November 15, 2020	Saturday, November 21, 2020	961,220	Not Quantified	--
Sunday, November 22, 2020	Saturday, November 28, 2020	980,480	Not Quantified	--
Sunday, November 29, 2020	Saturday, December 5, 2020	983,120	Not Quantified	--
Sunday, December 6, 2020	Saturday, December 12, 2020	1,013,640	Not Quantified	--
Sunday, December 13, 2020	Saturday, December 19, 2020	1,023,290	Not Quantified	--
Sunday, December 20, 2020	Saturday, December 26, 2020	982,810	Not Quantified	--
Sunday, December 27, 2020	Saturday, January 2, 2021	882,610	Not Quantified	--
Sunday, January 3, 2021	Saturday, January 9, 2021	723,000	Not Quantified	--

Table 5
Weekly Ditch A Treatment System and Stream Flow Volumes
Tyco Fire Products LP
Marinette, Wisconsin



Week Start Date	Week End Date	Ditch A Treatment System Discharge Volume	Ditch A Stream Flow Volume	Comments
		gallons	gallons	
Sunday, January 10, 2021	Saturday, January 16, 2021	0	Not Quantified	--
Sunday, January 17, 2021	Saturday, January 23, 2021	640,290	Not Quantified	--
Sunday, January 24, 2021	Saturday, January 30, 2021	0	Not Quantified	--
Sunday, January 31, 2021	Saturday, February 6, 2021	0	Not Quantified	--
Sunday, February 7, 2021	Saturday, February 13, 2021	0	Not Quantified	--
Sunday, February 14, 2021	Saturday, February 20, 2021	0	Not Quantified	--
Sunday, February 21, 2021	Saturday, February 27, 2021	0	Not Quantified	--
Sunday, February 28, 2021	Saturday, March 6, 2021	0	Not Quantified	--
Sunday, March 7, 2021	Saturday, March 13, 2021	458,650	Not Quantified	--
Sunday, March 14, 2021	Saturday, March 20, 2021	957,470	Not Quantified	--
Sunday, March 21, 2021	Saturday, March 27, 2021	996,610	Not Quantified	--
Sunday, March 28, 2021	Saturday, April 3, 2021	896,360	Not Quantified	--
Sunday, April 4, 2021	Saturday, April 10, 2021	989,920	Not Quantified	--
Sunday, April 11, 2021	Saturday, April 17, 2021	968,470	Not Quantified	--
Sunday, April 18, 2021	Saturday, April 24, 2021	980,120	Not Quantified	--
Sunday, April 25, 2021	Saturday, May 1, 2021	892,050	Not Quantified	--
Sunday, May 2, 2021	Saturday, May 8, 2021	760,720	Not Quantified	--
Sunday, May 9, 2021	Saturday, May 15, 2021	750,480	Not Quantified	--
Sunday, May 16, 2021	Saturday, May 22, 2021	895,230	Not Quantified	--
Sunday, May 23, 2021	Saturday, May 29, 2021	976,040	Not Quantified	--
Sunday, May 30, 2021	Saturday, June 5, 2021	945,780	Not Quantified	--
Sunday, June 6, 2021	Saturday, June 12, 2021	515,150	Not Quantified	--
Sunday, June 13, 2021	Saturday, June 19, 2021	0	Not Quantified	--
Sunday, June 20, 2021	Saturday, June 26, 2021	0	Not Quantified	--
Sunday, June 27, 2021	Saturday, July 3, 2021	470,400	470,400	--
Sunday, July 4, 2021	Saturday, July 10, 2021	923,960	923,960	--
Sunday, July 11, 2021	Saturday, July 17, 2021	849,050	849,050	--
Sunday, July 18, 2021	Saturday, July 24, 2021	862,210	862,210	--
Sunday, July 25, 2021	Saturday, July 31, 2021	806,590	806,590	--
Sunday, August 1, 2021	Saturday, August 7, 2021	1,002,360	1,002,360	--
Sunday, August 8, 2021	Saturday, August 14, 2021	965,060	965,060	--
Sunday, August 15, 2021	Saturday, August 21, 2021	906,250	906,250	--
Sunday, August 22, 2021	Saturday, August 28, 2021	256,440	256,440	--
Sunday, August 29, 2021	Saturday, September 4, 2021	934,260	934,260	--
Sunday, September 5, 2021	Saturday, September 11, 2021	0	0	--
Sunday, September 12, 2021	Saturday, September 18, 2021	0	0	--
Sunday, September 19, 2021	Saturday, September 25, 2021	0	0	--
Sunday, September 26, 2021	Saturday, October 2, 2021	0	0	--
Sunday, October 3, 2021	Saturday, October 9, 2021	0	0	--
Sunday, October 10, 2021	Saturday, October 16, 2021	0	0	--
Sunday, October 17, 2021	Saturday, October 23, 2021	0	0	--
Sunday, October 24, 2021	Saturday, October 30, 2021	0	0	--
Sunday, October 31, 2021	Saturday, November 6, 2021	0	0	--
Sunday, November 7, 2021	Saturday, November 13, 2021	0	0	--
Sunday, November 14, 2021	Saturday, November 20, 2021	0	0	--
Sunday, November 21, 2021	Saturday, November 27, 2021	0	0	--
Sunday, November 28, 2021	Saturday, December 4, 2021	0	0	--
Sunday, December 5, 2021	Saturday, December 11, 2021	0	0	--
Sunday, December 12, 2021	Saturday, December 18, 2021	0	0	--
Sunday, December 19, 2021	Saturday, December 25, 2021	46,720	0	Additional system flow due to processing construction dewatering water.
Sunday, December 26, 2021	Saturday, January 1, 2022	0	0	--
Sunday, January 2, 2022	Saturday, January 8, 2022	0	0	--

Table 5
Weekly Ditch A Treatment System and Stream Flow Volumes
Tyco Fire Products LP
Marinette, Wisconsin



Week Start Date	Week End Date	Ditch A Treatment System Discharge Volume	Ditch A Stream Flow Volume	Comments
		gallons	gallons	
Sunday, January 9, 2022	Saturday, January 15, 2022	123,800	0	Additional system flow due to processing construction dewatering water.
Sunday, January 16, 2022	Saturday, January 22, 2022	135,880	0	Additional system flow due to processing construction dewatering water.
Sunday, January 23, 2022	Saturday, January 29, 2022	54,700	0	Additional system flow due to processing construction dewatering water.
Sunday, January 30, 2022	Saturday, February 5, 2022	111,000	0	Additional system flow due to processing construction dewatering water.
Sunday, February 6, 2022	Saturday, February 12, 2022	0	0	--
Sunday, February 13, 2022	Saturday, February 19, 2022	0	0	--
Sunday, February 20, 2022	Saturday, February 26, 2022	0	0	--
Sunday, February 27, 2022	Saturday, March 5, 2022	0	0	--
Sunday, March 6, 2022	Saturday, March 12, 2022	0	0	--
Sunday, March 13, 2022	Saturday, March 19, 2022	0	0	--
Sunday, March 20, 2022	Saturday, March 26, 2022	532,910	515,220	Additional system flow due to processing construction dewatering water.
Sunday, March 27, 2022	Saturday, April 2, 2022	839,860	839,860	--
Sunday, April 3, 2022	Saturday, April 9, 2022	971,490	971,957	Check dam overtop on 4/6/22
Sunday, April 10, 2022	Saturday, April 16, 2022	991,800	991,800	--
Sunday, April 17, 2022	Saturday, April 23, 2022	995,510	995,510	--
Sunday, April 24, 2022	Saturday, April 30, 2022	854,650	854,650	--
Sunday, May 1, 2022	Saturday, May 7, 2022	1,012,040	1,012,040	--
Sunday, May 8, 2022	Saturday, May 14, 2022	982,480	984,413	Check dam overtop on 5/12/22
Sunday, May 15, 2022	Saturday, May 21, 2022	757,610	759,243	Check dam overtop on 5/20/22
Sunday, May 22, 2022	Saturday, May 28, 2022	722,340	724,773	Check dam overtop on 5/25/22
Sunday, May 29, 2022	Saturday, June 4, 2022	965,620	965,620	--
Sunday, June 5, 2022	Saturday, June 11, 2022	979,620	979,620	--
Sunday, June 12, 2022	Saturday, June 18, 2022	966,200	966,200	--
Sunday, June 19, 2022	Saturday, June 25, 2022	971,800	971,800	--
Sunday, June 26, 2022	Saturday, July 2, 2022	782,400	782,400	--
Sunday, July 3, 2022	Saturday, July 9, 2022	943,830	943,830	--
Sunday, July 10, 2022	Saturday, July 16, 2022	402,080	402,080	--
Sunday, July 17, 2022	Saturday, July 23, 2022	0	0	--
Sunday, July 24, 2022	Saturday, July 30, 2022	0	0	--
Sunday, July 31, 2022	Saturday, August 6, 2022	208,280	208,280	--
Sunday, August 7, 2022	Saturday, August 13, 2022	0	0	--
Sunday, August 14, 2022	Saturday, August 20, 2022	735,570	735,570	--
Sunday, August 21, 2022	Saturday, August 27, 2022	944,460	944,460	--
Sunday, August 28, 2022	Saturday, September 3, 2022	182,390	182,390	--
Sunday, September 4, 2022	Saturday, September 10, 2022	0	0	--
Sunday, September 11, 2022	Saturday, September 17, 2022	0	0	--
Sunday, September 18, 2022	Saturday, September 24, 2022	0	0	--
Sunday, September 25, 2022	Saturday, October 1, 2022	0	0	--
Sunday, October 2, 2022	Saturday, October 8, 2022	0	0	--
Sunday, October 9, 2022	Saturday, October 15, 2022	0	0	--
Sunday, October 16, 2022	Saturday, October 22, 2022	0	0	--
Sunday, October 23, 2022	Saturday, October 29, 2022	0	0	--
Sunday, October 30, 2022	Saturday, November 5, 2022	0	0	--
Sunday, November 6, 2022	Saturday, November 12, 2022	0	0	--
Sunday, November 13, 2022	Saturday, November 19, 2022	0	0	--
Sunday, November 20, 2022	Saturday, November 26, 2022	0	0	--
Sunday, November 27, 2022	Saturday, December 3, 2022	0	0	--
Sunday, December 4, 2022	Saturday, December 10, 2022	0	0	--

Table 5
Weekly Ditch A Treatment System and Stream Flow Volumes
Tyco Fire Products LP
Marinette, Wisconsin



Week Start Date	Week End Date	Ditch A Treatment System Discharge Volume	Ditch A Stream Flow Volume	Comments
		gallons	gallons	
Sunday, December 11, 2022	Saturday, December 17, 2022	0	0	--
Sunday, December 18, 2022	Saturday, December 24, 2022	0	0	--
Sunday, December 25, 2022	Saturday, December 31, 2022	0	0	--

Table 6
Ditch A Downstream Surface Water Laboratory Analytical Results
Tyco Fire Products LP
Marinette, Wisconsin



Location	Surface Water Standard - Other Water Bodies ⁽¹⁾⁽²⁾	Surface Water Standard - All Waters with Exception ⁽¹⁾⁽³⁾	SW-40			
			SW-40 (7-6-22)	DUP-01-A (7-6-22)	SW-40 (8-1-22)	DUP-01-A (8-1-22)
Sample ID			7/6/2022	7/6/2022	8/1/2022	8/1/2022
Sample Date						
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
Per- and Polyfluoroalkyl Substances						
PFBA	--	--	3.6 J	3.6 J	< 2.1 U	< 2.1 U
PFPeA	--	--	7.2	6.9	3.3	3.2
PFHxA	--	--	5.4	5.7	2.2	2.1
PFHpA	--	--	3.7	3.7	1.8	1.8
PFOA	95	--	19	18	4.5	4.7
PFNA	--	--	1.5 J	1.5 J	0.80 J	0.78 J
PFDA	--	--	0.55 J	0.52 J	0.78 J	0.92 J
PFUdA	--	--	< 0.94 U	< 0.95 U	< 0.98 U	1.2 J
PFDoA	--	--	< 0.47 U	< 0.48 U	< 0.49 U	< 0.49 U
PFTTrDA	--	--	< 1.1 U	< 1.1 U	< 1.2 U	< 1.2 U
PFTeDA	--	--	< 0.62 U	< 0.63 U	< 0.65 U	< 0.65 U
PFHxDA	--	--	< 0.76 U	< 0.77 U	< 0.79 U	< 0.79 U
PFODA	--	--	< 0.80 U	< 0.81 U	< 0.84 U	< 0.84 U
PFBS	--	--	< 0.17 U	< 0.17 U	0.35 J	0.28 J
PFPeS	--	--	< 0.26 U	< 0.26 U	< 0.27 U	< 0.27 U
PFHxS	--	--	1.0 J	1.0 J	< 0.51 U	< 0.51 U
PFHpS	--	--	< 0.16 U	< 0.16 U	< 0.17 U	< 0.17 U
PFOS	--	8	6.6	5.5	3.5	4.2
PFNS	--	--	< 0.32 U	< 0.32 U	< 0.33 U	< 0.33 U
PFDS	--	--	< 0.27 U	< 0.28 U	< 0.29 U	< 0.28 U
PFDOS	--	--	< 0.83 U	< 0.84 U	< 0.87 U	< 0.86 U
4:2 FTS	--	--	< 0.20 U	< 0.21 U	< 0.21 U	< 0.21 U
6:2 FTS	--	--	17	17	2.3 J	2.5 J
8:2 FTS	--	--	12	11	7.8	9.7
10:2 FTS	--	--	1.2 J	1.2 J	4.7	5.7
FOSA	--	--	< 0.84 U	2.1	< 0.87 U	< 0.87 U
N-MeFOSA	--	--	< 0.37 U	< 0.37 U	< 0.38 U	< 0.38 U
N-EtFOSA	--	--	< 0.74 U	< 0.75 U	< 0.78 U	< 0.77 U
MeFOSAA	--	--	< 1.0 U	< 1.0 U	< 1.1 U	< 1.1 U
EtFOSAA	--	--	< 1.1 U	< 1.1 U	< 1.2 U	< 1.2 U
N-MeFOSE	--	--	< 1.2 U	< 1.2 U	< 1.2 U	< 1.2 U
N-EtFOSE	--	--	< 0.73 U	< 0.74 U	< 0.76 U	< 0.76 U
HFPO-DA	--	--	< 1.3 U	< 1.3 U	< 1.3 U	< 1.3 U
DONA	--	--	< 0.34 U	< 0.35 U	< 0.36 U	< 0.36 U
F-53 Major	--	--	< 0.20 U	< 0.21 U	< 0.21 U	< 0.21 U
F-53B Minor	--	--	< 0.27 U	< 0.28 U	< 0.29 U	< 0.28 U

Notes:

-- = No Standard

< = Compound not detected at method detection limit

ng/L = Nanograms per liter

SW-40 is located downstream of the Ditch A System discharge

(1) = Surface water standards approved by the Wisconsin Legislature Joint Committee for Review of Administrative Rules

(2) = The PFOA surface water standard is 95 ng/L in Other Water Bodies (waters not classified as public water supplies) under ch. NR 104.07.

(3) = The PFOS surface water standard is 8 ng/L for all waters except those that cannot naturally support fish and do not have downstream waters that support fish.

Formatting Key:

Yellow Highlight = Value exceeds proposed surface water quality criteria (Other Water Bodies)

Bold = Value exceeds proposed surface water quality criteria (All Waters With Exception)

Data Qualifiers:

U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte.

Analyte Abbreviations:

PFBA	Perfluorobutanoic acid	PFDOS	Perfluorododecane sulfonic acid
PFPeA	Perfluoropentanoic acid	4:2 FTS	4:2 Fluorotelomer sulfonate
PFHxA	Perfluorohexanoic acid	6:2 FTS	6:2 Fluorotelomer sulfonic acid
PFHpA	Perfluoroheptanoic acid	8:2 FTS	8:2 Fluorotelomer sulfonic acid
PFOA	Perfluorooctanoic acid	10:2 FTS	10:2 Fluorotelomer sulfonic acid
PFNA	Perfluorononanoic acid	FOSA	Perfluorooctane sulfonamide
PFDA	Perfluorodecanoic acid	N-MeFOSA	N-Methyl perfluorooctane sulfonamide
PFUdA	Perfluoroundecanoic acid	N-EtFOSA	N-Ethyl perfluorooctane sulfonamide
PFDoA	Perfluorododecanoic acid	MeFOSAA	N-Methylperfluorooctane sulfonamide
PFTTrDA	Perfluorotridecanoic acid	EtFOSAA	N-Ethyl perfluorooctane sulfonamide
PFTeDA	Perfluorotetradecanoic acid	N-MeFOSE	N-Methyl perfluorooctane sulfonamide
PFHxDA	Perfluorohexadecanoic acid	N-EtFOSE	N-Ethyl perfluorooctane sulfonamide
PFODA	Perfluorooctadecanoic acid	HFPO-DA	2,3,3,3-Tetrafluoro-2-(heptafluoroethylthio)ethyl hexafluoroacetate
PFBS	Perfluorobutane sulfonic acid	DONA	4,8-Dioxa-3H-perfluorononanoic acid
PFPeS	Perfluoropentane sulfonic acid	F-53 Major	9-chlorohexadecafluoro-3-oxaundecanoic acid
PFHxS	Perfluorohexane sulfonic acid	F-53B Minor	11-chloroeicosafluoro-3-oxaundecanoic acid
PFHpS	Perfluoroheptane sulfonic acid		
PFOS	Perfluorooctane sulfonic acid		
PFNS	Perfluorononane sulfonic acid		
PFDS	Perfluorodecane sulfonic acid		

Table 7
Ditch A System Monthly Upstream and Downstream Analytical Results
Tyco Fire Products LP
Marinette, Wisconsin

Location:	Upstream of Ditch A Treatment System		Downstream of Ditch A Treatment System			Notes
	Analyte:	PFOS	PFOA	Sample Date	PFOS	
Month-Year	ng/L	ng/L		ng/L	ng/L	
Jul-22	64.0	180.3	7/6/2022	6.6	19	--
Aug-22	87.0	119.3	8/1/2022	4.2	4.7	--
Sep-22	NS	NS	NS	NS	NS	The system was offline from 9/1/22-9/30/22 due to dry conditions in Ditch A. No samples were collected.
Oct-22	NS	NS	NS	NS	NS	The system was offline from 10/1/22-10/31/22 due to dry conditions in Ditch A. No samples were collected.
Nov-22	NS	NS	NS	NS	NS	The system was offline from 11/1/22-11/30/22 due to dry conditions in Ditch A. No samples were collected.
Dec-22	NS	NS	NS	NS	NS	The system was offline from 12/1/22-12/31/22 due to dry conditions in Ditch A. No samples were collected.

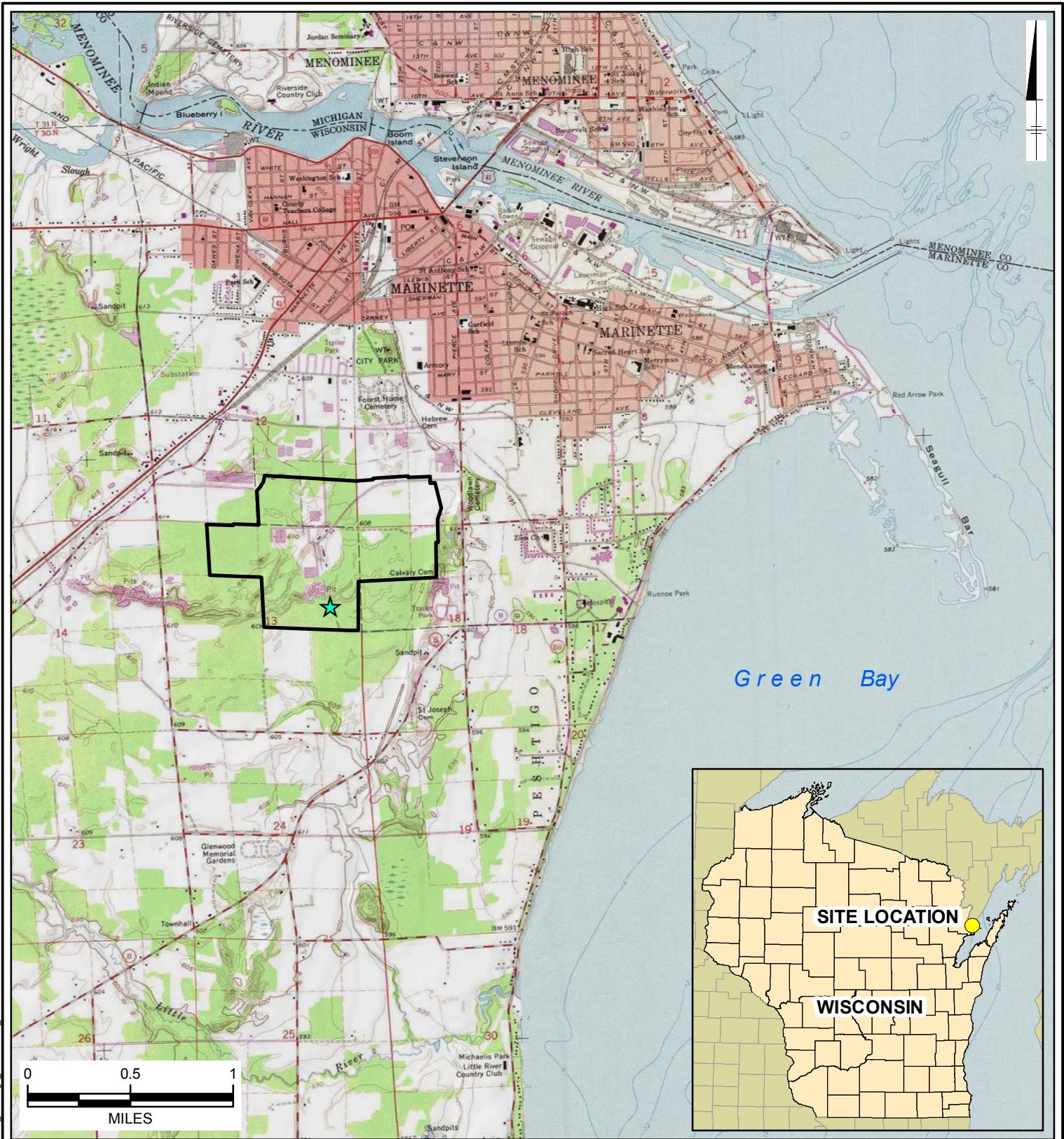
Abbreviations:

ng/L = nanograms per liter
 NS = Not Sampled
 PFOA = Perfluorooctanoic acid
 PFOS = Perfluorooctane sulfonic acid

Notes:



Monthly upstream values are calculated as the average of the weekly permit-required Ditch A System influent samples during periods in which natural stream flow is present.
 Downstream samples are collected monthly, when natural flow is observed in Ditch A, from SW-40.

Figures



City: Minneapolis/Clark Div/Group: IMDVC Created By: Last Saved By: alrens
 TYCO Marinette WI
 Z:\GIS\Projects\ENVT\TYCO_Marinette_WI\MapXD\2018-03\Work_Plan\Fig1_SiteLocation_DitchA.mxd 2/10/2020 1:11:34 PM

LEGEND:

-  APPROXIMATE SITE PROPERTY BOUNDARY
-  APPROXIMATE LOCATION OF DITCH A SYSTEM

NOTES:

1. TOPOGRAPHIC MAP SOURCE: COPYRIGHT:© 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED, ACCESSED FEBRUARY, 2020.

TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

SITE LOCATION



**FIGURE
1**

User: MWASLEWSKI Spec: AUS-NSNSOOD File: C:\USERS\MWASLEWSKI\DRIVE - ARCADIS\BIM360 - ONE DRIVE SYNC LOCATION\AUS-TYCO-FIRE TECHNOLOGY CTR\MARINETTE WISCONSIN\PROJECT FILES\2020\01-IN PROGRESS\01-DWG\01-DITCH_A_F02 - SITE PLAN.DWG Scale: 1:1 Saved Date: 2/19/2022 Time: 17:10 Plot Date: Wasilewski, Matt 02/19/2022 17:00 Layout: C2



NOTES:

1. AERIAL IMAGE, DITCH EXTENTS, AND EQUIPMENT ASSOCIATED WITH THE TREATMENT SYSTEM ARE IN APPROXIMATE LOCATIONS.

LEGEND:

- PROPERTY LINE
- - - RIGHT OF WAY
- ☐ CHECK DAM
- SW-40 ⊕ SURFACE WATER SAMPLE LOCATION
- ⊕ WELL LOCATION



ARCADIS

LEGAL ENTITY:
 ARCADIS U.S., Inc.
 ARCHITECTURAL AND
 ENGINEERING SERVICES, INC.
 COPYRIGHT: 2015

NO.	DATE	ISSUED FOR	BY	SEALS
4	08/26/22	REMOVAL OF TEMPORARY DEWATERING SYSTEM	MW	
3	02/03/22	TEMPORARY DEWATERING WATER TREATMENT ADDITION	MW	
2	02/07/20	SITE PLAN UPDATE	DA	
1	09/03/19	DITCH A SYSTEM AREA	DA	
0	02/11/19	ISSUED FOR REVIEW - DRAFT	EE	

NO.	DATE	ISSUED FOR	BY	SEALS
4	08/26/22	REMOVAL OF TEMPORARY DEWATERING SYSTEM	MW	
3	02/03/22	TEMPORARY DEWATERING WATER TREATMENT ADDITION	MW	
2	02/07/20	SITE PLAN UPDATE	DA	
1	09/03/19	DITCH A SYSTEM AREA	DA	
0	02/11/19	ISSUED FOR REVIEW - DRAFT	EE	

DATE: 05/30/19
 PROJECT NO.: 30015296.00003
 FILE NAME: DITCH_A_F02 - SITE PLAN
 DESIGNED BY: JY
 DRAWN BY: EE
 CHECKED BY: TK

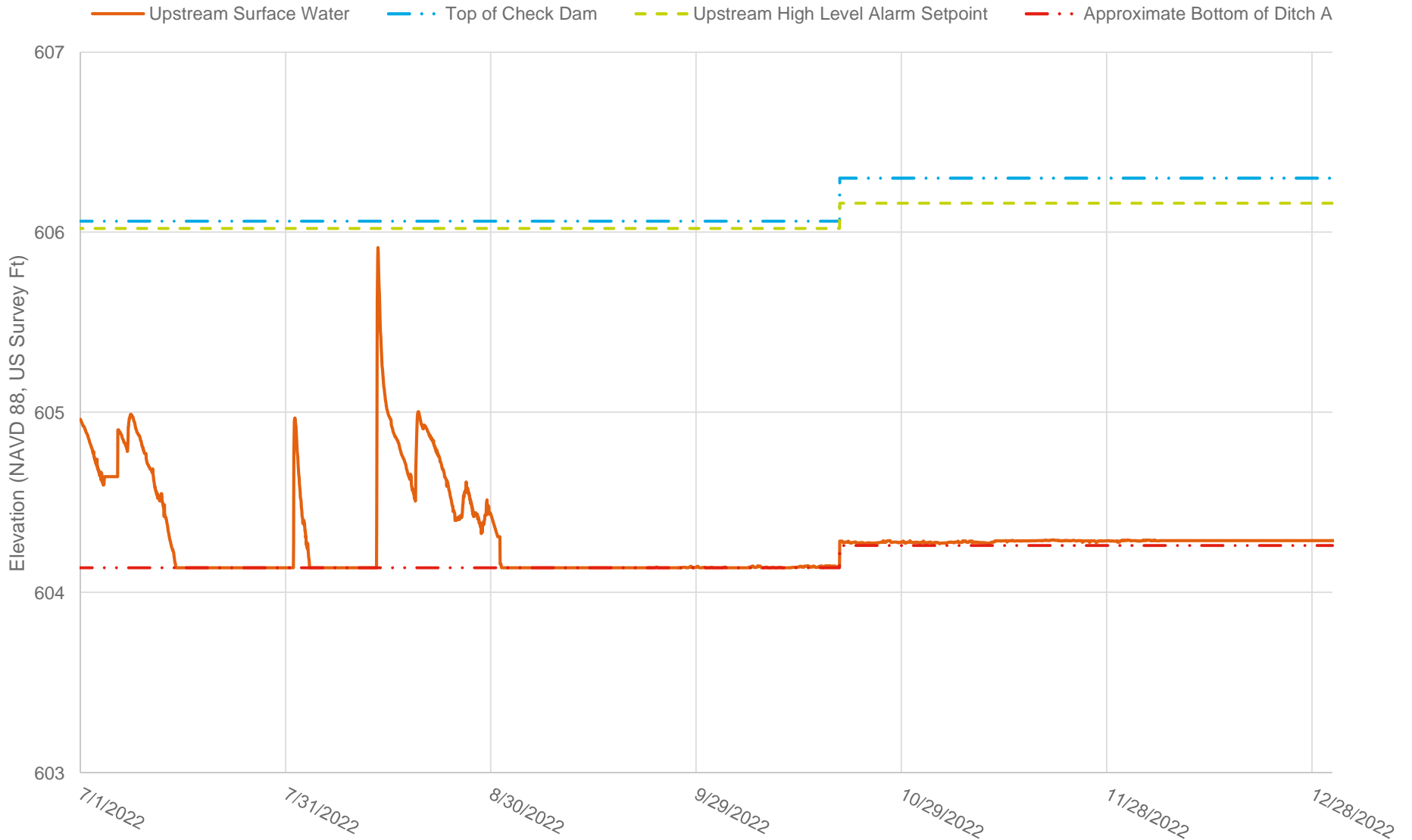
2700 INDUSTRIAL PARKWAY SOUTH
 MARINETTE, WISCONSIN 54143
 215-362-0700
ANSUL FTC SITE
DITCH INTERIM ACTION DESIGN
DITCH A
 ARCADIS PROJ. NO. 30015296.00003

SHEET TITLE: **DITCH A SITE PLAN**

SCALE: 0 20 FEET

FIGURE 2

SHEET 1 OF 1



Abbreviations:

ft = Feet

NAVD = North American Vertical Datum

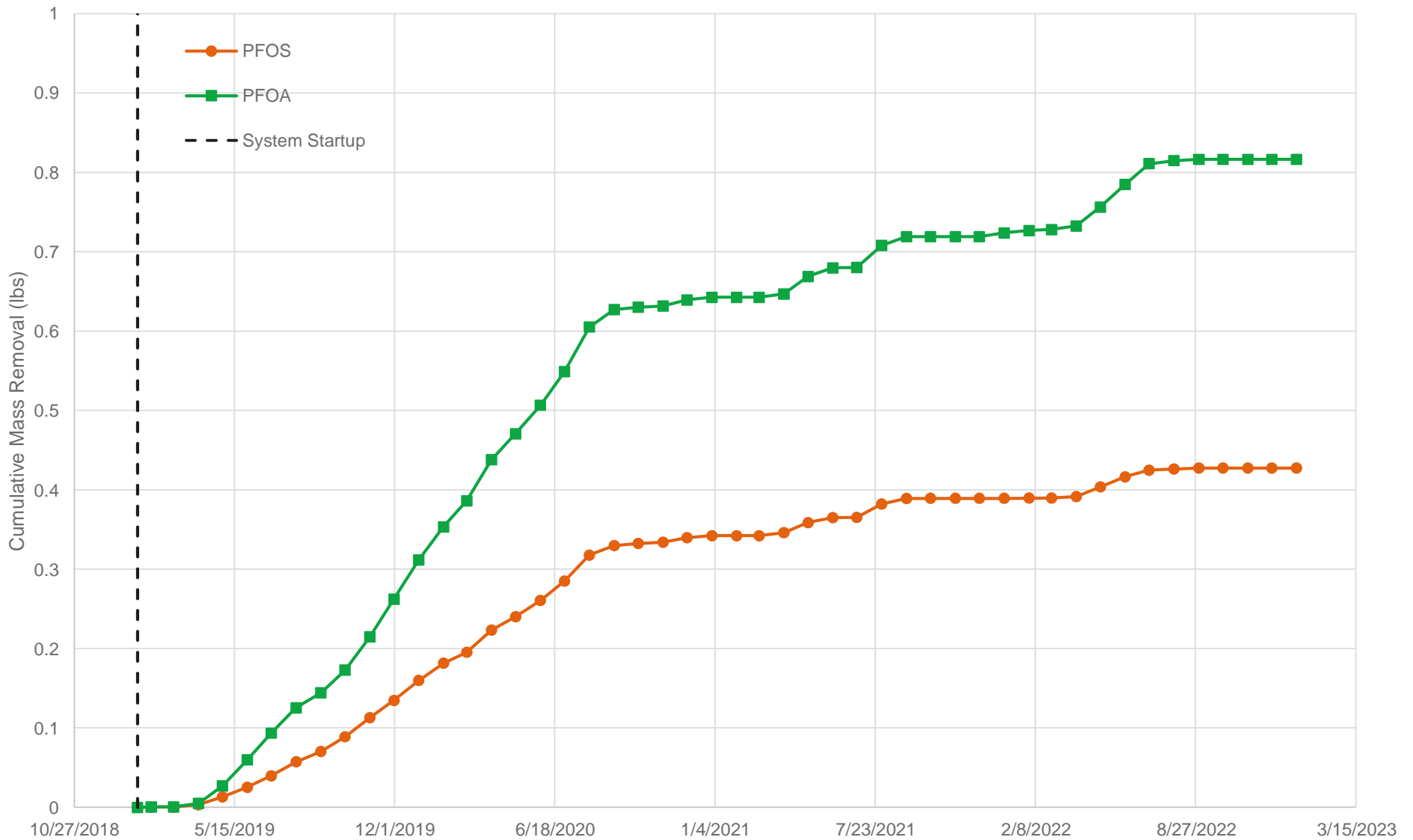
Notes:

1. Check dam maintenance completed on 10/20/22.
2. Elevations based on survey conducted by Coleman Engineering on 10/20/22.
3. The Ditch A bottom elevation is variable. An approximate value upstream of the check dam is shown for reference.

TYCO FIRE PRODUCTS LP
 2700 INDUSTRIAL PARKWAY SOUTH
 MARINETTE, WISCONSIN

DITCH A SYSTEM UPSTREAM SURFACE
 WATER ELEVATION (7/1/22 – 12/31/22)





Abbreviations:

PFOA = Perfluorooctanesulfonic Acid

PFOS = Perfluorooctanesulfonic Acid

lbs = Pounds

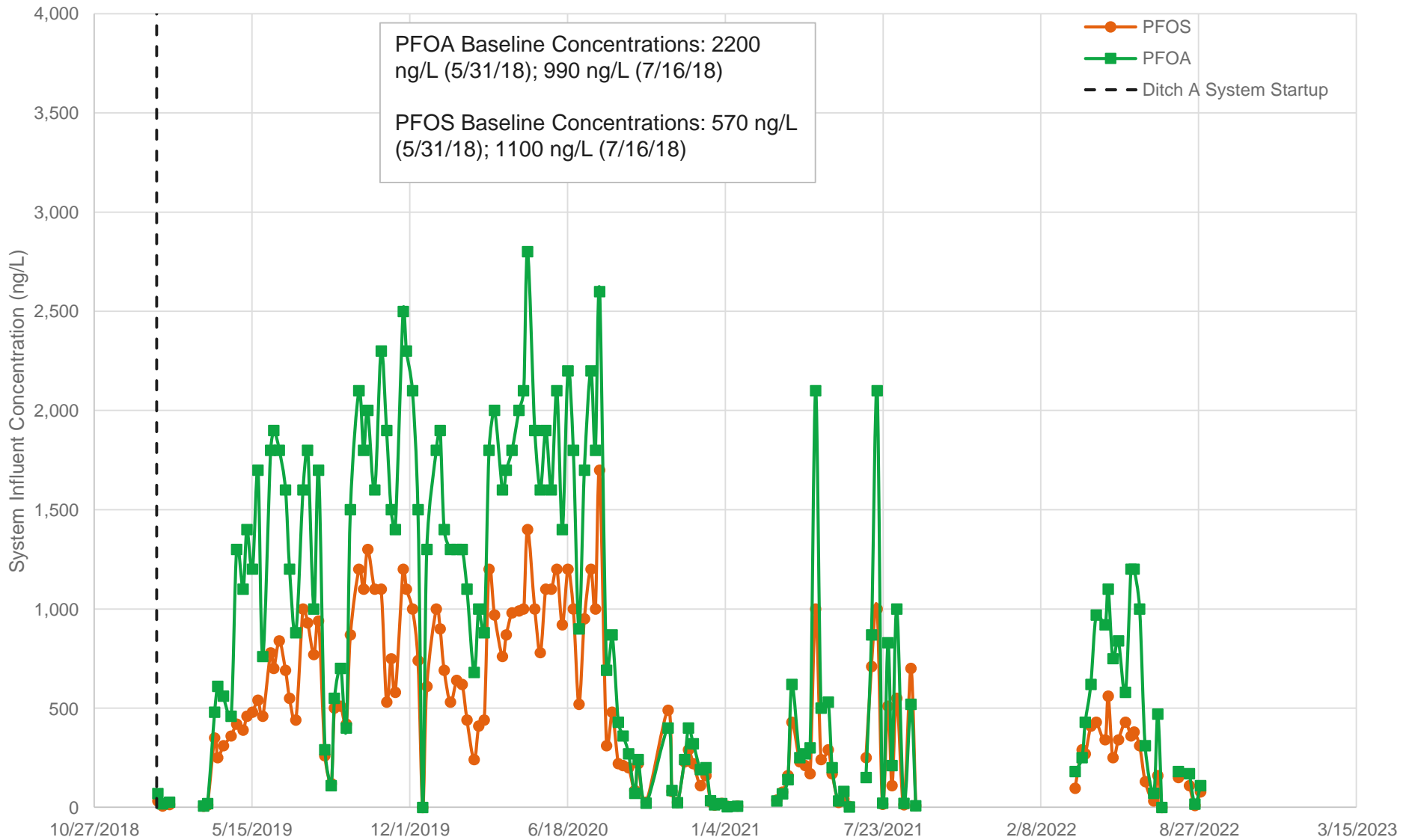
Note:

Data presented on a monthly basis

TYCO FIRE PRODUCTS LP
 2700 INDUSTRIAL PARKWAY SOUTH
 MARINETTE, WISCONSIN

DITCH A SYSTEM TREATMENT SYSTEM
 CUMULATIVE PFAS MASS REMOVAL





Abbreviations:

PFOA = Perfluorooctanesulfonic Acid
 PFOS = Perfluorooctanesulfonic Acid
 ng/L = Nanograms per Liter

Note:

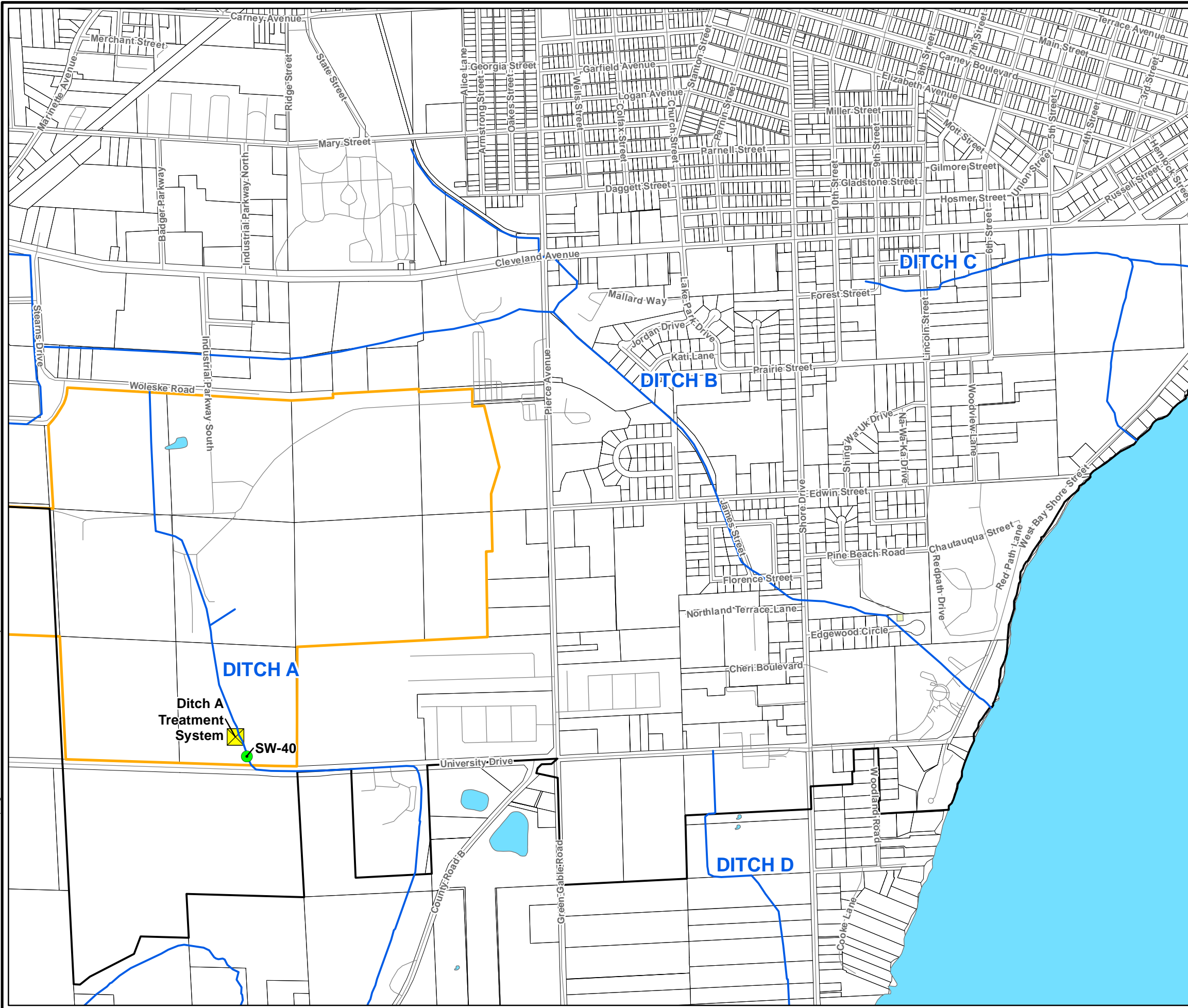
Baseline concentrations collected from sample location SW-27 on 5/31/18 and 7/16/18.

TYCO FIRE PRODUCTS LP
 2700 INDUSTRIAL PARKWAY SOUTH
 MARINETTE, WISCONSIN

DITCH A SYSTEM TREATMENT SYSTEM
 INFLUENT CONCENTRATIONS

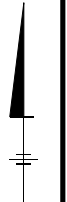


\\F:\ENVY\COM\XD\FTO\Surfacewater_SW40_Sampling_loc.mxd 2/7/2022 3:39:53 PM Last Saved By: MEslifanos



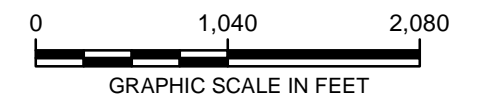
LEGEND:

- SURFACE WATER SAMPLE LOCATION
- SURFACE WATER TREATMENT SYSTEM
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- PARCEL BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY



NOTES:

1. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
2. DITCH/STREAM AND WATERBODY DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
3. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.



TYCO FIRE PRODUCTS LP
FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN

**SURFACE WATER SAMPLE LOCATION
SW-40**





Abbreviations:

PFOA = Perfluorooctanesulfonic Acid
 PFOS = Perfluorooctanesulfonic Acid
 ng/L = Nanograms per Liter

Ditch Dry/Frozen (No Sample Collected):

9/2022, 10/2022, 11/2022, 12/2022

Notes:

1. Downstream surface water samples collected from SW-40 (downstream of Ditch A System).
2. Downstream sample collection began in August 2021.
3. When duplicate samples were collected, the higher result is shown.
4. Surface water standard for PFOS of 8 ng/L based on water except those that cannot naturally support fish and do not have downstream waters that support fish per NR 102.04 (8d).
5. Surface water standard for PFOA of 95 ng/L based on non-drinking water bodies per NR 102.04 (8d).

TYCO FIRE PRODUCTS LP
 2700 INDUSTRIAL PARKWAY SOUTH
 MARINETTE, WISCONSIN

DITCH A DOWNSTREAM SURFACE
 WATER CONCENTRATIONS

Appendix A

Ditch A System Piping and Instrumentation Diagram

LEGEND

	FLEXIBLE HOSE
	CONTROL PANEL OR EQUIPMENT
	SOFTWARE LINK, SYSTEM FUNCTION CONNECTION OR COMMUNICATION LINK
	FIBER OPTIC CONNECTION
	MAIN PROCESS LINE
	AUXILIARY SYSTEMS
	BUILDING/AREA EXTENTS V-155
	ELECTRIC (ELECTRONIC) SIGNAL
	BALL VALVE
	BUTTERFLY VALVE
	GATE VALVE
	NEEDLE VALVE
	GLOBE VALVE
	KNIFE GATE VALVE
	SWING CHECK VALVE
	BALL CHECK VALVE
	SOLENOID OPERATED VALVE
	MOTOR OPERATED VALVE
	SAMPLE PORT
	PRESSURE REGULATING VALVE
	FLANGED CONNECTION/PIPE TRANSITION
	NON-FLANGED PIPE TRANSITION
	UNION
	REDUCER
	Y STRAINER
	PRESSURE RELIEF VALVE
	VACUUM RELIEF VALVE
	CAMLOCK
	HOSE BARB CONNECTION
	CAP
	PARTICULATE FILTER
	COALESCING FILTER

	MOTOR
	VARIABLE FREQUENCY DRIVE
	SUBMERSIBLE WELL PUMP
	CENTRIFUGAL PUMP
	ROTARY-LOBE BLOWER
	CHEMICAL METERING PUMP
	SUMP PUMP
	MAGNETIC FLOW METER
	POSITIVE DISPLACEMENT FLOW METER
	AVERAGING PILOT TUBE FLOW METER
	ROTAMETER WITH VALVE
	STATIC MIXER
	SITE GLASS
	FILTER

INSTRUMENT SYMBOLS

	PRIMARY CONTROL PANEL NORMALLY ACCESSIBLE TO OPERATOR	FIELD MOUNTED	AUXILIARY PANEL OR RACK NORMALLY ACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS			
SHARED DISPLAY, SHARED CONTROL			
COMPUTER FUNCTION INCLUDING DISTRIB. CNTL. SYS.			
PROGRAMMABLE LOGIC CONTROLLER FUNCTION			

PIPELINE DESIGNATION

6"-S04P

LINE TYPE
MATERIAL
SIZE

MATERIAL:
 GCS - GALVANIZED CARBON STEEL
 HDPE - HIGH DENSITY POLYETHYLENE
 LCS - LINED CARBON STEEL
 PET - POLYETHYLENE
 POP - POLYPROPYLENE
 PVC - POLYVINYL CHLORIDE
 DIR - DUCTILE IRON
 FRP - FIBERGLASS

TYPE:
 D = DUCT
 H = HOSE
 C = DOUBLE WALL CONTAINMENT PIPE
 P = PIPE
 T = TUBE

ALARMS:

1. AN ALARM THAT DISABLES ALL OR ANY PART OF THE SYSTEM WILL SEND A NOTIFICATION TO THE OPERATOR VIA THE SCADA SYSTEM.

INTERLOCKS:

SYSTEM SHUTDOWN

INSTRUMENT IDENTIFICATION LETTERS

FIRST LETTER		SUCCEEDING LETTERS		
MEASURE OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A = ANALYSIS		ALARM		
B = BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C = USER'S CHOICE			CONTROL, CLOSED	
D = USER'S CHOICE	DIFFERENTIAL			
E = VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F = FLOW RATE	RATIO (FRACTION)			
G = USER'S CHOICE		GLASS, VIEWING DEVICE		
H = HAND				HIGH
I = CURRENT (ELECTRICAL)		INDICATE		
J = POWER	SCAN			
K = TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L = LEVEL		LIGHT		LOW
M = USER'S CHOICE	MOMENTARY			MIDDLE, INTERMEDIATE
N = USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O = USER'S CHOICE		ORIFICE, RESTRICTION	OPEN	
P = PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q = QUANTITY	INTEGRATE, TOTALIZE			
R = RADIATION		RECORD	RUN	
S = SPEED, FREQUENCY	SAFETY	SWITCH	STOP	
T = TEMPERATURE			TRANSMIT	
U = MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V = VIBRATION, MECH. ANALYSIS			VALVE, DAMPER, LOUVER	
W = WEIGHT, FORCE		WELL		
X = UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y = EVENT, STATUS OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z = POSITION, DIMENSION	Z AXIS	UNCLASSIFIED	DRIVE, ACTUATOR, FINAL CONTROL ELEMENT	

ABBREVIATIONS:

AC	AIR COMPRESSOR
AD	AIR DRYER
AI	pH INDICATOR
AIT	pH INDICATOR TRANSMITTER
AR	AIR RECEIVER TANK
AS	ANTI-SCALANT
C	CENTER LINE
CAH	CONDUCTIVITY ALARM HIGH
CFM	CUBIC FEET PER MINUTE
CI	CONDUCTIVITY INDICATOR
CIP	CLEAN IN PLACE
CIT	CONDUCTIVITY INDICATOR TRANSMITTER
CO	CLEAN OUT
CTE	CONDUCTIVITY TEMPERATURE ELEMENT
CY	CUBIC YARDS
°C	DEGREES CELSIUS
DPAL	DIFFERENTIAL PRESSURE ALARM LOW
DPAH	DIFFERENTIAL PRESSURE ALARM HIGH
DPIT	DIFFERENTIAL PRESSURE INDICATOR TRANSMITTER
DPI	DIFFERENTIAL PRESSURE INDICATOR
E	ELECTRIC ACTUATOR
ECIP	ELECTRODE CLEAN IN PLACE
EM	ENVIRONMENTAL MEDIA
ELEV	ELEVATION
F	FILTER
FE	FLOW ELEMENT
FI	FLOW INDICATOR
FIT	FLOW INDICATING TRANSMITTER
FMO	FLOW MONITOR
FQ	FLOW TOTALIZER
FT	FOOT/ FEET
FT	FLOW TRANSMITTER
FV	FLOW VALVE
GAC	GRANULATED ACTIVATED CARBON
GAL	GALLONS
GPD	GALLONS PER DAY
HAZ	HAZARDOUS
HDPE	HIGH DENSITY POLYETHYLENE
HOA	HAND/ OFF/ AUTO
HR	HOUR
HS	HAND SWITCH
IN.	INCHES
kg	KILOGRAMS
KV	TIMER VALVE
L	LITER
LAH	LEVEL ALARM HIGH
LAHH	LEVEL ALARM HIGH HIGH
LAL	LEVEL ALARM LOW
LE	LEVEL ELEMENT
LP	LIQUID PHASE
LS	LEVEL SWITCH
LT	LEVEL TRANSMITTER
M	MOTOR
MAX	MAXIMUM
µM	MICROMETER
mg	MILLIMETER
MIN	MINIMUM
MMF	MULTIMEDIA FILTER
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NPT	NATIONAL PIPE THREAD
%	PERCENT
LB	POUNDS
PAH	PRESSURE ALARM HIGH
PAL	PRESSURE ALARM LOW
PI	PRESSURE INDICATOR
PIT	PRESSURE INDICATOR TRANSMITTER
PSIG	PRESSURE PER SQUARE FOOT GAUGE
PR	PRESSURE RELIEF VALVE
PRV	PRESSURE REGULATING VALVE
PSV	PRESSURE SAFETY VALVE
PVR	PRESSURE VACUUM RELIEF
QAAPP	QUALITY ASSURANCE PROJECTION PLAN
NaOH	SODIUM HYDROXIDE
SP	SAMPLE PORT
T	TANK
TAH	TEMPERATURE ALARM HIGH
TAHH	TEMPERATURE ALARM HIGH HIGH
TI	TEMPERATURE INDICATOR
TIT	TEMPERATURE INDICATOR TRANSMITTER
TYP	TYPICAL
TWV	THREE WAY VALVE
V	VALVE
VAH	VACUUM ALARM HIGH
VAL	VACUUM ALARM LOW
VE	VACUUM ELEMENT
VIT	VACUUM INDICATING TRANSMITTER
XLPE	CROSS LINKED POLYETHYLENE
YI	STATUS INDICATOR
ZX	POSITION INDICATOR

NOTES:

- ANY FIRST LETTER COMBINED WITH A MODIFIER REPRESENTS A NEW AND SEPARATE MEASURED VARIABLE. EXAMPLES: DP= DIFFERENTIAL PRESSURE; FQ= TOTALIZED OR INTEGRATED FLOW. EXCEPTION IS THE MODIFIER "J" FOR MULTIPOINT SCANNING.
- FOR ANALYSIS NOT IDENTIFIED BY A SPECIFIC LETTER IN THE TABLE, USE FIRST LETTER "A" NEAR THE INSTRUMENT SYMBOL, SPECIFY THAT NATURE OF THE ANALYSIS. EXAMPLE: pH
- MEANING OF A "USER'S CHOICE" LETTER SHALL BE CONSISTENT THROUGHOUT A PROJECT, AND SHALL BE SPECIFIED IN THE DRAWING LEGEND.

GENERAL NOTES:

- ALL ANALOG SET POINTS SHALL BE FIELD ADJUSTED BY OPERATOR AT HMI INTERFACE.
- ALARMS THAT SHUT DOWN TREATMENT EQUIPMENT MUST BE CLEARED BY OPERATOR BEFORE BEING RESTARTED.
- THIS DRAWING IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

NOT FOR CONSTRUCTION

REV.	ISSUED DATE	DESCRIPTION	BY	CK'D
3	02/04/2020	ISSUED FOR CUSTOMER REVIEW	PAP	MPS
2	10/1/2019	ISSUED FOR CUSTOMER REVIEW	PAP	MPS

SEAL	
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 126 N Jefferson St., Suite 400
 Milwaukee, WI 53202
 Tel: (414)-276-7742
 www.arcadis.com

Prepared by:

 Presidio Systems, Inc.
 2129 E. Birchwood Ave.
 Cudahy, WI 53110
 Tel: (414) 483-5600 Fax: (414) 483-1957
 www.presidiosystems.com

DITCH INTERIM ACTION-DITCH A
 MARINETTE, WI

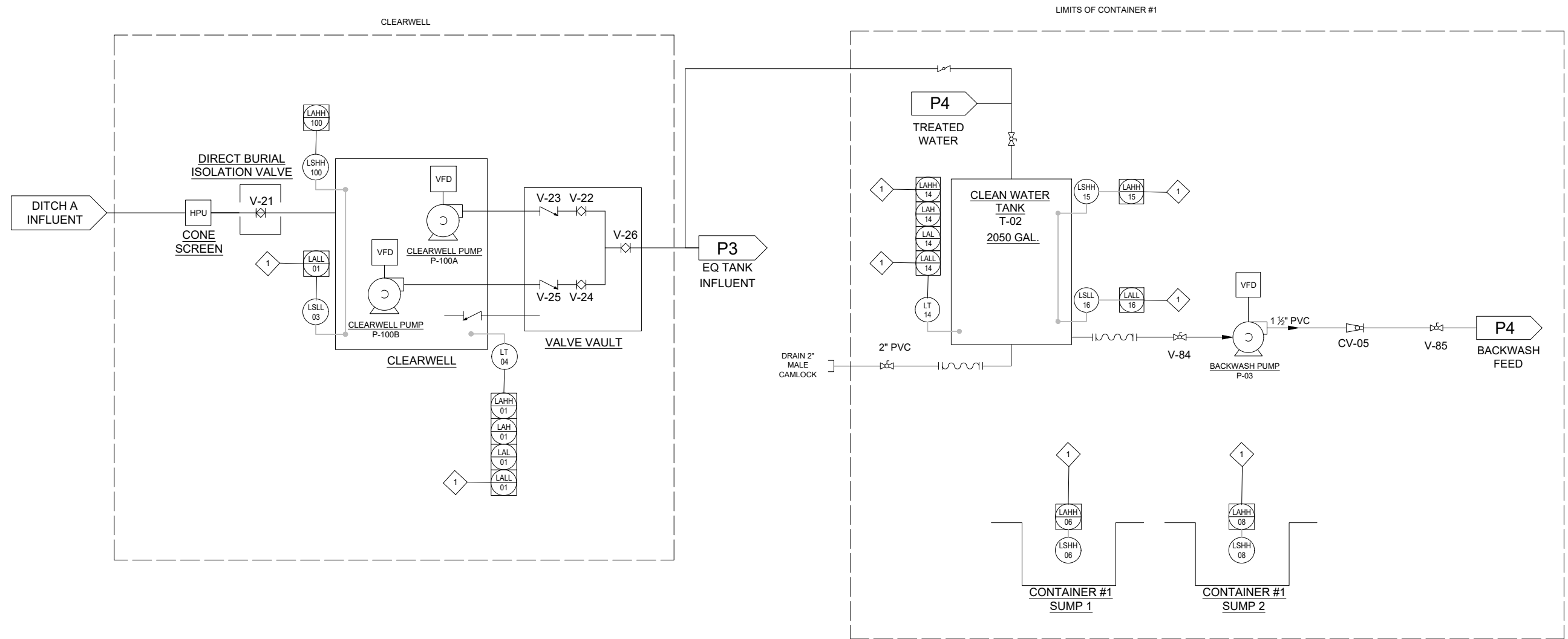
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**TYCO DITCH-A P&ID
 LEGEND SHEET**

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MPS
 DESIGNED BY
PAP
 PROJECT NUMBER
Q14949

CHECKED BY
MPS
 DRAWN BY
PAP
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P-01
 SHEET **1** OF **5**

INTERLOCK SCHEDULE

1 SHUT DOWN SYSTEM



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ARCADIS
 Arcadis U.S., Inc.
 126 N Jefferson St., Suite 400
 Milwaukee, WI 53202
 Tel: (414)-276-7742
 www.arcadis.com

Prepared by:

 Presidio Systems, Inc.
 2129 E. Birchwood Ave.
 Cudahy, WI 53110
 Tel: (414) 483-5600 Fax: (414) 483-1957
 www.presidiosystems.com

DITCH INTERIM ACTION-DITCH A
 MARINETTE, WI

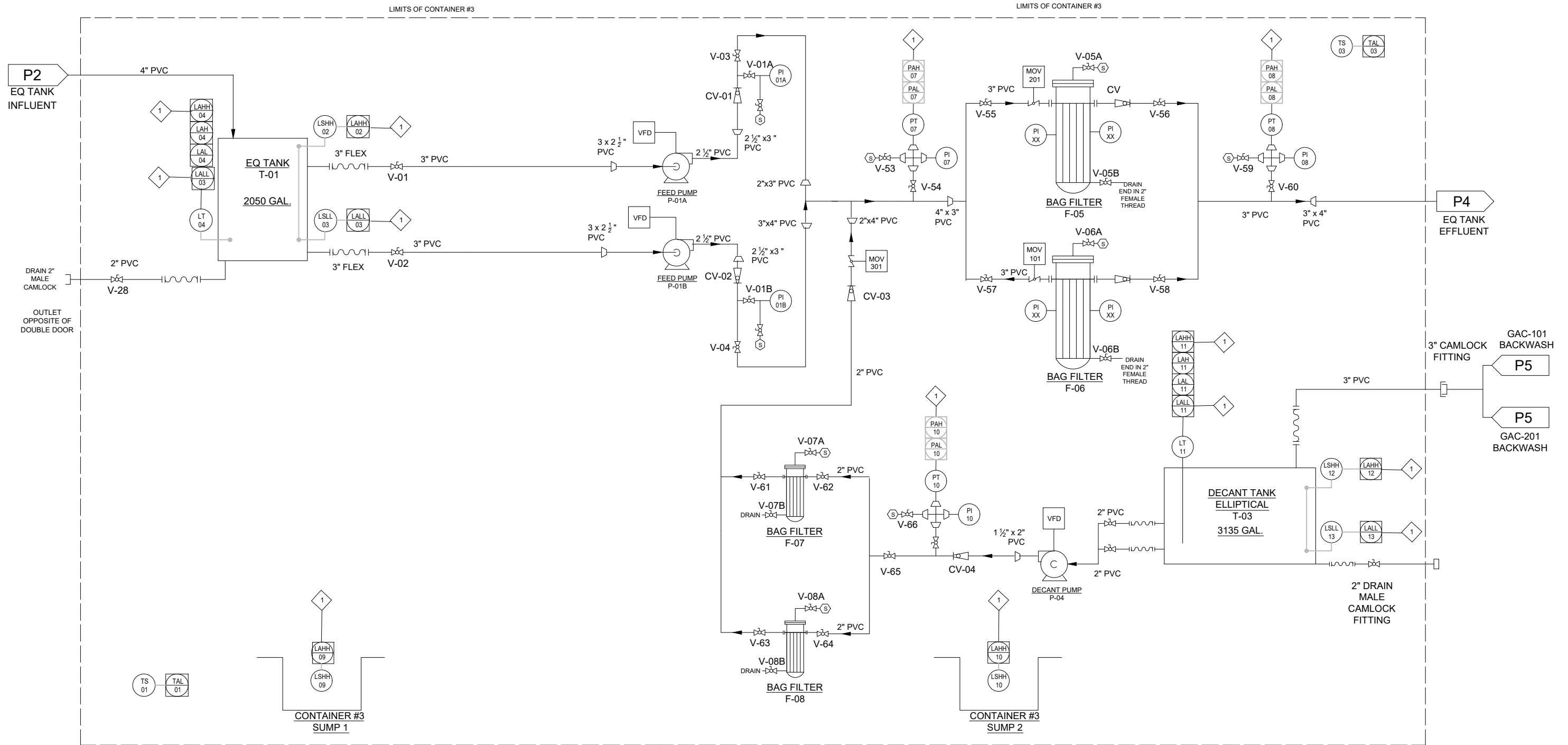
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 P&ID SHEET 1**

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INTERLOCK SCHEDULE

1 SHUT DOWN SYSTEM



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 Arcadis U.S., Inc.
 126 N Jefferson St., Suite 400
 Milwaukee, WI 53202
 Tel: (414)-276-7742
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 2129 E. Birchwood Ave.
 Cudahy, WI 53110
 Tel: (414) 483-5600 Fax: (414) 483-1957
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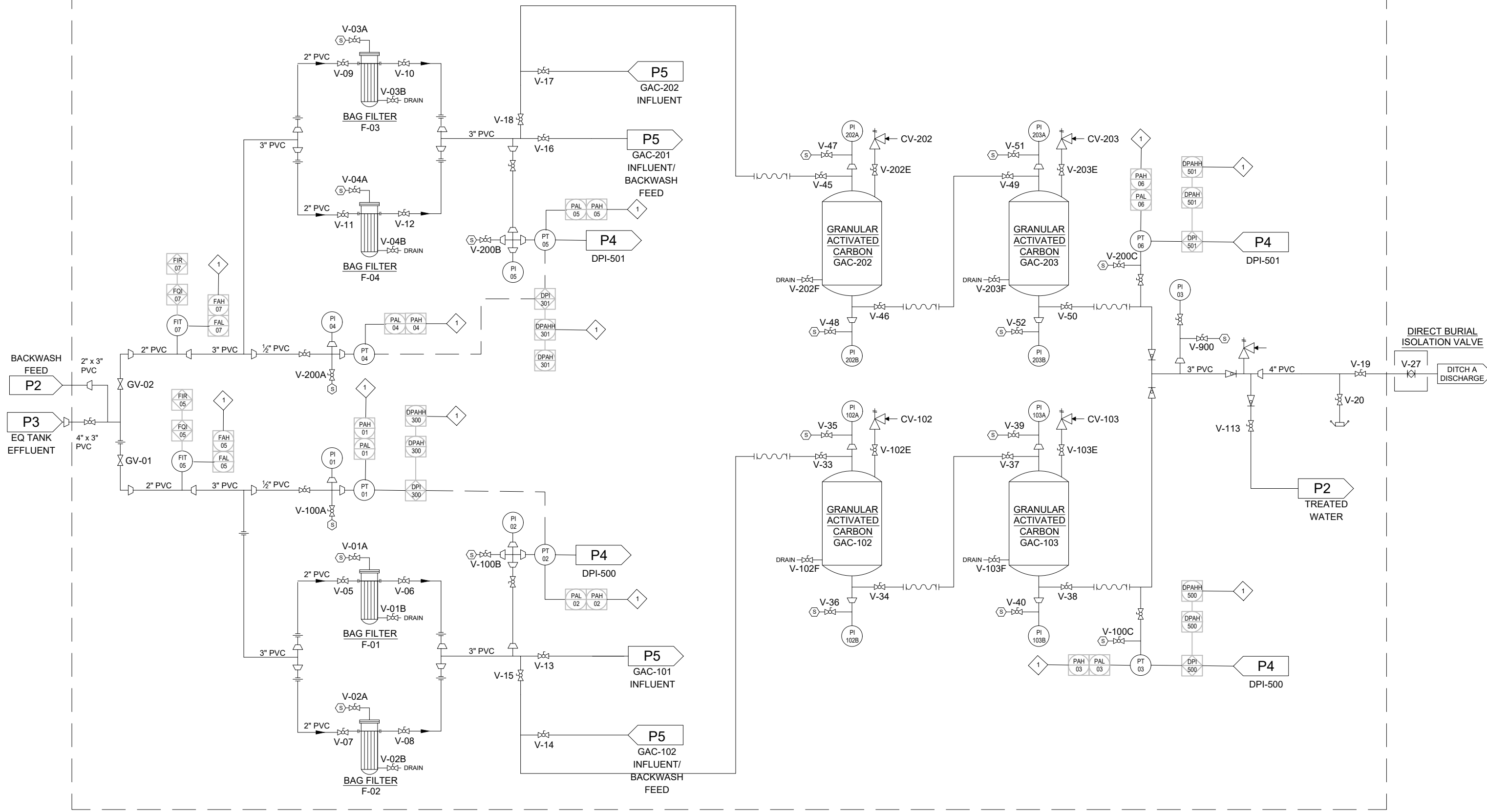
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INTERLOCK SCHEDULE

1 SHUT DOWN SYSTEM

LIMITS OF CONTAINER #1

LIMITS OF CONTAINER #1



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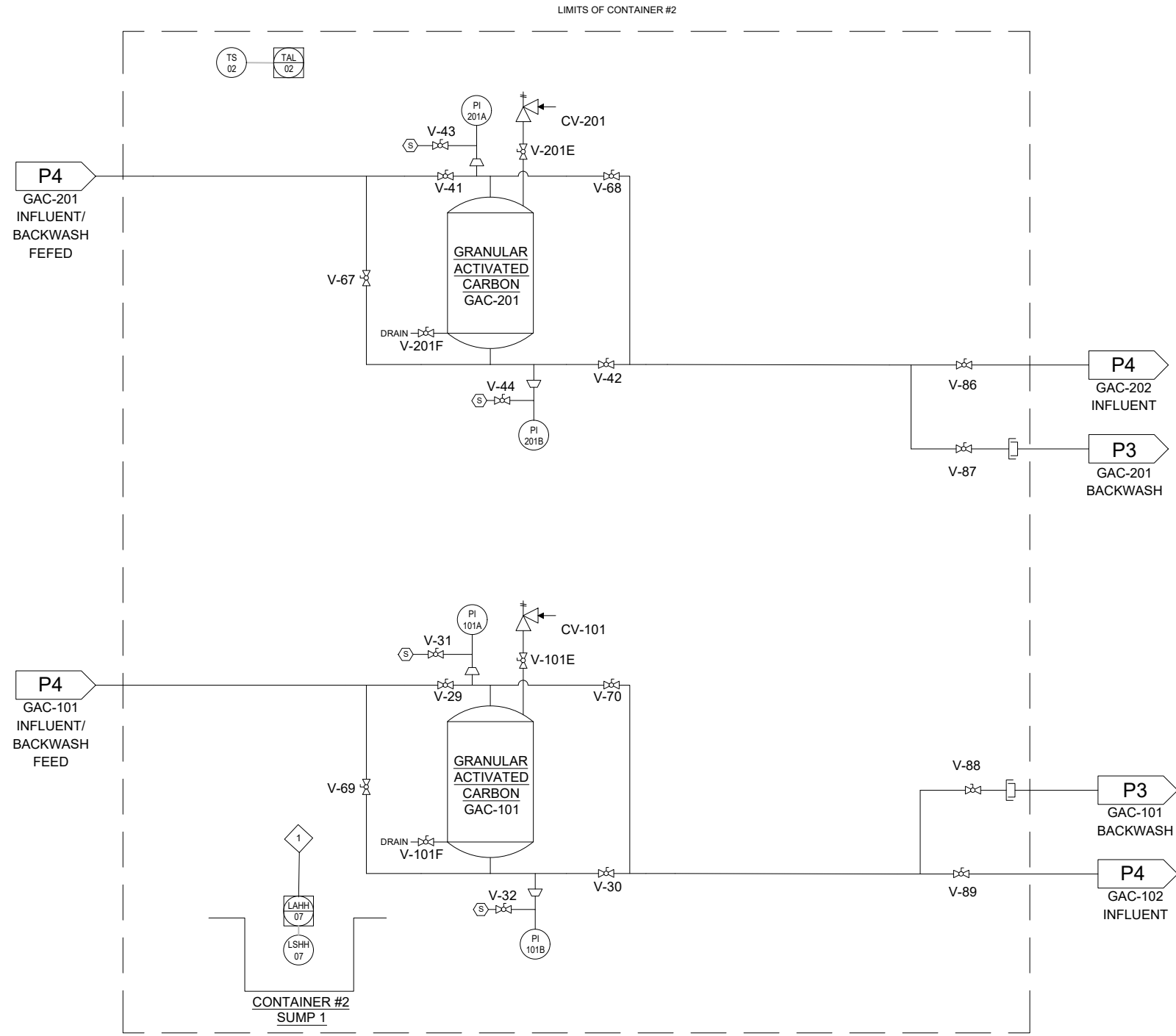
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 2129 E. Birchwood Ave.
 Cudahy, WI 53110
 Tel: (414) 483-5600 Fax: (414) 483-1957
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126 N Jefferson St., Suite 400
Milwaukee, WI 53202
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www.arcadis.com

Prepared by:

Presidio Systems, Inc.
2129 E. Birchwood Ave.
Cudahy, WI 53110
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**DITCH INTERIM ACTION-DITCH A
MARINETTE, WI**

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P-05

SHEET **5** OF **5**

Appendix B

WPDES Laboratory Analytical Reports

ANALYTICAL REPORT

Eurofins Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-219019-1

Client Project/Site: Marinette, WI 30128077.01 WPDES

For:

ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski

Jodie Bracken

Authorized for release by:

7/13/2022 1:01:20 PM

Jodie Bracken, Project Management Assistant II

Jodie.Bracken@et.eurofinsus.com

Designee for

Sandie Fredrick, Project Manager II

(920)261-1660

Sandra.Fredrick@et.eurofinsus.com

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

Job ID: 500-219019-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-219019-1

Comments

No additional comments.

Receipt

The samples were received on 7/6/2022 9:25 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 2.0° C.

LCMS

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

Organic Prep

Method 3535: Due to the matrix, the following samples 500-219019-1 and 500-219019-2 were prepared with an LCS/LCSD instead of a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-601666.

Method Code: 3535_PFC

Matrix: Aqueous

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-219019-1	V-200-A	Water	07/01/22 09:00	07/06/22 09:25
500-219019-2	V-900-A	Water	07/01/22 09:05	07/06/22 09:25

1

2

3

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14

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

Client Sample ID: V-200-A

Lab Sample ID: 500-219019-1

Date Collected: 07/01/22 09:00

Matrix: Water

Date Received: 07/06/22 09:25

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	15		4.8	2.3	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluoropentanoic acid (PFPeA)	50		1.9	0.47	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorohexanoic acid (PFHxA)	35		1.9	0.56	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluoroheptanoic acid (PFHpA)	19		1.9	0.24	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorooctanoic acid (PFOA)	71		1.9	0.81	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorononanoic acid (PFNA)	7.1		1.9	0.26	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorodecanoic acid (PFDA)	3.8		1.9	0.30	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluoroundecanoic acid (PFUnA)	2.4		1.9	1.1	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorododecanoic acid (PFDoA)	<0.53		1.9	0.53	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorotetradecanoic acid (PFTeA)	<0.70		1.9	0.70	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.85		1.9	0.85	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.90		1.9	0.90	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorobutanesulfonic acid (PFBS)	0.35	J	1.9	0.19	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluoropentanesulfonic acid (PFPeS)	<0.29		1.9	0.29	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorohexanesulfonic acid (PFHxS)	4.7		1.9	0.55	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluoroheptanesulfonic acid (PFHpS)	0.29	J	1.9	0.18	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorooctanesulfonic acid (PFOS)	32		1.9	0.52	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorononanesulfonic acid (PFNS)	<0.35		1.9	0.35	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorodecanesulfonic acid (PFDS)	<0.31		1.9	0.31	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorododecanesulfonic acid (PFDoS)	<0.93		1.9	0.93	ng/L		07/08/22 12:55	07/12/22 16:48	1
Perfluorooctanesulfonamide (FOSA)	1.8	J	1.9	0.94	ng/L		07/08/22 12:55	07/12/22 16:48	1
NEtFOSA	<0.83		1.9	0.83	ng/L		07/08/22 12:55	07/12/22 16:48	1
NMeFOSA	<0.41		1.9	0.41	ng/L		07/08/22 12:55	07/12/22 16:48	1
NMeFOSAA	<1.1		4.8	1.1	ng/L		07/08/22 12:55	07/12/22 16:48	1
NEtFOSAA	<1.2		4.8	1.2	ng/L		07/08/22 12:55	07/12/22 16:48	1
NMeFOSE	<1.3		3.8	1.3	ng/L		07/08/22 12:55	07/12/22 16:48	1
NEtFOSE	<0.81		1.9	0.81	ng/L		07/08/22 12:55	07/12/22 16:48	1
4:2 FTS	0.49	J	1.9	0.23	ng/L		07/08/22 12:55	07/12/22 16:48	1
6:2 FTS	86		4.8	2.4	ng/L		07/08/22 12:55	07/12/22 16:48	1
8:2 FTS	75		1.9	0.44	ng/L		07/08/22 12:55	07/12/22 16:48	1
10:2 FTS	7.0		1.9	0.64	ng/L		07/08/22 12:55	07/12/22 16:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		07/08/22 12:55	07/12/22 16:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.8	1.4	ng/L		07/08/22 12:55	07/12/22 16:48	1
F-53B Major	<0.23		1.9	0.23	ng/L		07/08/22 12:55	07/12/22 16:48	1
F-53B Minor	<0.31		1.9	0.31	ng/L		07/08/22 12:55	07/12/22 16:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	68		25 - 150				07/08/22 12:55	07/12/22 16:48	1
13C5 PFPeA	69		25 - 150				07/08/22 12:55	07/12/22 16:48	1
13C2 PFHxA	69		25 - 150				07/08/22 12:55	07/12/22 16:48	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

Client Sample ID: V-200-A

Lab Sample ID: 500-219019-1

Date Collected: 07/01/22 09:00

Matrix: Water

Date Received: 07/06/22 09:25

Method: 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>
13C4 PFHpA	70		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C4 PFOA	69		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C5 PFNA	67		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C2 PFDA	61		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C2 PFUnA	60		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C2 PFDoA	54		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C2 PFTeDA	49		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C2 PFHxDA	51		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C3 PFBS	58		25 - 150	07/08/22 12:55	07/12/22 16:48	1
18O2 PFHxS	60		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C4 PFOS	53		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C8 FOSA	60		10 - 150	07/08/22 12:55	07/12/22 16:48	1
d3-NMeFOSAA	51		25 - 150	07/08/22 12:55	07/12/22 16:48	1
d5-NEtFOSAA	51		25 - 150	07/08/22 12:55	07/12/22 16:48	1
d-N-MeFOSA-M	46		10 - 150	07/08/22 12:55	07/12/22 16:48	1
d-N-EtFOSA-M	45		10 - 150	07/08/22 12:55	07/12/22 16:48	1
d7-N-MeFOSE-M	48		10 - 150	07/08/22 12:55	07/12/22 16:48	1
d9-N-EtFOSE-M	45		10 - 150	07/08/22 12:55	07/12/22 16:48	1
M2-4:2 FTS	68		25 - 150	07/08/22 12:55	07/12/22 16:48	1
M2-6:2 FTS	59		25 - 150	07/08/22 12:55	07/12/22 16:48	1
M2-8:2 FTS	53		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C3 HFPO-DA	68		25 - 150	07/08/22 12:55	07/12/22 16:48	1
13C2 10:2 FTS	50		25 - 150	07/08/22 12:55	07/12/22 16:48	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

Client Sample ID: V-900-A

Lab Sample ID: 500-219019-2

Date Collected: 07/01/22 09:05

Matrix: Water

Date Received: 07/06/22 09:25

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.1		4.3	2.1	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluoropentanoic acid (PFPeA)	<0.42		1.7	0.42	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorohexanoic acid (PFHxA)	<0.50		1.7	0.50	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluoroheptanoic acid (PFHpA)	<0.21		1.7	0.21	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorooctanoic acid (PFOA)	<0.73		1.7	0.73	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorodecanoic acid (PFDA)	<0.26		1.7	0.26	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluoroundecanoic acid (PFUnA)	<0.94		1.7	0.94	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorododecanoic acid (PFDoA)	<0.47		1.7	0.47	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorotetradecanoic acid (PFTeA)	<0.62		1.7	0.62	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.76		1.7	0.76	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.80		1.7	0.80	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.7	0.26	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorohexanesulfonic acid (PFHxS)	<0.49		1.7	0.49	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.16		1.7	0.16	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorooctanesulfonic acid (PFOS)	<0.46		1.7	0.46	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorodecanesulfonic acid (PFDS)	<0.27		1.7	0.27	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorododecanesulfonic acid (PFDoS)	<0.83		1.7	0.83	ng/L		07/08/22 12:55	07/12/22 16:58	1
Perfluorooctanesulfonamide (FOSA)	<0.84		1.7	0.84	ng/L		07/08/22 12:55	07/12/22 16:58	1
NEtFOSA	<0.74		1.7	0.74	ng/L		07/08/22 12:55	07/12/22 16:58	1
NMeFOSA	<0.37		1.7	0.37	ng/L		07/08/22 12:55	07/12/22 16:58	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		07/08/22 12:55	07/12/22 16:58	1
NEtFOSAA	<1.1		4.3	1.1	ng/L		07/08/22 12:55	07/12/22 16:58	1
NMeFOSE	<1.2		3.4	1.2	ng/L		07/08/22 12:55	07/12/22 16:58	1
NEtFOSE	<0.73		1.7	0.73	ng/L		07/08/22 12:55	07/12/22 16:58	1
4:2 FTS	<0.21		1.7	0.21	ng/L		07/08/22 12:55	07/12/22 16:58	1
6:2 FTS	<2.1		4.3	2.1	ng/L		07/08/22 12:55	07/12/22 16:58	1
8:2 FTS	<0.39		1.7	0.39	ng/L		07/08/22 12:55	07/12/22 16:58	1
10:2 FTS	<0.57		1.7	0.57	ng/L		07/08/22 12:55	07/12/22 16:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		07/08/22 12:55	07/12/22 16:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		07/08/22 12:55	07/12/22 16:58	1
F-53B Major	<0.21		1.7	0.21	ng/L		07/08/22 12:55	07/12/22 16:58	1
F-53B Minor	<0.27		1.7	0.27	ng/L		07/08/22 12:55	07/12/22 16:58	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	88		25 - 150				07/08/22 12:55	07/12/22 16:58	1
13C5 PFPeA	85		25 - 150				07/08/22 12:55	07/12/22 16:58	1
13C2 PFHxA	90		25 - 150				07/08/22 12:55	07/12/22 16:58	1
13C4 PFHpA	94		25 - 150				07/08/22 12:55	07/12/22 16:58	1
13C4 PFOA	92		25 - 150				07/08/22 12:55	07/12/22 16:58	1
13C5 PFNA	91		25 - 150				07/08/22 12:55	07/12/22 16:58	1
13C2 PFDA	83		25 - 150				07/08/22 12:55	07/12/22 16:58	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

Client Sample ID: V-900-A

Lab Sample ID: 500-219019-2

Date Collected: 07/01/22 09:05

Matrix: Water

Date Received: 07/06/22 09:25

Method: 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 PFluA	79		25 - 150	07/08/22 12:55	07/12/22 16:58	1
13C2 PFlDoA	74		25 - 150	07/08/22 12:55	07/12/22 16:58	1
13C2 PFlTeDA	76		25 - 150	07/08/22 12:55	07/12/22 16:58	1
13C2 PFlHxDA	79		25 - 150	07/08/22 12:55	07/12/22 16:58	1
13C3 PFlBS	82		25 - 150	07/08/22 12:55	07/12/22 16:58	1
18O2 PFlHxS	89		25 - 150	07/08/22 12:55	07/12/22 16:58	1
13C4 PFlOS	78		25 - 150	07/08/22 12:55	07/12/22 16:58	1
13C8 FOSA	84		10 - 150	07/08/22 12:55	07/12/22 16:58	1
d3-NMeFOSAA	69		25 - 150	07/08/22 12:55	07/12/22 16:58	1
d5-NEtFOSAA	71		25 - 150	07/08/22 12:55	07/12/22 16:58	1
d-N-MeFOSA-M	67		10 - 150	07/08/22 12:55	07/12/22 16:58	1
d-N-EtFOSA-M	67		10 - 150	07/08/22 12:55	07/12/22 16:58	1
d7-N-MeFOSE-M	69		10 - 150	07/08/22 12:55	07/12/22 16:58	1
d9-N-EtFOSE-M	64		10 - 150	07/08/22 12:55	07/12/22 16:58	1
M2-4:2 FTS	89		25 - 150	07/08/22 12:55	07/12/22 16:58	1
M2-6:2 FTS	89		25 - 150	07/08/22 12:55	07/12/22 16:58	1
M2-8:2 FTS	80		25 - 150	07/08/22 12:55	07/12/22 16:58	1
13C3 HFPO-DA	83		25 - 150	07/08/22 12:55	07/12/22 16:58	1
13C2 10:2 FTS	74		25 - 150	07/08/22 12:55	07/12/22 16:58	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

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 30128077.01 WPDES

Job ID: 500-219019-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-601666/1-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 601666

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		07/08/22 12:55	07/12/22 14:16	1
NEtFOSA	<0.87		2.0	0.87	ng/L		07/08/22 12:55	07/12/22 14:16	1
NMeFOSA	<0.43		2.0	0.43	ng/L		07/08/22 12:55	07/12/22 14:16	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		07/08/22 12:55	07/12/22 14:16	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		07/08/22 12:55	07/12/22 14:16	1
NMeFOSE	<1.4		4.0	1.4	ng/L		07/08/22 12:55	07/12/22 14:16	1
NEtFOSE	<0.85		2.0	0.85	ng/L		07/08/22 12:55	07/12/22 14:16	1
4:2 FTS	<0.24		2.0	0.24	ng/L		07/08/22 12:55	07/12/22 14:16	1
6:2 FTS	<2.5		5.0	2.5	ng/L		07/08/22 12:55	07/12/22 14:16	1
8:2 FTS	<0.46		2.0	0.46	ng/L		07/08/22 12:55	07/12/22 14:16	1
10:2 FTS	<0.67		2.0	0.67	ng/L		07/08/22 12:55	07/12/22 14:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		07/08/22 12:55	07/12/22 14:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		07/08/22 12:55	07/12/22 14:16	1
F-53B Major	<0.24		2.0	0.24	ng/L		07/08/22 12:55	07/12/22 14:16	1
F-53B Minor	<0.32		2.0	0.32	ng/L		07/08/22 12:55	07/12/22 14:16	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	80		25 - 150				07/08/22 12:55	07/12/22 14:16	1
13C5 PFPeA	81		25 - 150				07/08/22 12:55	07/12/22 14:16	1
13C2 PFHxA	80		25 - 150				07/08/22 12:55	07/12/22 14:16	1
13C4 PFHpA	84		25 - 150				07/08/22 12:55	07/12/22 14:16	1
13C4 PFOA	82		25 - 150				07/08/22 12:55	07/12/22 14:16	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

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

Lab Sample ID: MB 320-601666/1-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 601666

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	86		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFDA	80		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFUnA	82		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFDoA	77		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFTeDA	74		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFHxDA	75		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C3 PFBS	74		25 - 150	07/08/22 12:55	07/12/22 14:16	1
18O2 PFHxS	79		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C4 PFOS	75		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C8 FOSA	75		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d3-NMeFOSAA	70		25 - 150	07/08/22 12:55	07/12/22 14:16	1
d5-NEtFOSAA	72		25 - 150	07/08/22 12:55	07/12/22 14:16	1
d-N-MeFOSA-M	64		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d-N-EtFOSA-M	63		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d7-N-MeFOSE-M	72		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d9-N-EtFOSE-M	66		10 - 150	07/08/22 12:55	07/12/22 14:16	1
M2-4:2 FTS	86		25 - 150	07/08/22 12:55	07/12/22 14:16	1
M2-6:2 FTS	82		25 - 150	07/08/22 12:55	07/12/22 14:16	1
M2-8:2 FTS	79		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C3 HFPO-DA	78		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 10:2 FTS	76		25 - 150	07/08/22 12:55	07/12/22 14:16	1

Lab Sample ID: LCS 320-601666/2-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 601666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	43.7		ng/L		109	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	40.9		ng/L		102	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	42.5		ng/L		106	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	40.5		ng/L		101	60 - 135
Perfluorononanoic acid (PFNA)	40.0	43.6		ng/L		109	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	42.9		ng/L		107	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	39.6		ng/L		99	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.7		ng/L		109	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	46.5		ng/L		116	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	42.4		ng/L		106	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.1		ng/L		113	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	38.3		ng/L		96	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	39.3		ng/L		111	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	44.9		ng/L		120	60 - 135

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

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

Lab Sample ID: LCS 320-601666/2-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 601666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.2		ng/L		99	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.8		ng/L		115	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	39.9		ng/L		107	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	42.4		ng/L		110	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	40.2		ng/L		104	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	40.7		ng/L		105	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.4		ng/L		106	60 - 135
NEtFOSA	40.0	41.0		ng/L		102	60 - 135
NMeFOSA	40.0	45.7		ng/L		114	60 - 135
NMeFOSAA	40.0	38.9		ng/L		97	60 - 135
NEtFOSAA	40.0	45.6		ng/L		114	60 - 135
NMeFOSE	40.0	43.5		ng/L		109	60 - 135
NEtFOSE	40.0	45.6		ng/L		114	60 - 135
4:2 FTS	37.5	42.2		ng/L		112	60 - 135
6:2 FTS	38.1	42.2		ng/L		111	60 - 135
8:2 FTS	38.4	41.5		ng/L		108	60 - 135
10:2 FTS	38.6	43.2		ng/L		112	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.9		ng/L		119	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.4		ng/L		109	60 - 135
F-53B Major	37.4	39.4		ng/L		106	60 - 135
F-53B Minor	37.8	40.2		ng/L		106	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	74		25 - 150
13C5 PFPeA	74		25 - 150
13C2 PFHxA	74		25 - 150
13C4 PFHpA	77		25 - 150
13C4 PFOA	78		25 - 150
13C5 PFNA	77		25 - 150
13C2 PFDA	74		25 - 150
13C2 PFUnA	79		25 - 150
13C2 PFDoA	72		25 - 150
13C2 PFTeDA	70		25 - 150
13C2 PFHxDA	72		25 - 150
13C3 PFBS	68		25 - 150
18O2 PFHxS	76		25 - 150
13C4 PFOS	72		25 - 150
13C8 FOSA	71		10 - 150
d3-NMeFOSAA	67		25 - 150
d5-NEtFOSAA	68		25 - 150
d-N-MeFOSA-M	56		10 - 150
d-N-EtFOSA-M	58		10 - 150

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

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

Lab Sample ID: LCS 320-601666/2-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 601666

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	65		10 - 150
d9-N-EtFOSE-M	63		10 - 150
M2-4:2 FTS	74		25 - 150
M2-6:2 FTS	76		25 - 150
M2-8:2 FTS	74		25 - 150
13C3 HFPO-DA	72		25 - 150
13C2 10:2 FTS	67		25 - 150

Lab Sample ID: LCSD 320-601666/3-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 601666

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	46.4		ng/L		116	60 - 135	2	30
Perfluoropentanoic acid (PFPeA)	40.0	45.0		ng/L		112	60 - 135	3	30
Perfluorohexanoic acid (PFHxA)	40.0	38.7		ng/L		97	60 - 135	5	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.7		ng/L		109	60 - 135	3	30
Perfluorooctanoic acid (PFOA)	40.0	40.7		ng/L		102	60 - 135	1	30
Perfluorononanoic acid (PFNA)	40.0	42.2		ng/L		106	60 - 135	3	30
Perfluorodecanoic acid (PFDA)	40.0	43.4		ng/L		108	60 - 135	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	40.5		ng/L		101	60 - 135	2	30
Perfluorododecanoic acid (PFDoA)	40.0	45.1		ng/L		113	60 - 135	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	46.7		ng/L		117	60 - 135	0	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.3		ng/L		103	60 - 135	2	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	46.0		ng/L		115	60 - 135	2	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	39.4		ng/L		99	60 - 135	3	30
Perfluorobutanesulfonic acid (PFBS)	35.5	39.0		ng/L		110	60 - 135	1	30
Perfluoropentanesulfonic acid (PFPeS)	37.5	45.0		ng/L		120	60 - 135	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.9		ng/L		101	60 - 135	2	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.2		ng/L		113	60 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	40.0		ng/L		107	60 - 135	0	30
Perfluorononanesulfonic acid (PFNS)	38.5	42.0		ng/L		109	60 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)	38.6	38.8		ng/L		101	60 - 135	4	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	41.8		ng/L		108	60 - 135	3	30
Perfluorooctanesulfonamide (FOSA)	40.0	42.8		ng/L		107	60 - 135	1	30
NEtFOSA	40.0	43.7		ng/L		109	60 - 135	6	30
NMeFOSA	40.0	45.4		ng/L		113	60 - 135	1	30
NMeFOSAA	40.0	38.6		ng/L		97	60 - 135	1	30

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

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

Lab Sample ID: LCSD 320-601666/3-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 601666

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	45.6		ng/L		114	60 - 135	0	30
NMeFOSE	40.0	42.8		ng/L		107	60 - 135	2	30
NEtFOSE	40.0	45.5		ng/L		114	60 - 135	0	30
4:2 FTS	37.5	40.5		ng/L		108	60 - 135	4	30
6:2 FTS	38.1	41.1		ng/L		108	60 - 135	3	30
8:2 FTS	38.4	42.2		ng/L		110	60 - 135	2	30
10:2 FTS	38.6	40.3		ng/L		104	60 - 135	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.3		ng/L		120	60 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.9		ng/L		110	60 - 135	1	30
F-53B Major	37.4	40.6		ng/L		109	60 - 135	3	30
F-53B Minor	37.8	42.2		ng/L		112	60 - 135	5	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	77		25 - 150
13C5 PFPeA	77		25 - 150
13C2 PFHxA	81		25 - 150
13C4 PFHpA	84		25 - 150
13C4 PFOA	84		25 - 150
13C5 PFNA	85		25 - 150
13C2 PFDA	78		25 - 150
13C2 PFUnA	84		25 - 150
13C2 PFDoA	76		25 - 150
13C2 PFTeDA	78		25 - 150
13C2 PFHxDA	79		25 - 150
13C3 PFBS	75		25 - 150
18O2 PFHxS	79		25 - 150
13C4 PFOS	77		25 - 150
13C8 FOSA	77		10 - 150
d3-NMeFOSAA	72		25 - 150
d5-NEtFOSAA	74		25 - 150
d-N-MeFOSA-M	60		10 - 150
d-N-EtFOSA-M	62		10 - 150
d7-N-MeFOSE-M	74		10 - 150
d9-N-EtFOSE-M	69		10 - 150
M2-4:2 FTS	82		25 - 150
M2-6:2 FTS	82		25 - 150
M2-8:2 FTS	79		25 - 150
13C3 HFPO-DA	79		25 - 150
13C2 10:2 FTS	78		25 - 150

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

Client Sample ID: V-200-A
Date Collected: 07/01/22 09:00
Date Received: 07/06/22 09:25

Lab Sample ID: 500-219019-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			601666	07/08/22 12:55	MRP	TAL SAC
Total/NA	Analysis	537 (modified)		1	602495	07/12/22 16:48	S1M	TAL SAC

Client Sample ID: V-900-A
Date Collected: 07/01/22 09:05
Date Received: 07/06/22 09:25

Lab Sample ID: 500-219019-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			601666	07/08/22 12:55	MRP	TAL SAC
Total/NA	Analysis	537 (modified)		1	602495	07/12/22 16:58	S1M	TAL SAC

Laboratory References:

TAL 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 30128077.01 WPDES

Job ID: 500-219019-1

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-22

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



Regulatory Program: DW NPDES RCRA Other:

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 # 30128077.01 (WPDES)		Project Manager: Lisa Rutkowiak Email: N/A Tell/Fax: N/A Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Project Manager: Lisa Rutkowiak Date: 7-1-22 Carrier: FedEx Lab Contact: Sandie Fredrick		COC No: 1 of 1 COCs For Lab Use Only: Walk-in Client: Lab Sampling: Lab Project Number 50015522											
Sample Identification V-200-A V-900-A		Sample Date 7-1-22 ↓ Sample Time 9:00 9:05		Sample Type (C=Comp, G=Grab) G G		Matrix W W		# of Cont. 2 2		Filtered Sample (Y/N) N N		Perform MS / MSD (Y/N) N N		EPA 537 Modified (36 Compounds) X X		Sample Specific Notes: System Influent System Effluent	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 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. <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown																	
Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7																	
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months																	
500-219019 Chain of Custody 																	
Custody Seal No.: _____ Company: Barley Excavating Date/Time: _____				Received by: <i>Jacob Ramirez</i> Company: <i>FEDEX</i> Date/Time: _____				Cooler Temp. (°C): _____ Obs'd: _____ Corr'd: _____ Company: _____ Therm ID No.: _____ Date/Time: _____				Received by: <i>FEDEX</i> Company: <i>FEDEX</i> Date/Time: _____					
Relinquished by: <i>Jacob Ramirez</i> Company: _____ Date/Time: _____				Relinquished by: _____ Company: _____ Date/Time: _____				Relinquished by: _____ Company: _____ Date/Time: _____				Relinquished by: _____ Company: _____ Date/Time: _____					



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-219019-1

Login Number: 219019

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 07/06/22 04:12 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
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	2.0C
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.	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	



500-219019 Field Sheet

Tracking #: 5776 0597 0678

Job: _____

SO (PO) / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / 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: W6 Corr. Factor: (+/-) N/A °C

Ice Wet Gel _____ Other _____

Cooler Custody Seal: —

Cooler ID: —

Temp Observed: 2.0 °C Corrected: 2.0 °C

From: Temp Blank Sample

Opening/Processing The Shipment **Yes** **No** **NA**

Cooler compromised/tampered with?

Cooler Temperature is acceptable?

Frozen samples show signs of thaw?

Initials: SO Date: 7-6-22

Unpacking/Labeling The Samples **Yes** **No** **NA**

COC is complete w/o discrepancies?

Samples compromised/tampered with?

Containers are not broken or leaking?

Sample custody seal?

Sample containers have legible labels?

Sample date/times are provided?

Appropriate containers are used?

Sample bottles are completely filled?

Sample preservatives verified?

Is the Field Sampler's name on COC?

Samples require splitting/compositing?

Samples w/o discrepancies?

Zero headspace?*

Alkalinity has no headspace?

Perchlorate has headspace?

(Methods 314, 331, 6850)

Multiphasic samples are not present?

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: SO Date: 7-6-22

Notes: _____

Trizma Lot #(s): _____

Login Completion **Yes** **No** **NA**

Receipt Temperature on COC?

Samples received within hold time?

NCM Filed?

Log Release checked in TALS?

Initials: SO Date: 7-6-22

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219019-1

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)
500-219019-1	V-200-A	68	69	69	70	69	67	61	60
500-219019-2	V-900-A	88	85	90	94	92	91	83	79
LCS 320-601666/2-A	Lab Control Sample	74	74	74	77	78	77	74	79
LCS 320-601666/3-A	Lab Control Sample Dup	77	77	81	84	84	85	78	84
MB 320-601666/1-A	Method Blank	80	81	80	84	82	86	80	82

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)
500-219019-1	V-200-A	54	49	51	58	60	53	60	51
500-219019-2	V-900-A	74	76	79	82	89	78	84	69
LCS 320-601666/2-A	Lab Control Sample	72	70	72	68	76	72	71	67
LCS 320-601666/3-A	Lab Control Sample Dup	76	78	79	75	79	77	77	72
MB 320-601666/1-A	Method Blank	77	74	75	74	79	75	75	70

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)
500-219019-1	V-200-A	51	46	45	48	45	68	59	53
500-219019-2	V-900-A	71	67	67	69	64	89	89	80
LCS 320-601666/2-A	Lab Control Sample	68	56	58	65	63	74	76	74
LCS 320-601666/3-A	Lab Control Sample Dup	74	60	62	74	69	82	82	79
MB 320-601666/1-A	Method Blank	72	64	63	72	66	86	82	79

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-219019-1	V-200-A	68	50
500-219019-2	V-900-A	83	74
LCS 320-601666/2-A	Lab Control Sample	72	67
LCS 320-601666/3-A	Lab Control Sample Dup	79	78
MB 320-601666/1-A	Method Blank	78	76

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 30128077.01 WPDES

Job ID: 500-219019-1

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

Eurofins Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-219050-1

Client Project/Site: Marinette, WI 30128077.01 WPDES

For:

ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski



Authorized for release by:

7/26/2022 8:18:17 AM

Sandie Fredrick, Project Manager II
(920)261-1660

Sandra.Fredrick@et.eurofinsus.com

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results through



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Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Job ID: 500-219050-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-219050-1

Comments

No additional comments.

Receipt

The samples were received on 7/7/2022 10:41 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 2.3° C.

Receipt Exceptions

Received 1 250ml amber broken for sample 1.

GC/MS VOA

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

GC/MS Semi VOA

Method 625: The continuing calibration verification (CCV) associated with batch 500-665298 recovered above the upper control limit for Dibenz(a,h)anthracene and Indeno[1,2,3-cd]pyrene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 625: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 500-665085 and analytical batch 500-666108 recovered outside control limits for the following analytes: Naphthalene and 2-Methylnaphthalene.

Method 625: The laboratory control sample duplicate (LCSD) for preparation batch 500-665085 and analytical batch 500-666108 recovered outside control limits for the following analytes: Phenanthrene and Pyrene. These analytes were biased high in the LCSD and were not detected in the associated samples; 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

Method 1664B: The matrix spike (MS) recovery for preparation batch 500-666722 and analytical batch 500-666723 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. 500-219050-H-1-A MS

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.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
1664B	HEM and SGT-HEM	1664B	TAL CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CHI
1664B	HEM and SGT-HEM (SPE)	1664B	TAL CHI
625	Liquid-Liquid Extraction	40CFR136A	TAL CHI

Protocol References:

1664B = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

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

Laboratory References:

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

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-219050-1	V-200-A	Water	07/06/22 09:30	07/07/22 10:41
500-219050-2	V-900-A	Water	07/06/22 09:55	07/07/22 10:41
500-219050-3	Trip Blank (7-6-22)	Water	07/06/22 00:00	07/07/22 10:41

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Client Sample ID: V-200-A

Lab Sample ID: 500-219050-1

Date Collected: 07/06/22 09:30

Matrix: Water

Date Received: 07/07/22 10:41

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			07/12/22 14:25	1
Toluene	<0.15		0.50	0.15	ug/L			07/12/22 14:25	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/12/22 14:25	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/12/22 14:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		75 - 120		07/12/22 14:25	1
4-Bromofluorobenzene (Surr)	100		71 - 120		07/12/22 14:25	1
1,2-Dichloroethane-d4 (Surr)	92		71 - 127		07/12/22 14:25	1
Dibromofluoromethane (Surr)	96		70 - 120		07/12/22 14:25	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.098		0.80	0.098	ug/L		07/12/22 08:13	07/13/22 21:14	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		07/12/22 08:13	07/13/22 21:14	1
Anthracene	<0.15		0.80	0.15	ug/L		07/12/22 08:13	07/13/22 21:14	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		07/12/22 08:13	07/13/22 21:14	1
Benzo[a]pyrene	<0.060		0.80	0.060	ug/L		07/12/22 08:13	07/13/22 21:14	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		07/12/22 08:13	07/13/22 21:14	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		07/12/22 08:13	07/13/22 21:14	1
Benzo[k]fluoranthene	<0.13		0.80	0.13	ug/L		07/12/22 08:13	07/13/22 21:14	1
Chrysene	<0.075		0.80	0.075	ug/L		07/12/22 08:13	07/13/22 21:14	1
Dibenz(a,h)anthracene	<0.090	^c	0.80	0.090	ug/L		07/12/22 08:13	07/13/22 21:14	1
Fluoranthene	<0.16		0.80	0.16	ug/L		07/12/22 08:13	07/13/22 21:14	1
Fluorene	<0.13		0.80	0.13	ug/L		07/12/22 08:13	07/13/22 21:14	1
Indeno[1,2,3-cd]pyrene	<0.061	^c	0.80	0.061	ug/L		07/12/22 08:13	07/13/22 21:14	1
Naphthalene	<0.12	*	0.80	0.12	ug/L		07/12/22 08:13	07/13/22 21:14	1
Phenanthrene	<0.17	*	0.80	0.17	ug/L		07/12/22 08:13	07/13/22 21:14	1
Pyrene	<0.18	*	0.80	0.18	ug/L		07/12/22 08:13	07/13/22 21:14	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		07/12/22 08:13	07/13/22 21:14	1
2-Methylnaphthalene	<0.067	*	1.6	0.067	ug/L		07/12/22 08:13	07/13/22 21:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	89		36 - 120	07/12/22 08:13	07/13/22 21:14	1
Terphenyl-d14	143		40 - 145	07/12/22 08:13	07/13/22 21:14	1
2-Fluorobiphenyl	95		34 - 110	07/12/22 08:13	07/13/22 21:14	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	2.0	J F1	5.3	1.4	mg/L		07/23/22 10:18	07/23/22 11:18	1
Total Suspended Solids	7.4		5.0	1.9	mg/L			07/12/22 12:31	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Client Sample ID: V-900-A

Lab Sample ID: 500-219050-2

Date Collected: 07/06/22 09:55

Matrix: Water

Date Received: 07/07/22 10:41

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			07/12/22 14:48	1
Toluene	<0.15		0.50	0.15	ug/L			07/12/22 14:48	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/12/22 14:48	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/12/22 14:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		75 - 120		07/12/22 14:48	1
4-Bromofluorobenzene (Surr)	104		71 - 120		07/12/22 14:48	1
1,2-Dichloroethane-d4 (Surr)	92		71 - 127		07/12/22 14:48	1
Dibromofluoromethane (Surr)	95		70 - 120		07/12/22 14:48	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.092		0.75	0.092	ug/L		07/12/22 08:13	07/13/22 21:38	1
Acenaphthylene	<0.10		0.75	0.10	ug/L		07/12/22 08:13	07/13/22 21:38	1
Anthracene	<0.14		0.75	0.14	ug/L		07/12/22 08:13	07/13/22 21:38	1
Benzo[a]anthracene	<0.049		0.75	0.049	ug/L		07/12/22 08:13	07/13/22 21:38	1
Benzo[a]pyrene	<0.057		0.75	0.057	ug/L		07/12/22 08:13	07/13/22 21:38	1
Benzo[b]fluoranthene	<0.061		0.75	0.061	ug/L		07/12/22 08:13	07/13/22 21:38	1
Benzo[g,h,i]perylene	<0.36		0.75	0.36	ug/L		07/12/22 08:13	07/13/22 21:38	1
Benzo[k]fluoranthene	<0.13		0.75	0.13	ug/L		07/12/22 08:13	07/13/22 21:38	1
Chrysene	<0.070		0.75	0.070	ug/L		07/12/22 08:13	07/13/22 21:38	1
Dibenz(a,h)anthracene	<0.085	^c	0.75	0.085	ug/L		07/12/22 08:13	07/13/22 21:38	1
Fluoranthene	<0.15		0.75	0.15	ug/L		07/12/22 08:13	07/13/22 21:38	1
Fluorene	<0.13		0.75	0.13	ug/L		07/12/22 08:13	07/13/22 21:38	1
Indeno[1,2,3-cd]pyrene	<0.057	^c	0.75	0.057	ug/L		07/12/22 08:13	07/13/22 21:38	1
Naphthalene	<0.12	*	0.75	0.12	ug/L		07/12/22 08:13	07/13/22 21:38	1
Phenanthrene	<0.16	*	0.75	0.16	ug/L		07/12/22 08:13	07/13/22 21:38	1
Pyrene	<0.17	*	0.75	0.17	ug/L		07/12/22 08:13	07/13/22 21:38	1
1-Methylnaphthalene	<0.23		1.5	0.23	ug/L		07/12/22 08:13	07/13/22 21:38	1
2-Methylnaphthalene	<0.063	*	1.5	0.063	ug/L		07/12/22 08:13	07/13/22 21:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	85		36 - 120	07/12/22 08:13	07/13/22 21:38	1
Terphenyl-d14	143		40 - 145	07/12/22 08:13	07/13/22 21:38	1
2-Fluorobiphenyl	95		34 - 110	07/12/22 08:13	07/13/22 21:38	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	2.4	J	5.2	1.4	mg/L		07/23/22 10:36	07/23/22 11:18	1
Total Suspended Solids	<1.9		5.0	1.9	mg/L			07/12/22 12:32	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Client Sample ID: Trip Blank (7-6-22)

Lab Sample ID: 500-219050-3

Date Collected: 07/06/22 00:00

Matrix: Water

Date Received: 07/07/22 10:41

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			07/12/22 12:28	1
Toluene	<0.15		0.50	0.15	ug/L			07/12/22 12:28	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/12/22 12:28	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/12/22 12:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		75 - 120		07/12/22 12:28	1
4-Bromofluorobenzene (Surr)	103		71 - 120		07/12/22 12:28	1
1,2-Dichloroethane-d4 (Surr)	88		71 - 127		07/12/22 12:28	1
Dibromofluoromethane (Surr)	93		70 - 120		07/12/22 12:28	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits
*	LCS or LCSD is outside acceptance limits.
^c	CCV Recovery is outside acceptance limits.
J	Reported value was between the limit of detection and the limit of quantitation.

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Reported value was between the limit of detection and the limit of quantitation.

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

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TOL	BFB	DCA	DBFM
		(75-120)	(71-120)	(71-127)	(70-120)
500-219050-1	V-200-A	103	100	92	96
500-219050-2	V-900-A	100	104	92	95
500-219050-3	Trip Blank (7-6-22)	101	103	88	93
LCS 500-665142/5	Lab Control Sample	99	95	84	95
MB 500-665142/7	Method Blank	103	96	88	100

Surrogate Legend

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr)

DBFM = Dibromofluoromethane (Surr)

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	NBZ	TPHL	FBP
		(36-120)	(40-145)	(34-110)
500-219050-1	V-200-A	89	143	95
500-219050-2	V-900-A	85	143	95
LCS 500-665085/2-A	Lab Control Sample	99	116	100
LCSD 500-665085/3-A	Lab Control Sample Dup	104	132	104
MB 500-665085/1-A	Method Blank	76	116	87

Surrogate Legend

NBZ = Nitrobenzene-d5

TPHL = Terphenyl-d14

FBP = 2-Fluorobiphenyl

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-665142/7
Matrix: Water
Analysis Batch: 665142

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

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			07/12/22 11:42	1
Toluene	<0.15		0.50	0.15	ug/L			07/12/22 11:42	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/12/22 11:42	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/12/22 11:42	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	103		75 - 120		07/12/22 11:42	1
4-Bromofluorobenzene (Surr)	96		71 - 120		07/12/22 11:42	1
1,2-Dichloroethane-d4 (Surr)	88		71 - 127		07/12/22 11:42	1
Dibromofluoromethane (Surr)	100		70 - 120		07/12/22 11:42	1

Lab Sample ID: LCS 500-665142/5
Matrix: Water
Analysis Batch: 665142

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

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Benzene	50.0	46.3		ug/L		93	37 - 151
Toluene	50.0	48.9		ug/L		98	47 - 150
Ethylbenzene	50.0	51.1		ug/L		102	37 - 162

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	99		75 - 120
4-Bromofluorobenzene (Surr)	95		71 - 120
1,2-Dichloroethane-d4 (Surr)	84		71 - 127
Dibromofluoromethane (Surr)	95		70 - 120

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-665085/1-A
Matrix: Water
Analysis Batch: 666108

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 665085

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acenaphthene	<0.099		0.80	0.099	ug/L		07/12/22 08:13	07/19/22 14:40	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		07/12/22 08:13	07/19/22 14:40	1
Anthracene	<0.15		0.80	0.15	ug/L		07/12/22 08:13	07/19/22 14:40	1
Benzo[a]anthracene	0.389	J	0.80	0.052	ug/L		07/12/22 08:13	07/19/22 14:40	1
Benzo[a]pyrene	0.369	J	0.80	0.061	ug/L		07/12/22 08:13	07/19/22 14:40	1
Benzo[b]fluoranthene	0.428	J	0.80	0.065	ug/L		07/12/22 08:13	07/19/22 14:40	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		07/12/22 08:13	07/19/22 14:40	1
Benzo[k]fluoranthene	0.195	J	0.80	0.14	ug/L		07/12/22 08:13	07/19/22 14:40	1
Chrysene	0.576	J	0.80	0.075	ug/L		07/12/22 08:13	07/19/22 14:40	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		07/12/22 08:13	07/19/22 14:40	1
Fluoranthene	0.530	J	0.80	0.16	ug/L		07/12/22 08:13	07/19/22 14:40	1
Fluorene	<0.13		0.80	0.13	ug/L		07/12/22 08:13	07/19/22 14:40	1
Indeno[1,2,3-cd]pyrene	0.176	J	0.80	0.061	ug/L		07/12/22 08:13	07/19/22 14:40	1
Naphthalene	<0.12		0.80	0.12	ug/L		07/12/22 08:13	07/19/22 14:40	1
Phenanthrene	<0.17		0.80	0.17	ug/L		07/12/22 08:13	07/19/22 14:40	1

Eurofins Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-665085/1-A
Matrix: Water
Analysis Batch: 666108

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 665085

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Pyrene	0.499	J	0.80	0.18	ug/L		07/12/22 08:13	07/19/22 14:40	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		07/12/22 08:13	07/19/22 14:40	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		07/12/22 08:13	07/19/22 14:40	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Nitrobenzene-d5	76		36 - 120	07/12/22 08:13	07/19/22 14:40	1
Terphenyl-d14	116		40 - 145	07/12/22 08:13	07/19/22 14:40	1
2-Fluorobiphenyl	87		34 - 110	07/12/22 08:13	07/19/22 14:40	1

Lab Sample ID: LCS 500-665085/2-A
Matrix: Water
Analysis Batch: 666108

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 665085

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Acenaphthene	32.0	28.4		ug/L		89	47 - 145
Acenaphthylene	32.0	28.4		ug/L		89	33 - 145
Anthracene	32.0	35.4		ug/L		111	27 - 133
Benzo[a]anthracene	32.0	34.8		ug/L		109	33 - 143
Benzo[a]pyrene	32.0	40.1		ug/L		125	17 - 163
Benzo[b]fluoranthene	32.0	37.7		ug/L		118	24 - 159
Benzo[g,h,i]perylene	32.0	38.4		ug/L		120	10 - 219
Benzo[k]fluoranthene	32.0	39.1		ug/L		122	11 - 162
Chrysene	32.0	35.2		ug/L		110	17 - 168
Dibenz(a,h)anthracene	32.0	38.6		ug/L		121	10 - 227
Fluoranthene	32.0	38.0		ug/L		119	26 - 137
Fluorene	32.0	32.5		ug/L		101	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	40.9		ug/L		128	10 - 171
Naphthalene	32.0	21.5		ug/L		67	21 - 133
Phenanthrene	32.0	34.5		ug/L		108	54 - 120
Pyrene	32.0	35.9		ug/L		112	52 - 115
1-Methylnaphthalene	32.0	22.3		ug/L		70	
2-Methylnaphthalene	32.0	21.6		ug/L		68	34 - 110

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Nitrobenzene-d5	99		36 - 120
Terphenyl-d14	116		40 - 145
2-Fluorobiphenyl	100		34 - 110

Lab Sample ID: LCSD 500-665085/3-A
Matrix: Water
Analysis Batch: 666108

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 665085

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
		Result	Qualifier						
Acenaphthene	32.0	34.1		ug/L		107	47 - 145	18	20
Acenaphthylene	32.0	33.5		ug/L		105	33 - 145	16	20
Anthracene	32.0	39.1		ug/L		122	27 - 133	10	20
Benzo[a]anthracene	32.0	39.4		ug/L		123	33 - 143	12	20
Benzo[a]pyrene	32.0	44.8		ug/L		140	17 - 163	11	20

Eurofins Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 500-665085/3-A
Matrix: Water
Analysis Batch: 666108

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 665085

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzo[b]fluoranthene	32.0	41.8		ug/L		130	24 - 159	10	20
Benzo[g,h,i]perylene	32.0	42.6		ug/L		133	10 - 219	10	20
Benzo[k]fluoranthene	32.0	43.5		ug/L		136	11 - 162	11	20
Chrysene	32.0	40.1		ug/L		125	17 - 168	13	20
Dibenz(a,h)anthracene	32.0	42.5		ug/L		133	10 - 227	10	20
Fluoranthene	32.0	42.5		ug/L		133	26 - 137	11	20
Fluorene	32.0	36.7		ug/L		115	59 - 121	12	20
Indeno[1,2,3-cd]pyrene	32.0	44.9		ug/L		140	10 - 171	9	20
Naphthalene	32.0	28.0	*	ug/L		87	21 - 133	26	20
Phenanthrene	32.0	38.6	*	ug/L		121	54 - 120	11	20
Pyrene	32.0	40.3	*	ug/L		126	52 - 115	12	20
1-Methylnaphthalene	32.0	28.8		ug/L		90		26	
2-Methylnaphthalene	32.0	28.8	*	ug/L		90	34 - 110	29	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Nitrobenzene-d5	104		36 - 120
Terphenyl-d14	132		40 - 145
2-Fluorobiphenyl	104		34 - 110

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-666722/1-A
Matrix: Water
Analysis Batch: 666723

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 666722

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		07/23/22 10:18	07/23/22 11:18	1

Lab Sample ID: LCS 500-666722/2-A
Matrix: Water
Analysis Batch: 666723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 666722

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
HEM (Oil & Grease)	40.0	35.90		mg/L		90	78 - 114

Lab Sample ID: 500-219050-1 MS
Matrix: Water
Analysis Batch: 666723

Client Sample ID: V-200-A
Prep Type: Total/NA
Prep Batch: 666722

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
HEM (Oil & Grease)	2.0	J F1	42.1	33.19	F1	mg/L		74	78 - 114

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 500-665162/1
Matrix: Water
Analysis Batch: 665162

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<1.9		5.0	1.9	mg/L			07/12/22 12:25	1

Eurofins Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: LCS 500-665162/2
Matrix: Water
Analysis Batch: 665162

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	200	177.0		mg/L		89	80 - 120

Lab Sample ID: 500-219050-2 DU
Matrix: Water
Analysis Batch: 665162

Client Sample ID: V-900-A
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	<1.9		<1.9		mg/L		NC	5

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Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Client Sample ID: V-200-A
Date Collected: 07/06/22 09:30
Date Received: 07/07/22 10:41

Lab Sample ID: 500-219050-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	665142	07/12/22 14:25	W1T	TAL CHI
Total/NA	Prep	625			665085	07/12/22 08:13	TS	TAL CHI
Total/NA	Analysis	625		1	665298	07/13/22 21:14	JSB	TAL CHI
Total/NA	Prep	1664B			666722	07/23/22 10:18	AM	TAL CHI
Total/NA	Analysis	1664B		1	666723	07/23/22 11:18	AM	TAL CHI
Total/NA	Analysis	SM 2540D		1	665162		SMO	TAL CHI
					(Start)	07/12/22 12:31		
					(End)	07/12/22 12:32		

Client Sample ID: V-900-A
Date Collected: 07/06/22 09:55
Date Received: 07/07/22 10:41

Lab Sample ID: 500-219050-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	665142	07/12/22 14:48	W1T	TAL CHI
Total/NA	Prep	625			665085	07/12/22 08:13	TS	TAL CHI
Total/NA	Analysis	625		1	665298	07/13/22 21:38	JSB	TAL CHI
Total/NA	Prep	1664B			666722	07/23/22 10:36	AM	TAL CHI
Total/NA	Analysis	1664B		1	666723	07/23/22 11:18	AM	TAL CHI
Total/NA	Analysis	SM 2540D		1	665162		SMO	TAL CHI
					(Start)	07/12/22 12:32		
					(End)	07/12/22 12:33		

Client Sample ID: Trip Blank (7-6-22)
Date Collected: 07/06/22 00:00
Date Received: 07/07/22 10:41

Lab Sample ID: 500-219050-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	665142	07/12/22 12:28	W1T	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219050-1

Laboratory: Eurofins Chicago

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


Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-22

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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

Client Contact		Project Manager: Lisa Rutkowski		Sampler: <i>Jacob Haminger</i>		Date: 7-6-22		COC No 1				
Arcadis U S , Inc 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202		Email: N/A Tel/Fax: N/A		Lab Contact: <i>Sandie Fredrick</i>		Carrier: FedEx		1 of 1 COCs				
 500-219050 COC		Analysis Turnaround Time		Filtered Sample (Y/N) Perform MS / MSD (Y/N) BTEX Method 624 Oil & Grease Method 1664 TSS Method 2540D PAHs Method 625		CTR		For Lab Use Only: Walk-in Client. _____ Lab Sampling: _____				
		<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below Standard _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day								Lab Project Number 50015522		
Project Name: Marinette, WI		Site Marinette, WI		P O # 30128077 01 (WPDES)		500-219050		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)	BTEX Method 624	Oil & Grease Method 1664	TSS Method 2540D	PAHs Method 625	Sample Specific Notes
V-200-A	7-6-22	9:30	G	W	8	N	N	X	X	X	X	System Influent
V-900-A	↓	9:55	G	W	8	N	N	X	X	X	X	System Effluent
Trip Blank (7-6-22)	↓	—	G	W	1	N	N	X				Trip Blank
CTR						CTR						
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other						2 3 - -						
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.						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)						
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown						<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months						
Special Instructions/QC Requirements & Comments:												
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No			Custody Seal No			Cooler Temp. (°C) Obs'd <i>3.7</i> Corr'd. <i>2.3</i>			Therm ID No			
Relinquished by: <i>Jacob Haminger</i>			Company: Barley Excavating			Date/Time: 7-6-22/11:10			Received by: <i>Fed Ex</i>			
Relinquished by:			Company:			Date/Time:			Received by:			
Relinquished by:			Company:			Date/Time:			Received in Laboratory by: <i>Shirley Lott</i>			
									Company: <i>ERT</i> Date/Time: <i>7/5/22 0940</i>			



500-219050 Waybi

ORIGIN ID:RRLA (262) 202-5955
JOE BARLEY
BARLEY EXCAVATING
1824 10TH AVE

SHIP DATE: 24MAY22
ACTWGT: 25.00 LB MAN
CAD: 0269688/CAFE3511

MENOMINEE, MI 49858
UNITED STATES US

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

57005/1RBC/AF48

UNIVERSITY PARK IL 60484

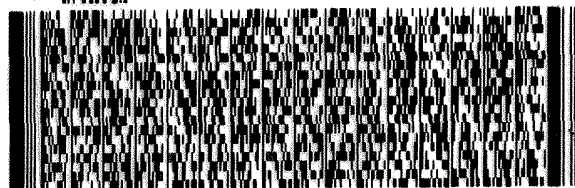
(262) 202-5955

REF:

INV:

DEPT

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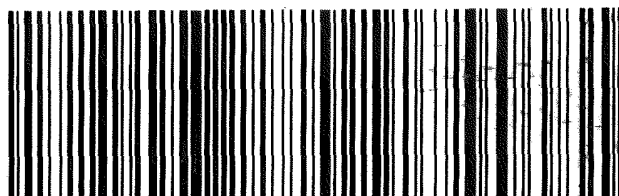
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THU - 07 JUL AA
PRIORITY OVERNIGHT

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3684346 06Jul2022 GRBA 56DG1/A4AE/C088



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Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-219050-1

Login Number: 219050

List Source: Eurofins Chicago

List Number: 1

Creator: Scott, Sherri L

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	2.3
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.	False	Containers recd broken. Sufficient sample in remaining containers for analysis.
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

Eurofins Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200


Laboratory Job ID: 500-219098-1

Client Project/Site: Marinette, WI 30128077.01 WPDES

For:

ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski



Authorized for release by:

7/18/2022 4:37:01 PM

Jim Knapp, Project Manager II
(630)758-0262

Jim.Knapp@et.eurofinsus.com

Designee for

Sandie Fredrick, Project Manager II
(920)261-1660

Sandra.Fredrick@et.eurofinsus.com

LINKS

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results through



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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

Job ID: 500-219098-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-219098-1

Comments

No additional comments.

Receipt

The samples were received on 7/7/2022 9:45 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 1.1° C.

LCMS

Method 537 (modified): The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: 500-219098-1. These analytes have been qualified; however, the peaks did not saturate the instrument detector. The samples were diluted within calibration range, and both sets of data were reported.

Method 537 (modified): Results for sample 500-219098-1 were reported from the analysis of a diluted extract due to high concentration of the matrix in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 5X analysis is 115% after the dilution factor was applied to the labeled internal standard area count.

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

Organic Prep

Method 3535: The following sample was light yellow prior to extraction: 500-219098-1.
preparation batch 320-601666

Method Code: 3535_PFC

Matrix: Aqueous

Method 3535: Due to the matrix, the following samples 500-219098-1 and 500-219098-2 were prepared with an LCS/LCSD instead of a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-601666.

Method Code: 3535_PFC

Matrix: Aqueous

Method 3535: The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction: 500-219098-1.
preparation batch 320-601666

Method Code: 3535_PFC

Matrix: Aqueous

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-219098-1	V-200-A	Water	07/06/22 09:35	07/07/22 09:45
500-219098-2	V-900-A	Water	07/06/22 10:00	07/07/22 09:45

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

Client Sample ID: V-200-A

Lab Sample ID: 500-219098-1

Date Collected: 07/06/22 09:35

Matrix: Water

Date Received: 07/07/22 09:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	52		4.3	2.0	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluoropentanoic acid (PFPeA)	180		1.7	0.42	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorohexanoic acid (PFHxA)	130		1.7	0.50	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluoroheptanoic acid (PFHpA)	96		1.7	0.21	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorooctanoic acid (PFOA)	470	E	1.7	0.73	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorononanoic acid (PFNA)	42		1.7	0.23	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorodecanoic acid (PFDA)	18		1.7	0.26	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluoroundecanoic acid (PFUnA)	8.3		1.7	0.94	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorododecanoic acid (PFDoA)	1.0	J	1.7	0.47	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorotetradecanoic acid (PFTeA)	<0.62		1.7	0.62	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.76		1.7	0.76	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.80		1.7	0.80	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorobutanesulfonic acid (PFBS)	3.9		1.7	0.17	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluoropentanesulfonic acid (PFPeS)	0.97	J	1.7	0.26	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorohexanesulfonic acid (PFHxS)	26		1.7	0.49	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluoroheptanesulfonic acid (PFHpS)	1.6	J	1.7	0.16	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorooctanesulfonic acid (PFOS)	160		1.7	0.46	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluoronanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorodecanesulfonic acid (PFDS)	<0.27		1.7	0.27	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorododecanesulfonic acid (PFDoS)	<0.83		1.7	0.83	ng/L		07/08/22 12:55	07/12/22 17:49	1
Perfluorooctanesulfonamide (FOSA)	7.7		1.7	0.84	ng/L		07/08/22 12:55	07/12/22 17:49	1
NEtFOSA	<0.74		1.7	0.74	ng/L		07/08/22 12:55	07/12/22 17:49	1
NMeFOSA	<0.37		1.7	0.37	ng/L		07/08/22 12:55	07/12/22 17:49	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		07/08/22 12:55	07/12/22 17:49	1
NEtFOSAA	1.2	J	4.3	1.1	ng/L		07/08/22 12:55	07/12/22 17:49	1
NMeFOSE	<1.2		3.4	1.2	ng/L		07/08/22 12:55	07/12/22 17:49	1
NEtFOSE	<0.73		1.7	0.73	ng/L		07/08/22 12:55	07/12/22 17:49	1
4:2 FTS	2.4		1.7	0.20	ng/L		07/08/22 12:55	07/12/22 17:49	1
6:2 FTS	420	E	4.3	2.1	ng/L		07/08/22 12:55	07/12/22 17:49	1
8:2 FTS	360	E	1.7	0.39	ng/L		07/08/22 12:55	07/12/22 17:49	1
10:2 FTS	24		1.7	0.57	ng/L		07/08/22 12:55	07/12/22 17:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		07/08/22 12:55	07/12/22 17:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		07/08/22 12:55	07/12/22 17:49	1
F-53B Major	<0.20		1.7	0.20	ng/L		07/08/22 12:55	07/12/22 17:49	1
F-53B Minor	<0.27		1.7	0.27	ng/L		07/08/22 12:55	07/12/22 17:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	81		25 - 150				07/08/22 12:55	07/12/22 17:49	1
13C5 PFPeA	86		25 - 150				07/08/22 12:55	07/12/22 17:49	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

Client Sample ID: V-200-A

Lab Sample ID: 500-219098-1

Date Collected: 07/06/22 09:35

Matrix: Water

Date Received: 07/07/22 09:45

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C4 PFHpA	96		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C4 PFOA	88		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C5 PFNA	95		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C2 PFDA	90		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C2 PFUnA	94		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C2 PFDoA	83		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C2 PFTeDA	74		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C2 PFHxDA	75		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C3 PFBS	83		25 - 150	07/08/22 12:55	07/12/22 17:49	1
18O2 PFHxS	91		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C4 PFOS	82		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C8 FOSA	88		10 - 150	07/08/22 12:55	07/12/22 17:49	1
d3-NMeFOSAA	77		25 - 150	07/08/22 12:55	07/12/22 17:49	1
d5-NEtFOSAA	79		25 - 150	07/08/22 12:55	07/12/22 17:49	1
d-N-MeFOSA-M	72		10 - 150	07/08/22 12:55	07/12/22 17:49	1
d-N-EtFOSA-M	67		10 - 150	07/08/22 12:55	07/12/22 17:49	1
d7-N-MeFOSE-M	77		10 - 150	07/08/22 12:55	07/12/22 17:49	1
d9-N-EtFOSE-M	69		10 - 150	07/08/22 12:55	07/12/22 17:49	1
M2-4:2 FTS	93		25 - 150	07/08/22 12:55	07/12/22 17:49	1
M2-6:2 FTS	73		25 - 150	07/08/22 12:55	07/12/22 17:49	1
M2-8:2 FTS	82		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C3 HFPO-DA	83		25 - 150	07/08/22 12:55	07/12/22 17:49	1
13C2 10:2 FTS	79		25 - 150	07/08/22 12:55	07/12/22 17:49	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	52		21	10	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluoropentanoic acid (PFPeA)	170		8.5	2.1	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorohexanoic acid (PFHxA)	150		8.5	2.5	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluoroheptanoic acid (PFHpA)	100		8.5	1.1	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorooctanoic acid (PFOA)	470		8.5	3.6	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorononanoic acid (PFNA)	41		8.5	1.2	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorodecanoic acid (PFDA)	17		8.5	1.3	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluoroundecanoic acid (PFUnA)	8.5		8.5	4.7	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorododecanoic acid (PFDoA)	<2.3		8.5	2.3	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorotridecanoic acid (PFTriA)	<5.5		8.5	5.5	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorotetradecanoic acid (PFTeA)	<3.1		8.5	3.1	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluoro-n-hexadecanoic acid (PFHxDA)	<3.8		8.5	3.8	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluoro-n-octadecanoic acid (PFODA)	<4.0		8.5	4.0	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorobutanesulfonic acid (PFBS)	3.5 J		8.5	0.85	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluoropentanesulfonic acid (PFPeS)	<1.3		8.5	1.3	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorohexanesulfonic acid (PFHxS)	25		8.5	2.4	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluoroheptanesulfonic acid (PFHpS)	1.6 J		8.5	0.81	ng/L		07/08/22 12:55	07/15/22 12:41	5

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

Client Sample ID: V-200-A

Lab Sample ID: 500-219098-1

Date Collected: 07/06/22 09:35

Matrix: Water

Date Received: 07/07/22 09:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	160		8.5	2.3	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorononanesulfonic acid (PFNS)	<1.6		8.5	1.6	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorodecanesulfonic acid (PFDS)	<1.4		8.5	1.4	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorododecanesulfonic acid (PFDoS)	<4.1		8.5	4.1	ng/L		07/08/22 12:55	07/15/22 12:41	5
Perfluorooctanesulfonamide (FOSA)	7.4 J		8.5	4.2	ng/L		07/08/22 12:55	07/15/22 12:41	5
NEtFOSA	<3.7		8.5	3.7	ng/L		07/08/22 12:55	07/15/22 12:41	5
NMeFOSA	<1.8		8.5	1.8	ng/L		07/08/22 12:55	07/15/22 12:41	5
NMeFOSAA	<5.1		21	5.1	ng/L		07/08/22 12:55	07/15/22 12:41	5
NEtFOSAA	<5.5		21	5.5	ng/L		07/08/22 12:55	07/15/22 12:41	5
NMeFOSE	<6.0		17	6.0	ng/L		07/08/22 12:55	07/15/22 12:41	5
NEtFOSE	<3.6		8.5	3.6	ng/L		07/08/22 12:55	07/15/22 12:41	5
4:2 FTS	2.3 J		8.5	1.0	ng/L		07/08/22 12:55	07/15/22 12:41	5
6:2 FTS	430		21	11	ng/L		07/08/22 12:55	07/15/22 12:41	5
8:2 FTS	350		8.5	2.0	ng/L		07/08/22 12:55	07/15/22 12:41	5
10:2 FTS	31		8.5	2.9	ng/L		07/08/22 12:55	07/15/22 12:41	5
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		8.5	1.7	ng/L		07/08/22 12:55	07/15/22 12:41	5
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<6.4		17	6.4	ng/L		07/08/22 12:55	07/15/22 12:41	5
F-53B Major	<1.0		8.5	1.0	ng/L		07/08/22 12:55	07/15/22 12:41	5
F-53B Minor	<1.4		8.5	1.4	ng/L		07/08/22 12:55	07/15/22 12:41	5
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	89		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C5 PFPeA	89		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C2 PFHxA	86		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C4 PFHpA	88		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C4 PFOA	88		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C5 PFNA	84		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C2 PFDA	82		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C2 PFUnA	82		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C2 PFDoA	77		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C2 PFTeDA	64		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C2 PFHxDA	59		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C3 PFBS	79		25 - 150				07/08/22 12:55	07/15/22 12:41	5
18O2 PFHxS	80		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C4 PFOS	73		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C8 FOSA	80		10 - 150				07/08/22 12:55	07/15/22 12:41	5
d3-NMeFOSAA	63		25 - 150				07/08/22 12:55	07/15/22 12:41	5
d5-NEtFOSAA	66		25 - 150				07/08/22 12:55	07/15/22 12:41	5
d-N-MeFOSA-M	61		10 - 150				07/08/22 12:55	07/15/22 12:41	5
d-N-EtFOSA-M	54		10 - 150				07/08/22 12:55	07/15/22 12:41	5
d7-N-MeFOSE-M	67		10 - 150				07/08/22 12:55	07/15/22 12:41	5
d9-N-EtFOSE-M	55		10 - 150				07/08/22 12:55	07/15/22 12:41	5
M2-4:2 FTS	82		25 - 150				07/08/22 12:55	07/15/22 12:41	5
M2-6:2 FTS	78		25 - 150				07/08/22 12:55	07/15/22 12:41	5
M2-8:2 FTS	74		25 - 150				07/08/22 12:55	07/15/22 12:41	5
13C3 HFPO-DA	84		25 - 150				07/08/22 12:55	07/15/22 12:41	5

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

Client Sample ID: V-200-A
Date Collected: 07/06/22 09:35
Date Received: 07/07/22 09:45

Lab Sample ID: 500-219098-1
Matrix: Water

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

<u>Isotope Dilution</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
13C2 10:2 FTS	52		25 - 150	07/08/22 12:55	07/15/22 12:41	5

- 1
- 2
- 3
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- 9
- 10
- 11
- 12
- 13
- 14

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

Client Sample ID: V-900-A

Lab Sample ID: 500-219098-2

Date Collected: 07/06/22 10:00

Matrix: Water

Date Received: 07/07/22 09:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.1		4.4	2.1	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluoropentanoic acid (PFPeA)	<0.43		1.8	0.43	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorohexanoic acid (PFHxA)	<0.51		1.8	0.51	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.8	0.22	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorooctanoic acid (PFOA)	<0.75		1.8	0.75	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorodecanoic acid (PFDA)	<0.27		1.8	0.27	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluoroundecanoic acid (PFUnA)	<0.96		1.8	0.96	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorododecanoic acid (PFDoA)	<0.48		1.8	0.48	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.8	1.1	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.8	0.64	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.78		1.8	0.78	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.82		1.8	0.82	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.8	0.26	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorohexanesulfonic acid (PFHxS)	<0.50		1.8	0.50	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.8	0.17	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorooctanesulfonic acid (PFOS)	<0.47		1.8	0.47	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.8	0.32	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorododecanesulfonic acid (PFDoS)	<0.85		1.8	0.85	ng/L		07/08/22 12:55	07/12/22 17:59	1
Perfluorooctanesulfonamide (FOSA)	<0.86		1.8	0.86	ng/L		07/08/22 12:55	07/12/22 17:59	1
NEtFOSA	<0.76		1.8	0.76	ng/L		07/08/22 12:55	07/12/22 17:59	1
NMeFOSA	<0.38		1.8	0.38	ng/L		07/08/22 12:55	07/12/22 17:59	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		07/08/22 12:55	07/12/22 17:59	1
NEtFOSAA	<1.1		4.4	1.1	ng/L		07/08/22 12:55	07/12/22 17:59	1
NMeFOSE	<1.2		3.5	1.2	ng/L		07/08/22 12:55	07/12/22 17:59	1
NEtFOSE	<0.75		1.8	0.75	ng/L		07/08/22 12:55	07/12/22 17:59	1
4:2 FTS	<0.21		1.8	0.21	ng/L		07/08/22 12:55	07/12/22 17:59	1
6:2 FTS	<2.2		4.4	2.2	ng/L		07/08/22 12:55	07/12/22 17:59	1
8:2 FTS	<0.40		1.8	0.40	ng/L		07/08/22 12:55	07/12/22 17:59	1
10:2 FTS	<0.59		1.8	0.59	ng/L		07/08/22 12:55	07/12/22 17:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		07/08/22 12:55	07/12/22 17:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		07/08/22 12:55	07/12/22 17:59	1
F-53B Major	<0.21		1.8	0.21	ng/L		07/08/22 12:55	07/12/22 17:59	1
F-53B Minor	<0.28		1.8	0.28	ng/L		07/08/22 12:55	07/12/22 17:59	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	61		25 - 150				07/08/22 12:55	07/12/22 17:59	1
13C5 PFPeA	64		25 - 150				07/08/22 12:55	07/12/22 17:59	1
13C2 PFHxA	61		25 - 150				07/08/22 12:55	07/12/22 17:59	1
13C4 PFHpA	66		25 - 150				07/08/22 12:55	07/12/22 17:59	1
13C4 PFOA	65		25 - 150				07/08/22 12:55	07/12/22 17:59	1
13C5 PFNA	66		25 - 150				07/08/22 12:55	07/12/22 17:59	1
13C2 PFDA	59		25 - 150				07/08/22 12:55	07/12/22 17:59	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

Client Sample ID: V-900-A
Date Collected: 07/06/22 10:00
Date Received: 07/07/22 09:45

Lab Sample ID: 500-219098-2
Matrix: Water

Method: 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 PFluA	58		25 - 150	07/08/22 12:55	07/12/22 17:59	1
13C2 PFlDoA	53		25 - 150	07/08/22 12:55	07/12/22 17:59	1
13C2 PFlTeDA	50		25 - 150	07/08/22 12:55	07/12/22 17:59	1
13C2 PFlHxDA	50		25 - 150	07/08/22 12:55	07/12/22 17:59	1
13C3 PFlBS	59		25 - 150	07/08/22 12:55	07/12/22 17:59	1
18O2 PFlHxS	60		25 - 150	07/08/22 12:55	07/12/22 17:59	1
13C4 PFlOS	55		25 - 150	07/08/22 12:55	07/12/22 17:59	1
13C8 FOSA	59		10 - 150	07/08/22 12:55	07/12/22 17:59	1
d3-NMeFOSAA	47		25 - 150	07/08/22 12:55	07/12/22 17:59	1
d5-NEtFOSAA	50		25 - 150	07/08/22 12:55	07/12/22 17:59	1
d-N-MeFOSA-M	45		10 - 150	07/08/22 12:55	07/12/22 17:59	1
d-N-EtFOSA-M	44		10 - 150	07/08/22 12:55	07/12/22 17:59	1
d7-N-MeFOSE-M	47		10 - 150	07/08/22 12:55	07/12/22 17:59	1
d9-N-EtFOSE-M	43		10 - 150	07/08/22 12:55	07/12/22 17:59	1
M2-4:2 FTS	65		25 - 150	07/08/22 12:55	07/12/22 17:59	1
M2-6:2 FTS	59		25 - 150	07/08/22 12:55	07/12/22 17:59	1
M2-8:2 FTS	53		25 - 150	07/08/22 12:55	07/12/22 17:59	1
13C3 HFPO-DA	61		25 - 150	07/08/22 12:55	07/12/22 17:59	1
13C2 10:2 FTS	48		25 - 150	07/08/22 12:55	07/12/22 17:59	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

Qualifiers

LCMS

Qualifier	Qualifier Description
E	Result exceeded calibration range.
J	Reported value was between the limit of detection and the limit of quantitation.

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 30128077.01 WPDES

Job ID: 500-219098-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-601666/1-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 601666

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		07/08/22 12:55	07/12/22 14:16	1
NEtFOSA	<0.87		2.0	0.87	ng/L		07/08/22 12:55	07/12/22 14:16	1
NMeFOSA	<0.43		2.0	0.43	ng/L		07/08/22 12:55	07/12/22 14:16	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		07/08/22 12:55	07/12/22 14:16	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		07/08/22 12:55	07/12/22 14:16	1
NMeFOSE	<1.4		4.0	1.4	ng/L		07/08/22 12:55	07/12/22 14:16	1
NEtFOSE	<0.85		2.0	0.85	ng/L		07/08/22 12:55	07/12/22 14:16	1
4:2 FTS	<0.24		2.0	0.24	ng/L		07/08/22 12:55	07/12/22 14:16	1
6:2 FTS	<2.5		5.0	2.5	ng/L		07/08/22 12:55	07/12/22 14:16	1
8:2 FTS	<0.46		2.0	0.46	ng/L		07/08/22 12:55	07/12/22 14:16	1
10:2 FTS	<0.67		2.0	0.67	ng/L		07/08/22 12:55	07/12/22 14:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		07/08/22 12:55	07/12/22 14:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		07/08/22 12:55	07/12/22 14:16	1
F-53B Major	<0.24		2.0	0.24	ng/L		07/08/22 12:55	07/12/22 14:16	1
F-53B Minor	<0.32		2.0	0.32	ng/L		07/08/22 12:55	07/12/22 14:16	1
Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac			
	%Recovery	Qualifier							
13C4 PFBA	80		25 - 150	07/08/22 12:55	07/12/22 14:16	1			
13C5 PFPeA	81		25 - 150	07/08/22 12:55	07/12/22 14:16	1			
13C2 PFHxA	80		25 - 150	07/08/22 12:55	07/12/22 14:16	1			
13C4 PFHpA	84		25 - 150	07/08/22 12:55	07/12/22 14:16	1			
13C4 PFOA	82		25 - 150	07/08/22 12:55	07/12/22 14:16	1			

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

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

Lab Sample ID: MB 320-601666/1-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 601666

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	86		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFDA	80		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFUnA	82		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFDoA	77		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFTeDA	74		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFHxDA	75		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C3 PFBS	74		25 - 150	07/08/22 12:55	07/12/22 14:16	1
18O2 PFHxS	79		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C4 PFOS	75		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C8 FOSA	75		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d3-NMeFOSAA	70		25 - 150	07/08/22 12:55	07/12/22 14:16	1
d5-NEtFOSAA	72		25 - 150	07/08/22 12:55	07/12/22 14:16	1
d-N-MeFOSA-M	64		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d-N-EtFOSA-M	63		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d7-N-MeFOSE-M	72		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d9-N-EtFOSE-M	66		10 - 150	07/08/22 12:55	07/12/22 14:16	1
M2-4:2 FTS	86		25 - 150	07/08/22 12:55	07/12/22 14:16	1
M2-6:2 FTS	82		25 - 150	07/08/22 12:55	07/12/22 14:16	1
M2-8:2 FTS	79		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C3 HFPO-DA	78		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 10:2 FTS	76		25 - 150	07/08/22 12:55	07/12/22 14:16	1

Lab Sample ID: LCS 320-601666/2-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 601666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	43.7		ng/L		109	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	40.9		ng/L		102	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	42.5		ng/L		106	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	40.5		ng/L		101	60 - 135
Perfluorononanoic acid (PFNA)	40.0	43.6		ng/L		109	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	42.9		ng/L		107	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	39.6		ng/L		99	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.7		ng/L		109	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	46.5		ng/L		116	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	42.4		ng/L		106	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.1		ng/L		113	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	38.3		ng/L		96	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	39.3		ng/L		111	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	44.9		ng/L		120	60 - 135

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

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

Lab Sample ID: LCS 320-601666/2-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 601666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.2		ng/L		99	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.8		ng/L		115	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	39.9		ng/L		107	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	42.4		ng/L		110	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	40.2		ng/L		104	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	40.7		ng/L		105	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.4		ng/L		106	60 - 135
NEtFOSA	40.0	41.0		ng/L		102	60 - 135
NMeFOSA	40.0	45.7		ng/L		114	60 - 135
NMeFOSAA	40.0	38.9		ng/L		97	60 - 135
NEtFOSAA	40.0	45.6		ng/L		114	60 - 135
NMeFOSE	40.0	43.5		ng/L		109	60 - 135
NEtFOSE	40.0	45.6		ng/L		114	60 - 135
4:2 FTS	37.5	42.2		ng/L		112	60 - 135
6:2 FTS	38.1	42.2		ng/L		111	60 - 135
8:2 FTS	38.4	41.5		ng/L		108	60 - 135
10:2 FTS	38.6	43.2		ng/L		112	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.9		ng/L		119	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.4		ng/L		109	60 - 135
F-53B Major	37.4	39.4		ng/L		106	60 - 135
F-53B Minor	37.8	40.2		ng/L		106	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	74		25 - 150
13C5 PFPeA	74		25 - 150
13C2 PFHxA	74		25 - 150
13C4 PFHpA	77		25 - 150
13C4 PFOA	78		25 - 150
13C5 PFNA	77		25 - 150
13C2 PFDA	74		25 - 150
13C2 PFUnA	79		25 - 150
13C2 PFDoA	72		25 - 150
13C2 PFTeDA	70		25 - 150
13C2 PFHxDA	72		25 - 150
13C3 PFBS	68		25 - 150
18O2 PFHxS	76		25 - 150
13C4 PFOS	72		25 - 150
13C8 FOSA	71		10 - 150
d3-NMeFOSAA	67		25 - 150
d5-NEtFOSAA	68		25 - 150
d-N-MeFOSA-M	56		10 - 150
d-N-EtFOSA-M	58		10 - 150

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

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

Lab Sample ID: LCS 320-601666/2-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 601666

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	65		10 - 150
d9-N-EtFOSE-M	63		10 - 150
M2-4:2 FTS	74		25 - 150
M2-6:2 FTS	76		25 - 150
M2-8:2 FTS	74		25 - 150
13C3 HFPO-DA	72		25 - 150
13C2 10:2 FTS	67		25 - 150

Lab Sample ID: LCSD 320-601666/3-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 601666

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	46.4		ng/L		116	60 - 135	2	30
Perfluoropentanoic acid (PFPeA)	40.0	45.0		ng/L		112	60 - 135	3	30
Perfluorohexanoic acid (PFHxA)	40.0	38.7		ng/L		97	60 - 135	5	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.7		ng/L		109	60 - 135	3	30
Perfluorooctanoic acid (PFOA)	40.0	40.7		ng/L		102	60 - 135	1	30
Perfluorononanoic acid (PFNA)	40.0	42.2		ng/L		106	60 - 135	3	30
Perfluorodecanoic acid (PFDA)	40.0	43.4		ng/L		108	60 - 135	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	40.5		ng/L		101	60 - 135	2	30
Perfluorododecanoic acid (PFDoA)	40.0	45.1		ng/L		113	60 - 135	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	46.7		ng/L		117	60 - 135	0	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.3		ng/L		103	60 - 135	2	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	46.0		ng/L		115	60 - 135	2	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	39.4		ng/L		99	60 - 135	3	30
Perfluorobutanesulfonic acid (PFBS)	35.5	39.0		ng/L		110	60 - 135	1	30
Perfluoropentanesulfonic acid (PFPeS)	37.5	45.0		ng/L		120	60 - 135	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.9		ng/L		101	60 - 135	2	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.2		ng/L		113	60 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	40.0		ng/L		107	60 - 135	0	30
Perfluorononanesulfonic acid (PFNS)	38.5	42.0		ng/L		109	60 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)	38.6	38.8		ng/L		101	60 - 135	4	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	41.8		ng/L		108	60 - 135	3	30
Perfluorooctanesulfonamide (FOSA)	40.0	42.8		ng/L		107	60 - 135	1	30
NEtFOSA	40.0	43.7		ng/L		109	60 - 135	6	30
NMeFOSA	40.0	45.4		ng/L		113	60 - 135	1	30
NMeFOSAA	40.0	38.6		ng/L		97	60 - 135	1	30

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

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

Lab Sample ID: LCSD 320-601666/3-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 601666

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	45.6		ng/L		114	60 - 135	0	30
NMeFOSE	40.0	42.8		ng/L		107	60 - 135	2	30
NEtFOSE	40.0	45.5		ng/L		114	60 - 135	0	30
4:2 FTS	37.5	40.5		ng/L		108	60 - 135	4	30
6:2 FTS	38.1	41.1		ng/L		108	60 - 135	3	30
8:2 FTS	38.4	42.2		ng/L		110	60 - 135	2	30
10:2 FTS	38.6	40.3		ng/L		104	60 - 135	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.3		ng/L		120	60 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.9		ng/L		110	60 - 135	1	30
F-53B Major	37.4	40.6		ng/L		109	60 - 135	3	30
F-53B Minor	37.8	42.2		ng/L		112	60 - 135	5	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	77		25 - 150
13C5 PFPeA	77		25 - 150
13C2 PFHxA	81		25 - 150
13C4 PFHpA	84		25 - 150
13C4 PFOA	84		25 - 150
13C5 PFNA	85		25 - 150
13C2 PFDA	78		25 - 150
13C2 PFUnA	84		25 - 150
13C2 PFDoA	76		25 - 150
13C2 PFTeDA	78		25 - 150
13C2 PFHxDA	79		25 - 150
13C3 PFBS	75		25 - 150
18O2 PFHxS	79		25 - 150
13C4 PFOS	77		25 - 150
13C8 FOSA	77		10 - 150
d3-NMeFOSAA	72		25 - 150
d5-NEtFOSAA	74		25 - 150
d-N-MeFOSA-M	60		10 - 150
d-N-EtFOSA-M	62		10 - 150
d7-N-MeFOSE-M	74		10 - 150
d9-N-EtFOSE-M	69		10 - 150
M2-4:2 FTS	82		25 - 150
M2-6:2 FTS	82		25 - 150
M2-8:2 FTS	79		25 - 150
13C3 HFPO-DA	79		25 - 150
13C2 10:2 FTS	78		25 - 150

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

Client Sample ID: V-200-A
Date Collected: 07/06/22 09:35
Date Received: 07/07/22 09:45

Lab Sample ID: 500-219098-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			601666	07/08/22 12:55	MRP	TAL SAC
Total/NA	Analysis	537 (modified)		1	602495	07/12/22 17:49	S1M	TAL SAC
Total/NA	Prep	3535	DL		601666	07/08/22 12:55	MRP	TAL SAC
Total/NA	Analysis	537 (modified)	DL	5	603078	07/15/22 12:41	AF	TAL SAC

Client Sample ID: V-900-A
Date Collected: 07/06/22 10:00
Date Received: 07/07/22 09:45

Lab Sample ID: 500-219098-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			601666	07/08/22 12:55	MRP	TAL SAC
Total/NA	Analysis	537 (modified)		1	602495	07/12/22 17:59	S1M	TAL SAC

Laboratory References:

TAL 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 30128077.01 WPDES

Job ID: 500-219098-1

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-22

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

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

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

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski
Email: N/A
Tel/Fax: N/A

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. # 30128077.01 (WPDES)

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below
 2 weeks
 1 week
 2 days
 1 day

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)
V-200-A	7-6-22	9:35	G	W	2	N	N	X
V-900-A	7-7-22	10:00	G	W	2	N	N	X



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other
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

Special Instructions/QC Requirements & Comments:
7-Dav TAT Max or Prelim Report by Day 7

Project Manager: Lisa Rutkowski
Email: N/A
Tel/Fax: N/A

Sampler: Jacob Ramirez
Lab Contact: Sandle Fredrick
Date: 7-6-22
Carrier: FedEx
COC No: 1 of 1 COCs

For Lab Use Only:
Walk-in Client:
Lab Sampling:
Lab Project Number: 50015522

Sample Specific Notes:
System Influent
System Effluent

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal by Lab Archive for _____ Months

Custody Seal No.: 1831832
Company: Bartley Excavating
Date/Time: 7-6-22 11:00
Received by: Jacob Ramirez
Date/Time: 7-7-22 0945



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-219098-1

Login Number: 219098

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 07/07/22 06:32 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1831832
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	1.1C
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.	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 30128077.01 WPDES

Job ID: 500-219098-1

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)
500-219098-1	V-200-A	81	86	102	96	88	95	90	94
500-219098-1 - DL	V-200-A	89	89	86	88	88	84	82	82
500-219098-2	V-900-A	61	64	61	66	65	66	59	58
LCS 320-601666/2-A	Lab Control Sample	74	74	74	77	78	77	74	79
LCSD 320-601666/3-A	Lab Control Sample Dup	77	77	81	84	84	85	78	84
MB 320-601666/1-A	Method Blank	80	81	80	84	82	86	80	82

		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)
500-219098-1	V-200-A	83	74	75	83	91	82	88	77
500-219098-1 - DL	V-200-A	77	64	59	79	80	73	80	63
500-219098-2	V-900-A	53	50	50	59	60	55	59	47
LCS 320-601666/2-A	Lab Control Sample	72	70	72	68	76	72	71	67
LCSD 320-601666/3-A	Lab Control Sample Dup	76	78	79	75	79	77	77	72
MB 320-601666/1-A	Method Blank	77	74	75	74	79	75	75	70

		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)
500-219098-1	V-200-A	79	72	67	77	69	93	73	82
500-219098-1 - DL	V-200-A	66	61	54	67	55	82	78	74
500-219098-2	V-900-A	50	45	44	47	43	65	59	53
LCS 320-601666/2-A	Lab Control Sample	68	56	58	65	63	74	76	74
LCSD 320-601666/3-A	Lab Control Sample Dup	74	60	62	74	69	82	82	79
MB 320-601666/1-A	Method Blank	72	64	63	72	66	86	82	79

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-219098-1	V-200-A	83	79
500-219098-1 - DL	V-200-A	84	52
500-219098-2	V-900-A	61	48
LCS 320-601666/2-A	Lab Control Sample	72	67
LCSD 320-601666/3-A	Lab Control Sample Dup	79	78
MB 320-601666/1-A	Method Blank	78	76

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

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.

Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219098-1

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

Eurofins Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200


Laboratory Job ID: 500-219238-1

Client Project/Site: Marinette, WI 30128077.01 WPDES

For:

ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski



Authorized for release by:

7/18/2022 5:09:41 PM

Jim Knapp, Project Manager II
(630)758-0262

Jim.Knapp@et.eurofinsus.com

Designee for

Sandie Fredrick, Project Manager II
(920)261-1660

Sandra.Fredrick@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

Job ID: 500-219238-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-219238-1

Comments

No additional comments.

Receipt

The samples were received on 7/12/2022 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice.

LCMS

Method 537 (modified): Internal standard (ISTD) response for the following method blank (MB) was outside control limits: MB 320-602580/1-A. The sample was re-analyzed and ISTD response was outside control limits. The internal standard is not used to quantitate target analytes, therefore the data was reported.

Method 537 (modified): The transition mass ratio for Perfluorononanoic acid (PFNA) was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. 500-219238-1

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

Organic Prep

Method 3535: Due to the matrix, the following samples 500-219238-1 and 500-219238-2 were prepared with an LCS/LCSD instead of a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-602580.

Method Code: 3535_PFC

Matrix: Aqueous

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



Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

TAL 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 30128077.01 WPDES

Job ID: 500-219238-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-219238-1	V-200-A	Water	07/11/22 10:30	07/12/22 09:35
500-219238-2	V-900-A	Water	07/11/22 10:35	07/12/22 09:35

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

Client Sample ID: V-200-A

Lab Sample ID: 500-219238-1

Date Collected: 07/11/22 10:30

Matrix: Water

Date Received: 07/12/22 09:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	8.3		4.3	2.1	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluoropentanoic acid (PFPeA)	6.9		1.7	0.42	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorohexanoic acid (PFHxA)	<0.50		1.7	0.50	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluoroheptanoic acid (PFHpA)	<0.21		1.7	0.21	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorooctanoic acid (PFOA)	<0.73		1.7	0.73	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorononanoic acid (PFNA)	0.35	J	1.7	0.23	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorodecanoic acid (PFDA)	<0.27		1.7	0.27	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluoroundecanoic acid (PFUnA)	<0.94		1.7	0.94	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorododecanoic acid (PFDoA)	<0.47		1.7	0.47	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorotetradecanoic acid (PFTeA)	<0.63		1.7	0.63	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.76		1.7	0.76	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.81		1.7	0.81	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.7	0.26	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorohexanesulfonic acid (PFHxS)	<0.49		1.7	0.49	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.16		1.7	0.16	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorooctanesulfonic acid (PFOS)	<0.46		1.7	0.46	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorodecanesulfonic acid (PFDS)	<0.27		1.7	0.27	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorododecanesulfonic acid (PFDoS)	<0.83		1.7	0.83	ng/L		07/13/22 06:54	07/15/22 10:08	1
Perfluorooctanesulfonamide (FOSA)	<0.84		1.7	0.84	ng/L		07/13/22 06:54	07/15/22 10:08	1
NEtFOSA	<0.75		1.7	0.75	ng/L		07/13/22 06:54	07/15/22 10:08	1
NMeFOSA	<0.37		1.7	0.37	ng/L		07/13/22 06:54	07/15/22 10:08	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		07/13/22 06:54	07/15/22 10:08	1
NEtFOSAA	<1.1		4.3	1.1	ng/L		07/13/22 06:54	07/15/22 10:08	1
NMeFOSE	<1.2		3.4	1.2	ng/L		07/13/22 06:54	07/15/22 10:08	1
NEtFOSE	<0.73		1.7	0.73	ng/L		07/13/22 06:54	07/15/22 10:08	1
4:2 FTS	<0.21		1.7	0.21	ng/L		07/13/22 06:54	07/15/22 10:08	1
6:2 FTS	<2.1		4.3	2.1	ng/L		07/13/22 06:54	07/15/22 10:08	1
8:2 FTS	<0.39		1.7	0.39	ng/L		07/13/22 06:54	07/15/22 10:08	1
10:2 FTS	<0.57		1.7	0.57	ng/L		07/13/22 06:54	07/15/22 10:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		07/13/22 06:54	07/15/22 10:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		07/13/22 06:54	07/15/22 10:08	1
F-53B Major	<0.21		1.7	0.21	ng/L		07/13/22 06:54	07/15/22 10:08	1
F-53B Minor	<0.27		1.7	0.27	ng/L		07/13/22 06:54	07/15/22 10:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	84		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C5 PFPeA	84		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C2 PFHxA	81		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C4 PFHpA	86		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C4 PFOA	82		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C5 PFNA	82		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C2 PFDA	76		25 - 150	07/13/22 06:54	07/15/22 10:08	1

Eurofins Chicago

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

Client Sample ID: V-200-A

Lab Sample ID: 500-219238-1

Date Collected: 07/11/22 10:30

Matrix: Water

Date Received: 07/12/22 09:35

Method: 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 PFluA	77		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C2 PFlDoA	74		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C2 PFlTeDA	74		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C2 PFlHxDA	68		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C3 PFlBS	76		25 - 150	07/13/22 06:54	07/15/22 10:08	1
18O2 PFlHxS	78		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C4 PFlOS	70		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C8 FOSA	73		10 - 150	07/13/22 06:54	07/15/22 10:08	1
d3-NMeFOSAA	63		25 - 150	07/13/22 06:54	07/15/22 10:08	1
d5-NEtFOSAA	66		25 - 150	07/13/22 06:54	07/15/22 10:08	1
d-N-MeFOSA-M	55		10 - 150	07/13/22 06:54	07/15/22 10:08	1
d-N-EtFOSA-M	53		10 - 150	07/13/22 06:54	07/15/22 10:08	1
d7-N-MeFOSE-M	64		10 - 150	07/13/22 06:54	07/15/22 10:08	1
d9-N-EtFOSE-M	57		10 - 150	07/13/22 06:54	07/15/22 10:08	1
M2-4:2 FTS	78		25 - 150	07/13/22 06:54	07/15/22 10:08	1
M2-6:2 FTS	77		25 - 150	07/13/22 06:54	07/15/22 10:08	1
M2-8:2 FTS	68		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C3 HFPO-DA	80		25 - 150	07/13/22 06:54	07/15/22 10:08	1
13C2 10:2 FTS	56		25 - 150	07/13/22 06:54	07/15/22 10:08	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

Client Sample ID: V-900-A

Lab Sample ID: 500-219238-2

Date Collected: 07/11/22 10:35

Matrix: Water

Date Received: 07/12/22 09:35

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.6		4.2	2.0	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluoropentanoic acid (PFPeA)	<0.41		1.7	0.41	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorohexanoic acid (PFHxA)	<0.49		1.7	0.49	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluoroheptanoic acid (PFHpA)	<0.21		1.7	0.21	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorooctanoic acid (PFOA)	<0.71		1.7	0.71	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorodecanoic acid (PFDA)	<0.26		1.7	0.26	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluoroundecanoic acid (PFUnA)	<0.92		1.7	0.92	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorododecanoic acid (PFDoA)	<0.46		1.7	0.46	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorotetradecanoic acid (PFTeA)	<0.61		1.7	0.61	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.75		1.7	0.75	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.79		1.7	0.79	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluoropentanesulfonic acid (PFPeS)	<0.25		1.7	0.25	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorohexanesulfonic acid (PFHxS)	<0.48		1.7	0.48	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.16		1.7	0.16	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorooctanesulfonic acid (PFOS)	<0.45		1.7	0.45	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorononanesulfonic acid (PFNS)	<0.31		1.7	0.31	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorodecanesulfonic acid (PFDS)	<0.27		1.7	0.27	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorododecanesulfonic acid (PFDoS)	<0.81		1.7	0.81	ng/L		07/13/22 06:54	07/15/22 10:18	1
Perfluorooctanesulfonamide (FOSA)	<0.82		1.7	0.82	ng/L		07/13/22 06:54	07/15/22 10:18	1
NEtFOSA	<0.73		1.7	0.73	ng/L		07/13/22 06:54	07/15/22 10:18	1
NMeFOSA	<0.36		1.7	0.36	ng/L		07/13/22 06:54	07/15/22 10:18	1
NMeFOSAA	<1.0		4.2	1.0	ng/L		07/13/22 06:54	07/15/22 10:18	1
NEtFOSAA	<1.1		4.2	1.1	ng/L		07/13/22 06:54	07/15/22 10:18	1
NMeFOSE	<1.2		3.4	1.2	ng/L		07/13/22 06:54	07/15/22 10:18	1
NEtFOSE	<0.71		1.7	0.71	ng/L		07/13/22 06:54	07/15/22 10:18	1
4:2 FTS	<0.20		1.7	0.20	ng/L		07/13/22 06:54	07/15/22 10:18	1
6:2 FTS	<2.1		4.2	2.1	ng/L		07/13/22 06:54	07/15/22 10:18	1
8:2 FTS	<0.39		1.7	0.39	ng/L		07/13/22 06:54	07/15/22 10:18	1
10:2 FTS	<0.56		1.7	0.56	ng/L		07/13/22 06:54	07/15/22 10:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		07/13/22 06:54	07/15/22 10:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		07/13/22 06:54	07/15/22 10:18	1
F-53B Major	<0.20		1.7	0.20	ng/L		07/13/22 06:54	07/15/22 10:18	1
F-53B Minor	<0.27		1.7	0.27	ng/L		07/13/22 06:54	07/15/22 10:18	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	82		25 - 150				07/13/22 06:54	07/15/22 10:18	1
13C5 PFPeA	76		25 - 150				07/13/22 06:54	07/15/22 10:18	1
13C2 PFHxA	78		25 - 150				07/13/22 06:54	07/15/22 10:18	1
13C4 PFHpA	82		25 - 150				07/13/22 06:54	07/15/22 10:18	1
13C4 PFOA	81		25 - 150				07/13/22 06:54	07/15/22 10:18	1
13C5 PFNA	77		25 - 150				07/13/22 06:54	07/15/22 10:18	1
13C2 PFDA	74		25 - 150				07/13/22 06:54	07/15/22 10:18	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

Client Sample ID: V-900-A
Date Collected: 07/11/22 10:35
Date Received: 07/12/22 09:35

Lab Sample ID: 500-219238-2
Matrix: Water

Method: 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 PFluA	75		25 - 150	07/13/22 06:54	07/15/22 10:18	1
13C2 PFlDoA	74		25 - 150	07/13/22 06:54	07/15/22 10:18	1
13C2 PFlTeDA	68		25 - 150	07/13/22 06:54	07/15/22 10:18	1
13C2 PFlHxDA	63		25 - 150	07/13/22 06:54	07/15/22 10:18	1
13C3 PFlBS	73		25 - 150	07/13/22 06:54	07/15/22 10:18	1
18O2 PFlHxS	73		25 - 150	07/13/22 06:54	07/15/22 10:18	1
13C4 PFlOS	67		25 - 150	07/13/22 06:54	07/15/22 10:18	1
13C8 FOSA	71		10 - 150	07/13/22 06:54	07/15/22 10:18	1
d3-NMeFOSA	62		25 - 150	07/13/22 06:54	07/15/22 10:18	1
d5-NEtFOSA	64		25 - 150	07/13/22 06:54	07/15/22 10:18	1
d-N-MeFOSA-M	62		10 - 150	07/13/22 06:54	07/15/22 10:18	1
d-N-EtFOSA-M	60		10 - 150	07/13/22 06:54	07/15/22 10:18	1
d7-N-MeFOSE-M	65		10 - 150	07/13/22 06:54	07/15/22 10:18	1
d9-N-EtFOSE-M	57		10 - 150	07/13/22 06:54	07/15/22 10:18	1
M2-4:2 FTS	74		25 - 150	07/13/22 06:54	07/15/22 10:18	1
M2-6:2 FTS	73		25 - 150	07/13/22 06:54	07/15/22 10:18	1
M2-8:2 FTS	64		25 - 150	07/13/22 06:54	07/15/22 10:18	1
13C3 HFPO-DA	78		25 - 150	07/13/22 06:54	07/15/22 10:18	1
13C2 10:2 FTS	50		25 - 150	07/13/22 06:54	07/15/22 10:18	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

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 30128077.01 WPDES

Job ID: 500-219238-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-602580/1-A
Matrix: Water
Analysis Batch: 603078

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 602580

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		07/13/22 06:54	07/15/22 07:56	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		07/13/22 06:54	07/15/22 07:56	1
NEtFOSA	<0.87		2.0	0.87	ng/L		07/13/22 06:54	07/15/22 07:56	1
NMeFOSA	<0.43		2.0	0.43	ng/L		07/13/22 06:54	07/15/22 07:56	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		07/13/22 06:54	07/15/22 07:56	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		07/13/22 06:54	07/15/22 07:56	1
NMeFOSE	<1.4		4.0	1.4	ng/L		07/13/22 06:54	07/15/22 07:56	1
NEtFOSE	<0.85		2.0	0.85	ng/L		07/13/22 06:54	07/15/22 07:56	1
4:2 FTS	<0.24		2.0	0.24	ng/L		07/13/22 06:54	07/15/22 07:56	1
6:2 FTS	<2.5		5.0	2.5	ng/L		07/13/22 06:54	07/15/22 07:56	1
8:2 FTS	<0.46		2.0	0.46	ng/L		07/13/22 06:54	07/15/22 07:56	1
10:2 FTS	<0.67		2.0	0.67	ng/L		07/13/22 06:54	07/15/22 07:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		07/13/22 06:54	07/15/22 07:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		07/13/22 06:54	07/15/22 07:56	1
F-53B Major	<0.24		2.0	0.24	ng/L		07/13/22 06:54	07/15/22 07:56	1
F-53B Minor	<0.32		2.0	0.32	ng/L		07/13/22 06:54	07/15/22 07:56	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	49		25 - 150				07/13/22 06:54	07/15/22 07:56	1
13C5 PFPeA	46		25 - 150				07/13/22 06:54	07/15/22 07:56	1
13C2 PFHxA	47		25 - 150				07/13/22 06:54	07/15/22 07:56	1
13C4 PFHpA	50		25 - 150				07/13/22 06:54	07/15/22 07:56	1
13C4 PFOA	48		25 - 150				07/13/22 06:54	07/15/22 07:56	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

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

Lab Sample ID: MB 320-602580/1-A
Matrix: Water
Analysis Batch: 603078

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 602580

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	50		25 - 150	07/13/22 06:54	07/15/22 07:56	1
13C2 PFDA	48		25 - 150	07/13/22 06:54	07/15/22 07:56	1
13C2 PFUnA	49		25 - 150	07/13/22 06:54	07/15/22 07:56	1
13C2 PFDoA	48		25 - 150	07/13/22 06:54	07/15/22 07:56	1
13C2 PFTeDA	46		25 - 150	07/13/22 06:54	07/15/22 07:56	1
13C2 PFHxDA	43		25 - 150	07/13/22 06:54	07/15/22 07:56	1
13C3 PFBS	44		25 - 150	07/13/22 06:54	07/15/22 07:56	1
18O2 PFHxS	46		25 - 150	07/13/22 06:54	07/15/22 07:56	1
13C4 PFOS	41		25 - 150	07/13/22 06:54	07/15/22 07:56	1
13C8 FOSA	44		10 - 150	07/13/22 06:54	07/15/22 07:56	1
d3-NMeFOSAA	44		25 - 150	07/13/22 06:54	07/15/22 07:56	1
d5-NEtFOSAA	42		25 - 150	07/13/22 06:54	07/15/22 07:56	1
d-N-MeFOSA-M	31		10 - 150	07/13/22 06:54	07/15/22 07:56	1
d-N-EtFOSA-M	30		10 - 150	07/13/22 06:54	07/15/22 07:56	1
d7-N-MeFOSE-M	41		10 - 150	07/13/22 06:54	07/15/22 07:56	1
d9-N-EtFOSE-M	36		10 - 150	07/13/22 06:54	07/15/22 07:56	1
M2-4:2 FTS	50		25 - 150	07/13/22 06:54	07/15/22 07:56	1
M2-6:2 FTS	54		25 - 150	07/13/22 06:54	07/15/22 07:56	1
M2-8:2 FTS	49		25 - 150	07/13/22 06:54	07/15/22 07:56	1
13C3 HFPO-DA	44		25 - 150	07/13/22 06:54	07/15/22 07:56	1
13C2 10:2 FTS	36		25 - 150	07/13/22 06:54	07/15/22 07:56	1

Lab Sample ID: LCS 320-602580/2-A
Matrix: Water
Analysis Batch: 603078

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 602580

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	39.3		ng/L		98	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	37.2		ng/L		93	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	39.8		ng/L		99	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	38.9		ng/L		97	60 - 135
Perfluorononanoic acid (PFNA)	40.0	40.7		ng/L		102	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	39.8		ng/L		99	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	37.1		ng/L		93	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	40.4		ng/L		101	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	39.4		ng/L		98	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	37.9		ng/L		95	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.8		ng/L		107	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	27.4		ng/L		69	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	35.6		ng/L		100	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	40.1		ng/L		107	60 - 135

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

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

Lab Sample ID: LCS 320-602580/2-A
Matrix: Water
Analysis Batch: 603078

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 602580

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.0		ng/L		93	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	46.1		ng/L		121	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	41.1		ng/L		110	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	42.9		ng/L		111	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	40.9		ng/L		106	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	42.9		ng/L		111	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	40.8		ng/L		102	60 - 135
NEtFOSA	40.0	42.9		ng/L		107	60 - 135
NMeFOSA	40.0	44.6		ng/L		111	60 - 135
NMeFOSAA	40.0	40.7		ng/L		102	60 - 135
NEtFOSAA	40.0	40.5		ng/L		101	60 - 135
NMeFOSE	40.0	42.0		ng/L		105	60 - 135
NEtFOSE	40.0	46.5		ng/L		116	60 - 135
4:2 FTS	37.5	39.2		ng/L		104	60 - 135
6:2 FTS	38.1	37.7		ng/L		99	60 - 135
8:2 FTS	38.4	41.3		ng/L		108	60 - 135
10:2 FTS	38.6	45.0		ng/L		116	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.8		ng/L		121	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.9		ng/L		105	60 - 135
F-53B Major	37.4	39.0		ng/L		104	60 - 135
F-53B Minor	37.8	38.2		ng/L		101	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	54		25 - 150
13C5 PFPeA	52		25 - 150
13C2 PFHxA	52		25 - 150
13C4 PFHpA	53		25 - 150
13C4 PFOA	54		25 - 150
13C5 PFNA	52		25 - 150
13C2 PFDA	51		25 - 150
13C2 PFUnA	52		25 - 150
13C2 PFDoA	51		25 - 150
13C2 PFTeDA	49		25 - 150
13C2 PFHxDA	48		25 - 150
13C3 PFBS	48		25 - 150
18O2 PFHxS	50		25 - 150
13C4 PFOS	43		25 - 150
13C8 FOSA	46		10 - 150
d3-NMeFOSAA	46		25 - 150
d5-NEtFOSAA	45		25 - 150
d-N-MeFOSA-M	37		10 - 150
d-N-EtFOSA-M	36		10 - 150

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

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

Lab Sample ID: LCS 320-602580/2-A
Matrix: Water
Analysis Batch: 603078

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 602580

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	44		10 - 150
d9-N-EtFOSE-M	40		10 - 150
M2-4:2 FTS	53		25 - 150
M2-6:2 FTS	57		25 - 150
M2-8:2 FTS	48		25 - 150
13C3 HFPO-DA	50		25 - 150
13C2 10:2 FTS	39		25 - 150

Lab Sample ID: LCSD 320-602580/3-A
Matrix: Water
Analysis Batch: 603078

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 602580

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD 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)	40.0	39.7		ng/L		99	60 - 135	1	30
Perfluoropentanoic acid (PFPeA)	40.0	40.3		ng/L		101	60 - 135	2	30
Perfluorohexanoic acid (PFHxA)	40.0	38.5		ng/L		96	60 - 135	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.7		ng/L		102	60 - 135	2	30
Perfluorooctanoic acid (PFOA)	40.0	39.7		ng/L		99	60 - 135	2	30
Perfluorononanoic acid (PFNA)	40.0	39.4		ng/L		99	60 - 135	3	30
Perfluorodecanoic acid (PFDA)	40.0	40.3		ng/L		101	60 - 135	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	38.6		ng/L		96	60 - 135	4	30
Perfluorododecanoic acid (PFDoA)	40.0	42.3		ng/L		106	60 - 135	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.2		ng/L		103	60 - 135	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	38.0		ng/L		95	60 - 135	0	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	43.2		ng/L		108	60 - 135	1	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	27.0		ng/L		67	60 - 135	2	30
Perfluorobutanesulfonic acid (PFBS)	35.5	36.0		ng/L		101	60 - 135	1	30
Perfluoropentanesulfonic acid (PFPeS)	37.5	40.2		ng/L		107	60 - 135	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	33.8		ng/L		93	60 - 135	1	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.4		ng/L		114	60 - 135	6	30
Perfluorooctanesulfonic acid (PFOS)	37.2	38.2		ng/L		103	60 - 135	7	30
Perfluorononanesulfonic acid (PFNS)	38.5	42.2		ng/L		110	60 - 135	2	30
Perfluorodecanesulfonic acid (PFDS)	38.6	38.9		ng/L		101	60 - 135	5	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	41.2		ng/L		106	60 - 135	4	30
Perfluorooctanesulfonamide (FOSA)	40.0	41.5		ng/L		104	60 - 135	2	30
NEtFOSA	40.0	42.3		ng/L		106	60 - 135	1	30
NMeFOSA	40.0	44.9		ng/L		112	60 - 135	1	30
NMeFOSAA	40.0	38.9		ng/L		97	60 - 135	4	30

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

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

Lab Sample ID: LCSD 320-602580/3-A
Matrix: Water
Analysis Batch: 603078

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 602580

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	41.8		ng/L		105	60 - 135	3	30
NMeFOSE	40.0	40.8		ng/L		102	60 - 135	3	30
NEtFOSE	40.0	49.0		ng/L		122	60 - 135	5	30
4:2 FTS	37.5	37.7		ng/L		100	60 - 135	4	30
6:2 FTS	38.1	39.3		ng/L		103	60 - 135	4	30
8:2 FTS	38.4	38.3		ng/L		100	60 - 135	8	30
10:2 FTS	38.6	45.3		ng/L		117	60 - 135	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.4		ng/L		120	60 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.8		ng/L		100	60 - 135	5	30
F-53B Major	37.4	38.2		ng/L		102	60 - 135	2	30
F-53B Minor	37.8	37.6		ng/L		100	60 - 135	1	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	93		25 - 150
13C5 PFPeA	89		25 - 150
13C2 PFHxA	89		25 - 150
13C4 PFHpA	90		25 - 150
13C4 PFOA	90		25 - 150
13C5 PFNA	88		25 - 150
13C2 PFDA	86		25 - 150
13C2 PFUnA	89		25 - 150
13C2 PFDoA	86		25 - 150
13C2 PFTeDA	83		25 - 150
13C2 PFHxDA	81		25 - 150
13C3 PFBS	83		25 - 150
18O2 PFHxS	86		25 - 150
13C4 PFOS	78		25 - 150
13C8 FOSA	78		10 - 150
d3-NMeFOSAA	79		25 - 150
d5-NEtFOSAA	75		25 - 150
d-N-MeFOSA-M	68		10 - 150
d-N-EtFOSA-M	70		10 - 150
d7-N-MeFOSE-M	77		10 - 150
d9-N-EtFOSE-M	67		10 - 150
M2-4:2 FTS	88		25 - 150
M2-6:2 FTS	90		25 - 150
M2-8:2 FTS	87		25 - 150
13C3 HFPO-DA	86		25 - 150
13C2 10:2 FTS	67		25 - 150

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

Lab Sample ID: MB 320-602580/1-A
Matrix: Water
Analysis Batch: 603078

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 602580

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA) - RA	<2.4		5.0	2.4	ng/L		07/13/22 06:54	07/15/22 13:52	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

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

Lab Sample ID: MB 320-602580/1-A
Matrix: Water
Analysis Batch: 603078

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 602580

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluoropentanoic acid (PFPeA) - RA	<0.49		2.0	0.49	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorohexanoic acid (PFHxA) - RA	<0.58		2.0	0.58	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluoroheptanoic acid (PFHpA) - RA	<0.25		2.0	0.25	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorooctanoic acid (PFOA) - RA	<0.85		2.0	0.85	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorononanoic acid (PFNA) - RA	<0.27		2.0	0.27	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorodecanoic acid (PFDA) - RA	<0.31		2.0	0.31	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluoroundecanoic acid (PFUnA) - RA	<1.1		2.0	1.1	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorododecanoic acid (PFDoA) - RA	<0.55		2.0	0.55	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorotridecanoic acid (PFTriA) - RA	<1.3		2.0	1.3	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorotetradecanoic acid (PFTeA) - RA	<0.73		2.0	0.73	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluoro-n-hexadecanoic acid (PFHxDA) - RA	<0.89		2.0	0.89	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluoro-n-octadecanoic acid (PFODA) - RA	<0.94		2.0	0.94	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorobutanesulfonic acid (PFBS) - RA	<0.20		2.0	0.20	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluoropentanesulfonic acid (PFPeS) - RA	<0.30		2.0	0.30	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorohexanesulfonic acid (PFHxS) - RA	<0.57		2.0	0.57	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluoroheptanesulfonic acid (PFHpS) - RA	<0.19		2.0	0.19	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorooctanesulfonic acid (PFOS) - RA	<0.54		2.0	0.54	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorononanesulfonic acid (PFNS) - RA	<0.37		2.0	0.37	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorodecanesulfonic acid (PFDS) - RA	<0.32		2.0	0.32	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorododecanesulfonic acid (PFDoS) - RA	<0.97		2.0	0.97	ng/L		07/13/22 06:54	07/15/22 13:52	1
Perfluorooctanesulfonamide (FOSA) - RA	<0.98		2.0	0.98	ng/L		07/13/22 06:54	07/15/22 13:52	1
NEtFOSA - RA	<0.87		2.0	0.87	ng/L		07/13/22 06:54	07/15/22 13:52	1
NMeFOSA - RA	<0.43		2.0	0.43	ng/L		07/13/22 06:54	07/15/22 13:52	1
NMeFOSAA - RA	<1.2		5.0	1.2	ng/L		07/13/22 06:54	07/15/22 13:52	1
NEtFOSAA - RA	<1.3		5.0	1.3	ng/L		07/13/22 06:54	07/15/22 13:52	1
NMeFOSE - RA	<1.4		4.0	1.4	ng/L		07/13/22 06:54	07/15/22 13:52	1
NEtFOSE - RA	<0.85		2.0	0.85	ng/L		07/13/22 06:54	07/15/22 13:52	1
4:2 FTS - RA	<0.24		2.0	0.24	ng/L		07/13/22 06:54	07/15/22 13:52	1
6:2 FTS - RA	<2.5		5.0	2.5	ng/L		07/13/22 06:54	07/15/22 13:52	1
8:2 FTS - RA	<0.46		2.0	0.46	ng/L		07/13/22 06:54	07/15/22 13:52	1
10:2 FTS - RA	<0.67		2.0	0.67	ng/L		07/13/22 06:54	07/15/22 13:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA) - RA	<0.40		2.0	0.40	ng/L		07/13/22 06:54	07/15/22 13:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) - RA	<1.5		4.0	1.5	ng/L		07/13/22 06:54	07/15/22 13:52	1
F-53B Major - RA	<0.24		2.0	0.24	ng/L		07/13/22 06:54	07/15/22 13:52	1
F-53B Minor - RA	<0.32		2.0	0.32	ng/L		07/13/22 06:54	07/15/22 13:52	1

Eurofins Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

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

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA - RA	49		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C5 PFPeA - RA	46		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C2 PFHxA - RA	48		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C4 PFHpA - RA	48		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C4 PFOA - RA	47		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C5 PFNA - RA	46		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C2 PFDA - RA	46		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C2 PFUnA - RA	46		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C2 PFDoA - RA	45		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C2 PFTeDA - RA	42		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C2 PFHxDA - RA	38		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C3 PFBS - RA	43		25 - 150	07/13/22 06:54	07/15/22 13:52	1
18O2 PFHxS - RA	44		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C4 PFOS - RA	40		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C8 FOSA - RA	41		10 - 150	07/13/22 06:54	07/15/22 13:52	1
d3-NMeFOSAA - RA	36		25 - 150	07/13/22 06:54	07/15/22 13:52	1
d5-NEtFOSAA - RA	39		25 - 150	07/13/22 06:54	07/15/22 13:52	1
d-N-MeFOSA-M - RA	29		10 - 150	07/13/22 06:54	07/15/22 13:52	1
d-N-EtFOSA-M - RA	29		10 - 150	07/13/22 06:54	07/15/22 13:52	1
d7-N-MeFOSE-M - RA	38		10 - 150	07/13/22 06:54	07/15/22 13:52	1
d9-N-EtFOSE-M - RA	34		10 - 150	07/13/22 06:54	07/15/22 13:52	1
M2-4:2 FTS - RA	45		25 - 150	07/13/22 06:54	07/15/22 13:52	1
M2-6:2 FTS - RA	44		25 - 150	07/13/22 06:54	07/15/22 13:52	1
M2-8:2 FTS - RA	42		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C3 HFPO-DA - RA	46		25 - 150	07/13/22 06:54	07/15/22 13:52	1
13C2 10:2 FTS - RA	32		25 - 150	07/13/22 06:54	07/15/22 13:52	1

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

Client Sample ID: V-200-A

Date Collected: 07/11/22 10:30

Date Received: 07/12/22 09:35

Lab Sample ID: 500-219238-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			602580	07/13/22 06:54	MRP	TAL SAC
Total/NA	Analysis	537 (modified)		1	603078	07/15/22 10:08	AF	TAL SAC

Client Sample ID: V-900-A

Date Collected: 07/11/22 10:35

Date Received: 07/12/22 09:35

Lab Sample ID: 500-219238-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			602580	07/13/22 06:54	MRP	TAL SAC
Total/NA	Analysis	537 (modified)		1	603078	07/15/22 10:18	AF	TAL SAC

Laboratory References:

TAL 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 30128077.01 WPDES

Job ID: 500-219238-1

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-22

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


Chain Custody Record



West Sacramento, CA 95605-1500
phone 916.373 5600 fax 303.467 7248

Regulatory Program: DW NPDES RCRA Other

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

Client Contact		Project Manager: Lisa Rutkowski		Sampler: <i>Jacob Harringer</i>		Date: 7-11-22		COC No. 1 of 1 COCs	
Arcadis U.S., Inc.		Email: N/A		Lab Contact: Sandle Fredrick		Carrier: FedEx			
126 North Jefferson Street, Suite 400		Tel/Fax: N/A							
Milwaukee, WI 53202		Analysis Turnaround Time							
Phone		<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS							
FAX		TAT if different from Below							
Project Name: Marinette, WI		<input type="checkbox"/> 2 weeks							
Site: Marinette, WI		<input checked="" type="checkbox"/> 1 week							
P O # 30128077 01 (WPDES)		<input type="checkbox"/> 2 days							
		<input type="checkbox"/> 1 day							
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Performs MS / MSD (Y/N)	EPA 817 Modified (36 Compounds)
V-200-A	7-11-22	10:30	G	W	2	N	N	X	
V-900-A	↓	10:35	G	W	2	N	N	X	
 500-219238 COC									
For Lab Use Only: Walk-in Client: <input type="checkbox"/> Lab Sampling: <input type="checkbox"/> Lab Project Number: 50015522 500-219238 Sample Specific Notes: System Influent System Effluent									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other									
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.					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
<input checked="" type="checkbox"/> Non-Hazardous <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown					<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Dispose by Lab <input type="checkbox"/> Archive for _____ Months				
Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7 <i>5 day - TAT</i>									
Custody Seal Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No. <i>1831849</i>		Cooler Temp. (°C): Obs'd: <i>2.1</i> Cor'd: <i>2.1</i>		Therm ID No.: <i>FW</i>			
Relinquished by: <i>Jacob Harringer</i>		Company: Barley Excavating		Date/Time: 7-11-22/12:35		Received by: <i>Fred Ex</i>		Company: _____	
Relinquished by:		Company:		Date/Time:		Received by:		Company: _____	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company: _____	

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-219238-1

Login Number: 219238

List Number: 1

Creator: Simmons, Jason C

List Source: Eurofins Sacramento

List Creation: 07/12/22 04:06 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1831849
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	2.1c
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	



500-219238 Field Sheet

Job: _____

Tracking #: 288762877506

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / 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: E-11 Corr. Factor: (+/-) - °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal: 1831849

Cooler ID: _____

Temp Observed: 2.1 °C Corrected: 2.1 °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: D Date: 7.12.22

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<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 require splitting/compositing?	<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, 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: D Date: 7.12.22

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<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: D Date: 7.12.22

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

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)
500-219238-1	V-200-A	84	84	81	86	82	82	76	77
500-219238-2	V-900-A	82	76	78	82	81	77	74	75
LCS 320-602580/2-A	Lab Control Sample	54	52	52	53	54	52	51	52
LCS 320-602580/3-A	Lab Control Sample Dup	93	89	89	90	90	88	86	89
MB 320-602580/1-A - RA	Method Blank	49	46	48	48	47	46	46	46
MB 320-602580/1-A	Method Blank	49	46	47	50	48	50	48	49

		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)
500-219238-1	V-200-A	74	74	68	76	78	70	73	63
500-219238-2	V-900-A	74	68	63	73	73	67	71	62
LCS 320-602580/2-A	Lab Control Sample	51	49	48	48	50	43	46	46
LCS 320-602580/3-A	Lab Control Sample Dup	86	83	81	83	86	78	78	79
MB 320-602580/1-A - RA	Method Blank	45	42	38	43	44	40	41	36
MB 320-602580/1-A	Method Blank	48	46	43	44	46	41	44	44

		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)
500-219238-1	V-200-A	66	55	53	64	57	78	77	68
500-219238-2	V-900-A	64	62	60	65	57	74	73	64
LCS 320-602580/2-A	Lab Control Sample	45	37	36	44	40	53	57	48
LCS 320-602580/3-A	Lab Control Sample Dup	75	68	70	77	67	88	90	87
MB 320-602580/1-A - RA	Method Blank	39	29	29	38	34	45	44	42
MB 320-602580/1-A	Method Blank	42	31	30	41	36	50	54	49

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-219238-1	V-200-A	80	56
500-219238-2	V-900-A	78	50
LCS 320-602580/2-A	Lab Control Sample	50	39
LCS 320-602580/3-A	Lab Control Sample Dup	86	67
MB 320-602580/1-A - RA	Method Blank	46	32
MB 320-602580/1-A	Method Blank	44	36

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

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.

Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-219238-1

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

Eurofins Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-220268-1

Client Project/Site: Marinette, WI 30128077.01 WPDES

For:

ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski



*Authorized for release by:
8/11/2022 2:51:57 PM*

Sandie Fredrick, Project Manager II
(920)261-1660

Sandra.Fredrick@et.eurofinsus.com

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results through



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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

Job ID: 500-220268-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-220268-1

Comments

No additional comments.

Receipt

The samples were received on 8/2/2022 9:20 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 1.7° C.

LCMS

Method 537 (modified): A second injection of the closing continuing calibration verification (CCV) was incorrectly submitted in place of a CCB. The CCB is normally submitted after a CCV is to demonstrate no carryover from the CCV. As this is the end of the sample run, the data have been reported. CCV 320-608682/15

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 320-607920.

Method: 3535_PFC-W

Matrix: Aqueous

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



Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-220268-1	V-200-A	Water	08/01/22 11:30	08/02/22 09:20
500-220268-2	V-900-A	Water	08/01/22 11:35	08/02/22 09:20

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- 14

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

Client Sample ID: V-200-A

Lab Sample ID: 500-220268-1

Date Collected: 08/01/22 11:30

Matrix: Water

Date Received: 08/02/22 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	30		4.7	2.3	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluoropentanoic acid (PFPeA)	130		1.9	0.46	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorohexanoic acid (PFHxA)	84		1.9	0.55	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluoroheptanoic acid (PFHpA)	70		1.9	0.24	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorooctanoic acid (PFOA)	180		1.9	0.80	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorononanoic acid (PFNA)	33		1.9	0.25	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorodecanoic acid (PFDA)	23		1.9	0.29	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluoroundecanoic acid (PFUnA)	22		1.9	1.0	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorododecanoic acid (PFDoA)	2.3		1.9	0.52	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorotetradecanoic acid (PFTeA)	<0.69		1.9	0.69	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.84		1.9	0.84	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.89		1.9	0.89	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorobutanesulfonic acid (PFBS)	12		1.9	0.19	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluoropentanesulfonic acid (PFPeS)	0.85 J		1.9	0.28	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorohexanesulfonic acid (PFHxS)	19		1.9	0.54	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluoroheptanesulfonic acid (PFHpS)	0.84 J		1.9	0.18	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorooctanesulfonic acid (PFOS)	150		1.9	0.51	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorononanesulfonic acid (PFNS)	0.53 J		1.9	0.35	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorododecanesulfonic acid (PFDoS)	<0.91		1.9	0.91	ng/L		08/08/22 07:21	08/10/22 14:00	1
Perfluorooctanesulfonamide (FOSA)	4.8		1.9	0.92	ng/L		08/08/22 07:21	08/10/22 14:00	1
NEtFOSA	<0.82		1.9	0.82	ng/L		08/08/22 07:21	08/10/22 14:00	1
NMeFOSA	<0.41		1.9	0.41	ng/L		08/08/22 07:21	08/10/22 14:00	1
NMeFOSAA	<1.1		4.7	1.1	ng/L		08/08/22 07:21	08/10/22 14:00	1
NEtFOSAA	2.6 J		4.7	1.2	ng/L		08/08/22 07:21	08/10/22 14:00	1
NMeFOSE	<1.3		3.8	1.3	ng/L		08/08/22 07:21	08/10/22 14:00	1
NEtFOSE	<0.80		1.9	0.80	ng/L		08/08/22 07:21	08/10/22 14:00	1
4:2 FTS	0.37 J		1.9	0.23	ng/L		08/08/22 07:21	08/10/22 14:00	1
6:2 FTS	93		4.7	2.4	ng/L		08/08/22 07:21	08/10/22 14:00	1
8:2 FTS	270		1.9	0.43	ng/L		08/08/22 07:21	08/10/22 14:00	1
10:2 FTS	63		1.9	0.63	ng/L		08/08/22 07:21	08/10/22 14:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		08/08/22 07:21	08/10/22 14:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.8	1.4	ng/L		08/08/22 07:21	08/10/22 14:00	1
F-53B Major	<0.23		1.9	0.23	ng/L		08/08/22 07:21	08/10/22 14:00	1
F-53B Minor	<0.30		1.9	0.30	ng/L		08/08/22 07:21	08/10/22 14:00	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	86		25 - 150				08/08/22 07:21	08/10/22 14:00	1
13C5 PFPeA	98		25 - 150				08/08/22 07:21	08/10/22 14:00	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

Client Sample ID: V-200-A
Date Collected: 08/01/22 11:30
Date Received: 08/02/22 09:20

Lab Sample ID: 500-220268-1
Matrix: Water

Method: 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 PFHxA	102		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C4 PFHpA	100		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C4 PFOA	103		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C5 PFNA	98		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C2 PFDA	98		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C2 PFUnA	100		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C2 PFDoA	97		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C2 PFTeDA	79		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C2 PFHxDA	74		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C3 PFBS	99		25 - 150	08/08/22 07:21	08/10/22 14:00	1
18O2 PFHxS	106		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C4 PFOS	100		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C8 FOSA	97		10 - 150	08/08/22 07:21	08/10/22 14:00	1
d3-NMeFOSAA	119		25 - 150	08/08/22 07:21	08/10/22 14:00	1
d5-NEtFOSAA	113		25 - 150	08/08/22 07:21	08/10/22 14:00	1
d-N-MeFOSA-M	82		10 - 150	08/08/22 07:21	08/10/22 14:00	1
d-N-EtFOSA-M	82		10 - 150	08/08/22 07:21	08/10/22 14:00	1
d7-N-MeFOSE-M	85		10 - 150	08/08/22 07:21	08/10/22 14:00	1
d9-N-EtFOSE-M	81		10 - 150	08/08/22 07:21	08/10/22 14:00	1
M2-4:2 FTS	121		25 - 150	08/08/22 07:21	08/10/22 14:00	1
M2-6:2 FTS	112		25 - 150	08/08/22 07:21	08/10/22 14:00	1
M2-8:2 FTS	107		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C3 HFPO-DA	85		25 - 150	08/08/22 07:21	08/10/22 14:00	1
13C2 10:2 FTS	86		25 - 150	08/08/22 07:21	08/10/22 14:00	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

Client Sample ID: V-900-A

Lab Sample ID: 500-220268-2

Date Collected: 08/01/22 11:35

Matrix: Water

Date Received: 08/02/22 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.2		4.6	2.2	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluoropentanoic acid (PFPeA)	<0.45		1.9	0.45	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorohexanoic acid (PFHxA)	<0.54		1.9	0.54	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.9	0.23	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorooctanoic acid (PFOA)	<0.79		1.9	0.79	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorononanoic acid (PFNA)	<0.25		1.9	0.25	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorododecanoic acid (PFDoA)	<0.51		1.9	0.51	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorotetradecanoic acid (PFTeA)	<0.68		1.9	0.68	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.83		1.9	0.83	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.87		1.9	0.87	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluoropentanesulfonic acid (PFPeS)	<0.28		1.9	0.28	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorohexanesulfonic acid (PFHxS)	<0.53		1.9	0.53	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.9	0.18	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorooctanesulfonic acid (PFOS)	<0.50		1.9	0.50	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorononanesulfonic acid (PFNS)	<0.34		1.9	0.34	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorododecanesulfonic acid (PFDoS)	<0.90		1.9	0.90	ng/L		08/08/22 07:21	08/10/22 14:10	1
Perfluorooctanesulfonamide (FOSA)	<0.91		1.9	0.91	ng/L		08/08/22 07:21	08/10/22 14:10	1
NEtFOSA	<0.81		1.9	0.81	ng/L		08/08/22 07:21	08/10/22 14:10	1
NMeFOSA	<0.40		1.9	0.40	ng/L		08/08/22 07:21	08/10/22 14:10	1
NMeFOSAA	<1.1		4.6	1.1	ng/L		08/08/22 07:21	08/10/22 14:10	1
NEtFOSAA	<1.2		4.6	1.2	ng/L		08/08/22 07:21	08/10/22 14:10	1
NMeFOSE	<1.3		3.7	1.3	ng/L		08/08/22 07:21	08/10/22 14:10	1
NEtFOSE	<0.79		1.9	0.79	ng/L		08/08/22 07:21	08/10/22 14:10	1
4:2 FTS	<0.22		1.9	0.22	ng/L		08/08/22 07:21	08/10/22 14:10	1
6:2 FTS	<2.3		4.6	2.3	ng/L		08/08/22 07:21	08/10/22 14:10	1
8:2 FTS	<0.43		1.9	0.43	ng/L		08/08/22 07:21	08/10/22 14:10	1
10:2 FTS	3.3		1.9	0.62	ng/L		08/08/22 07:21	08/10/22 14:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.37		1.9	0.37	ng/L		08/08/22 07:21	08/10/22 14:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.7	1.4	ng/L		08/08/22 07:21	08/10/22 14:10	1
F-53B Major	<0.22		1.9	0.22	ng/L		08/08/22 07:21	08/10/22 14:10	1
F-53B Minor	<0.30		1.9	0.30	ng/L		08/08/22 07:21	08/10/22 14:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	90		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C5 PFPeA	95		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C2 PFHxA	93		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C4 PFHpA	90		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C4 PFOA	94		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C5 PFNA	92		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C2 PFDA	88		25 - 150	08/08/22 07:21	08/10/22 14:10	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

Client Sample ID: V-900-A

Lab Sample ID: 500-220268-2

Date Collected: 08/01/22 11:35

Matrix: Water

Date Received: 08/02/22 09:20

Method: 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 PFluA	90		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C2 PFlDoA	77		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C2 PFlTeDA	74		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C2 PFlHxDA	75		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C3 PFlBS	98		25 - 150	08/08/22 07:21	08/10/22 14:10	1
18O2 PFlHxS	99		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C4 PFlOS	88		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C8 FOSA	88		10 - 150	08/08/22 07:21	08/10/22 14:10	1
d3-NMeFOSAA	108		25 - 150	08/08/22 07:21	08/10/22 14:10	1
d5-NEtFOSAA	101		25 - 150	08/08/22 07:21	08/10/22 14:10	1
d-N-MeFOSA-M	72		10 - 150	08/08/22 07:21	08/10/22 14:10	1
d-N-EtFOSA-M	74		10 - 150	08/08/22 07:21	08/10/22 14:10	1
d7-N-MeFOSE-M	69		10 - 150	08/08/22 07:21	08/10/22 14:10	1
d9-N-EtFOSE-M	73		10 - 150	08/08/22 07:21	08/10/22 14:10	1
M2-4:2 FTS	103		25 - 150	08/08/22 07:21	08/10/22 14:10	1
M2-6:2 FTS	102		25 - 150	08/08/22 07:21	08/10/22 14:10	1
M2-8:2 FTS	92		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C3 HFPO-DA	85		25 - 150	08/08/22 07:21	08/10/22 14:10	1
13C2 10:2 FTS	68		25 - 150	08/08/22 07:21	08/10/22 14:10	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

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 30128077.01 WPDES

Job ID: 500-220268-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-607920/1-A
Matrix: Water
Analysis Batch: 608682

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 607920

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		08/08/22 07:21	08/10/22 13:30	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		08/08/22 07:21	08/10/22 13:30	1
NEtFOSA	<0.87		2.0	0.87	ng/L		08/08/22 07:21	08/10/22 13:30	1
NMeFOSA	<0.43		2.0	0.43	ng/L		08/08/22 07:21	08/10/22 13:30	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		08/08/22 07:21	08/10/22 13:30	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		08/08/22 07:21	08/10/22 13:30	1
NMeFOSE	<1.4		4.0	1.4	ng/L		08/08/22 07:21	08/10/22 13:30	1
NEtFOSE	<0.85		2.0	0.85	ng/L		08/08/22 07:21	08/10/22 13:30	1
4:2 FTS	<0.24		2.0	0.24	ng/L		08/08/22 07:21	08/10/22 13:30	1
6:2 FTS	<2.5		5.0	2.5	ng/L		08/08/22 07:21	08/10/22 13:30	1
8:2 FTS	<0.46		2.0	0.46	ng/L		08/08/22 07:21	08/10/22 13:30	1
10:2 FTS	<0.67		2.0	0.67	ng/L		08/08/22 07:21	08/10/22 13:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		08/08/22 07:21	08/10/22 13:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		08/08/22 07:21	08/10/22 13:30	1
F-53B Major	<0.24		2.0	0.24	ng/L		08/08/22 07:21	08/10/22 13:30	1
F-53B Minor	<0.32		2.0	0.32	ng/L		08/08/22 07:21	08/10/22 13:30	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	86		25 - 150				08/08/22 07:21	08/10/22 13:30	1
13C5 PFPeA	91		25 - 150				08/08/22 07:21	08/10/22 13:30	1
13C2 PFHxA	88		25 - 150				08/08/22 07:21	08/10/22 13:30	1
13C4 PFHpA	88		25 - 150				08/08/22 07:21	08/10/22 13:30	1
13C4 PFOA	95		25 - 150				08/08/22 07:21	08/10/22 13:30	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

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

Lab Sample ID: MB 320-607920/1-A
Matrix: Water
Analysis Batch: 608682

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 607920

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	94		25 - 150	08/08/22 07:21	08/10/22 13:30	1
13C2 PFDA	93		25 - 150	08/08/22 07:21	08/10/22 13:30	1
13C2 PFUnA	101		25 - 150	08/08/22 07:21	08/10/22 13:30	1
13C2 PFDoA	94		25 - 150	08/08/22 07:21	08/10/22 13:30	1
13C2 PFTeDA	89		25 - 150	08/08/22 07:21	08/10/22 13:30	1
13C2 PFHxDA	84		25 - 150	08/08/22 07:21	08/10/22 13:30	1
13C3 PFBS	92		25 - 150	08/08/22 07:21	08/10/22 13:30	1
18O2 PFHxS	98		25 - 150	08/08/22 07:21	08/10/22 13:30	1
13C4 PFOS	88		25 - 150	08/08/22 07:21	08/10/22 13:30	1
13C8 FOSA	91		10 - 150	08/08/22 07:21	08/10/22 13:30	1
d3-NMeFOSAA	117		25 - 150	08/08/22 07:21	08/10/22 13:30	1
d5-NEtFOSAA	109		25 - 150	08/08/22 07:21	08/10/22 13:30	1
d-N-MeFOSA-M	74		10 - 150	08/08/22 07:21	08/10/22 13:30	1
d-N-EtFOSA-M	79		10 - 150	08/08/22 07:21	08/10/22 13:30	1
d7-N-MeFOSE-M	82		10 - 150	08/08/22 07:21	08/10/22 13:30	1
d9-N-EtFOSE-M	79		10 - 150	08/08/22 07:21	08/10/22 13:30	1
M2-4:2 FTS	110		25 - 150	08/08/22 07:21	08/10/22 13:30	1
M2-6:2 FTS	110		25 - 150	08/08/22 07:21	08/10/22 13:30	1
M2-8:2 FTS	97		25 - 150	08/08/22 07:21	08/10/22 13:30	1
13C3 HFPO-DA	82		25 - 150	08/08/22 07:21	08/10/22 13:30	1
13C2 10:2 FTS	78		25 - 150	08/08/22 07:21	08/10/22 13:30	1

Lab Sample ID: LCS 320-607920/2-A
Matrix: Water
Analysis Batch: 608682

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 607920

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	44.1		ng/L		110	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	40.2		ng/L		101	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	39.2		ng/L		98	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	40.5		ng/L		101	60 - 135
Perfluorononanoic acid (PFNA)	40.0	40.9		ng/L		102	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	36.1		ng/L		90	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	40.0		ng/L		100	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	40.5		ng/L		101	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	39.7		ng/L		99	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	43.4		ng/L		108	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.6		ng/L		107	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	32.2		ng/L		81	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	39.3		ng/L		111	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	42.3		ng/L		113	60 - 135

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

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

Lab Sample ID: LCS 320-607920/2-A
Matrix: Water
Analysis Batch: 608682

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 607920

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.7		ng/L		98	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	44.3		ng/L		116	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	41.7		ng/L		112	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	42.9		ng/L		112	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	42.7		ng/L		111	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	44.5		ng/L		115	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	44.0		ng/L		110	60 - 135
NEtFOSA	40.0	41.7		ng/L		104	60 - 135
NMeFOSA	40.0	43.5		ng/L		109	60 - 135
NMeFOSAA	40.0	40.0		ng/L		100	60 - 135
NEtFOSAA	40.0	42.1		ng/L		105	60 - 135
NMeFOSE	40.0	41.5		ng/L		104	60 - 135
NEtFOSE	40.0	42.8		ng/L		107	60 - 135
4:2 FTS	37.5	36.8		ng/L		98	60 - 135
6:2 FTS	38.1	40.9		ng/L		108	60 - 135
8:2 FTS	38.4	40.4		ng/L		105	60 - 135
10:2 FTS	38.6	36.7		ng/L		95	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.4		ng/L		112	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.3		ng/L		111	60 - 135
F-53B Major	37.4	38.4		ng/L		103	60 - 135
F-53B Minor	37.8	41.5		ng/L		110	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	87		25 - 150
13C5 PFPeA	93		25 - 150
13C2 PFHxA	97		25 - 150
13C4 PFHpA	101		25 - 150
13C4 PFOA	102		25 - 150
13C5 PFNA	100		25 - 150
13C2 PFDA	98		25 - 150
13C2 PFUnA	100		25 - 150
13C2 PFDoA	99		25 - 150
13C2 PFTeDA	88		25 - 150
13C2 PFHxDA	87		25 - 150
13C3 PFBS	95		25 - 150
18O2 PFHxS	102		25 - 150
13C4 PFOS	95		25 - 150
13C8 FOSA	91		10 - 150
d3-NMeFOSAA	126		25 - 150
d5-NEtFOSAA	117		25 - 150
d-N-MeFOSA-M	74		10 - 150
d-N-EtFOSA-M	78		10 - 150

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

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

Lab Sample ID: LCS 320-607920/2-A
Matrix: Water
Analysis Batch: 608682

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 607920

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	83		10 - 150
d9-N-EtFOSE-M	80		10 - 150
M2-4:2 FTS	119		25 - 150
M2-6:2 FTS	101		25 - 150
M2-8:2 FTS	102		25 - 150
13C3 HFPO-DA	84		25 - 150
13C2 10:2 FTS	86		25 - 150

Lab Sample ID: LCSD 320-607920/3-A
Matrix: Water
Analysis Batch: 608682

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 607920

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	43.6		ng/L		109	60 - 135	4	30
Perfluoropentanoic acid (PFPeA)	40.0	46.5		ng/L		116	60 - 135	5	30
Perfluorohexanoic acid (PFHxA)	40.0	40.7		ng/L		102	60 - 135	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.9		ng/L		110	60 - 135	11	30
Perfluorooctanoic acid (PFOA)	40.0	44.4		ng/L		111	60 - 135	9	30
Perfluorononanoic acid (PFNA)	40.0	40.8		ng/L		102	60 - 135	0	30
Perfluorodecanoic acid (PFDA)	40.0	32.7		ng/L		82	60 - 135	10	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.8		ng/L		105	60 - 135	4	30
Perfluorododecanoic acid (PFDoA)	40.0	41.9		ng/L		105	60 - 135	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	39.2		ng/L		98	60 - 135	1	30
Perfluorotetradecanoic acid (PFTeA)	40.0	42.5		ng/L		106	60 - 135	2	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	43.7		ng/L		109	60 - 135	3	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	38.7		ng/L		97	60 - 135	18	30
Perfluorobutanesulfonic acid (PFBS)	35.5	42.3		ng/L		119	60 - 135	7	30
Perfluoropentanesulfonic acid (PFPeS)	37.5	42.4		ng/L		113	60 - 135	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.2		ng/L		99	60 - 135	2	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	47.0		ng/L		123	60 - 135	6	30
Perfluorooctanesulfonic acid (PFOS)	37.2	41.7		ng/L		112	60 - 135	0	30
Perfluorononanesulfonic acid (PFNS)	38.5	45.5		ng/L		118	60 - 135	6	30
Perfluorodecanesulfonic acid (PFDS)	38.6	43.2		ng/L		112	60 - 135	1	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	43.2		ng/L		111	60 - 135	3	30
Perfluorooctanesulfonamide (FOSA)	40.0	44.8		ng/L		112	60 - 135	2	30
NEtFOSA	40.0	44.6		ng/L		111	60 - 135	7	30
NMeFOSA	40.0	42.3		ng/L		106	60 - 135	3	30
NMeFOSAA	40.0	39.1		ng/L		98	60 - 135	2	30

Eurofins Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

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

Lab Sample ID: LCSD 320-607920/3-A
Matrix: Water
Analysis Batch: 608682

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 607920

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	43.0		ng/L		108	60 - 135	2	30
NMeFOSE	40.0	42.8		ng/L		107	60 - 135	3	30
NEtFOSE	40.0	43.8		ng/L		109	60 - 135	2	30
4:2 FTS	37.5	38.6		ng/L		103	60 - 135	5	30
6:2 FTS	38.1	39.8		ng/L		104	60 - 135	3	30
8:2 FTS	38.4	38.9		ng/L		101	60 - 135	4	30
10:2 FTS	38.6	37.7		ng/L		98	60 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.4		ng/L		115	60 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.2		ng/L		105	60 - 135	5	30
F-53B Major	37.4	39.2		ng/L		105	60 - 135	2	30
F-53B Minor	37.8	40.4		ng/L		107	60 - 135	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C4 PFBA	87		25 - 150
13C5 PFPeA	92		25 - 150
13C2 PFHxA	90		25 - 150
13C4 PFHpA	92		25 - 150
13C4 PFOA	96		25 - 150
13C5 PFNA	97		25 - 150
13C2 PFDA	94		25 - 150
13C2 PFUnA	99		25 - 150
13C2 PFDoA	91		25 - 150
13C2 PFTeDA	79		25 - 150
13C2 PFHxDA	80		25 - 150
13C3 PFBS	89		25 - 150
18O2 PFHxS	97		25 - 150
13C4 PFOS	90		25 - 150
13C8 FOSA	88		10 - 150
d3-NMeFOSAA	120		25 - 150
d5-NEtFOSAA	106		25 - 150
d-N-MeFOSA-M	72		10 - 150
d-N-EtFOSA-M	73		10 - 150
d7-N-MeFOSE-M	80		10 - 150
d9-N-EtFOSE-M	77		10 - 150
M2-4:2 FTS	108		25 - 150
M2-6:2 FTS	102		25 - 150
M2-8:2 FTS	101		25 - 150
13C3 HFPO-DA	83		25 - 150
13C2 10:2 FTS	79		25 - 150

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220268-1

Client Sample ID: V-200-A

Date Collected: 08/01/22 11:30

Date Received: 08/02/22 09:20

Lab Sample ID: 500-220268-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			607920	EFG	EET SAC	08/08/22 07:21
Total/NA	Analysis	537 (modified)		1	608682	RS1	EET SAC	08/10/22 14:00

Client Sample ID: V-900-A

Date Collected: 08/01/22 11:35

Date Received: 08/02/22 09:20

Lab Sample ID: 500-220268-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			607920	EFG	EET SAC	08/08/22 07:21
Total/NA	Analysis	537 (modified)		1	608682	RS1	EET SAC	08/10/22 14:10

Laboratory References:

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 30128077.01 WPDES

Job ID: 500-220268-1

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-22

- 1
- 2
- 3
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- 9
- 10
- 11
- 12
- 13
- 14

West Sacramento, CA 95605-1500
phone 916.373.5800 fax 303.487.7248

Regulatory Program: DW NPDES RCRA Other

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

Client Contact Arcadia U.S., Inc. 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Project Name: Marinette, WI Site: Marinette, WI P O # 30128077.01 (WPDES)		Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A		Sampler: Jacob Rominger Lab Contact: Sandie Friedrich		Date: 8-1-22 Carrier: FedEx		COC No. / 1 of 1 COCs	
Phone FAX 500-220268 COC		Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Filtrated Sample (Y/N) Perform MS/MSD (Y/N) EPA 837 Modified (36 Compounds)		For Lab Use Only: Walk-in Client: Lab Sampling:		Lab Project Number 50015522 500-220-62838 Sample Specific Notes: 8/3/22	
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtrated Sample (Y/N)	Perform MS/MSD (Y/N)	EPA 837 Modified (36 Compounds)
1 V-200-A		8-1-22	11:30	G W	W	2	N N	X	System Influent
V-900-A		↓	11:35	G W	W	2	N N	X	System Effluent
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other									
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 <input checked="" type="checkbox"/> Non-Hazardous <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Dispose by Lab <input type="checkbox"/> Archive for _____ Months				
Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7 5 day-TAT									
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No. 1831835		Cooler Temp. (°C) Obs'd 13 Cor'd: 12		Therm ID No. 611			
Relinquished by: Jacob Rominger		Company: Barley Excavating		Date/Time: 8-1-22/12:30		Received by: FedEx		Company:	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:	

Regulatory Program: DW NPDES RCRA Other: _____

Project Manager: Lisa Rutkowski

Client Contact

Email: N/A
 Tel/Fax: N/A
 Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
 TAT if different from Below _____
 2 weeks
 1 week
 2 days
 1 day

Project Name: Marinette, WI
 Site: Marinette, WI
 P O # 30128077.01 (WPDES)

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 (S&C Compounds)
V-200-A	8-1-22	11:30	G	W	2	N	N	X
V-900-A	↓	11:35	G	W	2	N	N	X



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

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.

Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7

Relinquished by: Josh Ramirez
 Relinquished by: _____
 Relinquished by: _____

Custody Seal No.: 1831835
 Company: Barley Excavating
 Date/Time: 8-1-22 12:30

Received by: Fred Ex
 Company: _____
 Date/Time: _____

Received by: _____
 Company: _____
 Date/Time: _____

Received in Laboratory by: _____
 Company: _____
 Date/Time: _____

Cooler Temp. (°C): 17.2 Obs'd: 17.2 Corr'd: 17.2 Therm ID No.: 611



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-220268-1

Login Number: 220268

List Number: 1

Creator: Her, David A

List Source: Eurofins Sacramento

List Creation: 08/05/22 08:10 AM

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	1831835
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	1.7 c
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.	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 <6mm (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 30128077.01 WPDES

Job ID: 500-220268-1

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)
500-220268-1	V-200-A	86	98	102	100	103	98	98	100
500-220268-2	V-900-A	90	95	93	90	94	92	88	90
LCS 320-607920/2-A	Lab Control Sample	87	93	97	101	102	100	98	100
LCSD 320-607920/3-A	Lab Control Sample Dup	87	92	90	92	96	97	94	99
MB 320-607920/1-A	Method Blank	86	91	88	88	95	94	93	101

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)
500-220268-1	V-200-A	97	79	74	99	106	100	97	119
500-220268-2	V-900-A	77	74	75	98	99	88	88	108
LCS 320-607920/2-A	Lab Control Sample	99	88	87	95	102	95	91	126
LCSD 320-607920/3-A	Lab Control Sample Dup	91	79	80	89	97	90	88	120
MB 320-607920/1-A	Method Blank	94	89	84	92	98	88	91	117

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)
500-220268-1	V-200-A	113	82	82	85	81	121	112	107
500-220268-2	V-900-A	101	72	74	69	73	103	102	92
LCS 320-607920/2-A	Lab Control Sample	117	74	78	83	80	119	101	102
LCSD 320-607920/3-A	Lab Control Sample Dup	106	72	73	80	77	108	102	101
MB 320-607920/1-A	Method Blank	109	74	79	82	79	110	110	97

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-220268-1	V-200-A	85	86
500-220268-2	V-900-A	85	68
LCS 320-607920/2-A	Lab Control Sample	84	86
LCSD 320-607920/3-A	Lab Control Sample Dup	83	79
MB 320-607920/1-A	Method Blank	82	78

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 30128077.01 WPDES

Job ID: 500-220268-1

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

1

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ANALYTICAL REPORT

Eurofins Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-220941-1

Client Project/Site: Marinette, WI 30128077.01 WPDES

For:

ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski



Authorized for release by:

8/25/2022 10:01:39 AM

Sandie Fredrick, Project Manager II
(920)261-1660

Sandra.Fredrick@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

Job ID: 500-220941-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-220941-1

Comments

No additional comments.

Receipt

The samples were received on 8/16/2022 9:30 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 4.1° C.

LCMS

No analytical or quality issues were noted, other than those described 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 320-611333.

PFC_IDA_WI

Water

preparation batch 320-611333

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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 30128077.01 WPDES

Job ID: 500-220941-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-220941-1	V-200-A	Water	08/15/22 11:30	08/16/22 09:30
500-220941-2	V-900-A	Water	08/15/22 11:35	08/16/22 09:30

- 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 30128077.01 WPDES

Job ID: 500-220941-1

Client Sample ID: V-200-A

Lab Sample ID: 500-220941-1

Date Collected: 08/15/22 11:30

Matrix: Water

Date Received: 08/16/22 09:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	38		4.4	2.1	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluoropentanoic acid (PFPeA)	190		1.8	0.43	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorohexanoic acid (PFHxA)	99		1.8	0.51	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluoroheptanoic acid (PFHpA)	98		1.8	0.22	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorooctanoic acid (PFOA)	170		1.8	0.75	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorononanoic acid (PFNA)	29		1.8	0.24	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorodecanoic acid (PFDA)	21		1.8	0.27	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluoroundecanoic acid (PFUnA)	12		1.8	0.97	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorododecanoic acid (PFDoA)	1.6	J	1.8	0.49	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.8	1.1	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.8	0.64	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.79		1.8	0.79	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.83		1.8	0.83	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorobutanesulfonic acid (PFBS)	6.8		1.8	0.18	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluoropentanesulfonic acid (PFPeS)	1.4	J	1.8	0.27	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorohexanesulfonic acid (PFHxS)	27		1.8	0.50	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluoroheptanesulfonic acid (PFHpS)	0.75	J	1.8	0.17	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorooctanesulfonic acid (PFOS)	110		1.8	0.48	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluoronanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorododecanesulfonic acid (PFDoS)	<0.86		1.8	0.86	ng/L		08/22/22 19:26	08/24/22 03:20	1
Perfluorooctanesulfonamide (FOSA)	4.1		1.8	0.87	ng/L		08/22/22 19:26	08/24/22 03:20	1
NEtFOSA	<0.77		1.8	0.77	ng/L		08/22/22 19:26	08/24/22 03:20	1
NMeFOSA	<0.38		1.8	0.38	ng/L		08/22/22 19:26	08/24/22 03:20	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		08/22/22 19:26	08/24/22 03:20	1
NEtFOSAA	1.9	J	4.4	1.1	ng/L		08/22/22 19:26	08/24/22 03:20	1
NMeFOSE	<1.2		3.5	1.2	ng/L		08/22/22 19:26	08/24/22 03:20	1
NEtFOSE	<0.75		1.8	0.75	ng/L		08/22/22 19:26	08/24/22 03:20	1
4:2 FTS	1.7	J	1.8	0.21	ng/L		08/22/22 19:26	08/24/22 03:20	1
6:2 FTS	170		4.4	2.2	ng/L		08/22/22 19:26	08/24/22 03:20	1
8:2 FTS	130		1.8	0.41	ng/L		08/22/22 19:26	08/24/22 03:20	1
10:2 FTS	20		1.8	0.59	ng/L		08/22/22 19:26	08/24/22 03:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		08/22/22 19:26	08/24/22 03:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		08/22/22 19:26	08/24/22 03:20	1
F-53B Major	<0.21		1.8	0.21	ng/L		08/22/22 19:26	08/24/22 03:20	1
F-53B Minor	<0.28		1.8	0.28	ng/L		08/22/22 19:26	08/24/22 03:20	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	86		25 - 150				08/22/22 19:26	08/24/22 03:20	1
13C5 PFPeA	92		25 - 150				08/22/22 19:26	08/24/22 03:20	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

Client Sample ID: V-200-A

Lab Sample ID: 500-220941-1

Date Collected: 08/15/22 11:30

Matrix: Water

Date Received: 08/16/22 09:30

Method: 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 PFHxA	109		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C4 PFHpA	97		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C4 PFOA	99		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C5 PFNA	101		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C2 PFDA	103		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C2 PFUnA	100		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C2 PFDoA	95		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C2 PFTeDA	87		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C2 PFHxDA	80		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C3 PFBS	92		25 - 150	08/22/22 19:26	08/24/22 03:20	1
18O2 PFHxS	107		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C4 PFOS	103		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C8 FOSA	100		10 - 150	08/22/22 19:26	08/24/22 03:20	1
d3-NMeFOSAA	100		25 - 150	08/22/22 19:26	08/24/22 03:20	1
d5-NEtFOSAA	109		25 - 150	08/22/22 19:26	08/24/22 03:20	1
d-N-MeFOSA-M	88		10 - 150	08/22/22 19:26	08/24/22 03:20	1
d-N-EtFOSA-M	84		10 - 150	08/22/22 19:26	08/24/22 03:20	1
d7-N-MeFOSE-M	80		10 - 150	08/22/22 19:26	08/24/22 03:20	1
d9-N-EtFOSE-M	77		10 - 150	08/22/22 19:26	08/24/22 03:20	1
M2-4:2 FTS	107		25 - 150	08/22/22 19:26	08/24/22 03:20	1
M2-6:2 FTS	101		25 - 150	08/22/22 19:26	08/24/22 03:20	1
M2-8:2 FTS	115		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C3 HFPO-DA	92		25 - 150	08/22/22 19:26	08/24/22 03:20	1
13C2 10:2 FTS	103		25 - 150	08/22/22 19:26	08/24/22 03:20	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

Client Sample ID: V-900-A

Lab Sample ID: 500-220941-2

Date Collected: 08/15/22 11:35

Matrix: Water

Date Received: 08/16/22 09:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.1		4.4	2.1	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluoropentanoic acid (PFPeA)	<0.43		1.8	0.43	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorohexanoic acid (PFHxA)	<0.51		1.8	0.51	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.8	0.22	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorooctanoic acid (PFOA)	<0.75		1.8	0.75	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorodecanoic acid (PFDA)	<0.27		1.8	0.27	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluoroundecanoic acid (PFUnA)	<0.97		1.8	0.97	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorotetradecanoic acid (PFTeA)	<0.65		1.8	0.65	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.79		1.8	0.79	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.83		1.8	0.83	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorohexanesulfonic acid (PFHxS)	<0.50		1.8	0.50	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.8	0.17	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorooctanesulfonic acid (PFOS)	<0.48		1.8	0.48	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorododecanesulfonic acid (PFDoS)	<0.86		1.8	0.86	ng/L		08/22/22 19:26	08/24/22 03:30	1
Perfluorooctanesulfonamide (FOSA)	<0.87		1.8	0.87	ng/L		08/22/22 19:26	08/24/22 03:30	1
NEtFOSA	<0.77		1.8	0.77	ng/L		08/22/22 19:26	08/24/22 03:30	1
NMeFOSA	<0.38		1.8	0.38	ng/L		08/22/22 19:26	08/24/22 03:30	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		08/22/22 19:26	08/24/22 03:30	1
NEtFOSAA	<1.2		4.4	1.2	ng/L		08/22/22 19:26	08/24/22 03:30	1
NMeFOSE	<1.2		3.5	1.2	ng/L		08/22/22 19:26	08/24/22 03:30	1
NEtFOSE	<0.75		1.8	0.75	ng/L		08/22/22 19:26	08/24/22 03:30	1
4:2 FTS	<0.21		1.8	0.21	ng/L		08/22/22 19:26	08/24/22 03:30	1
6:2 FTS	<2.2		4.4	2.2	ng/L		08/22/22 19:26	08/24/22 03:30	1
8:2 FTS	0.89	J	1.8	0.41	ng/L		08/22/22 19:26	08/24/22 03:30	1
10:2 FTS	4.7		1.8	0.59	ng/L		08/22/22 19:26	08/24/22 03:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		08/22/22 19:26	08/24/22 03:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		08/22/22 19:26	08/24/22 03:30	1
F-53B Major	<0.21		1.8	0.21	ng/L		08/22/22 19:26	08/24/22 03:30	1
F-53B Minor	<0.28		1.8	0.28	ng/L		08/22/22 19:26	08/24/22 03:30	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	88		25 - 150				08/22/22 19:26	08/24/22 03:30	1
13C5 PFPeA	96		25 - 150				08/22/22 19:26	08/24/22 03:30	1
13C2 PFHxA	100		25 - 150				08/22/22 19:26	08/24/22 03:30	1
13C4 PFHpA	95		25 - 150				08/22/22 19:26	08/24/22 03:30	1
13C4 PFOA	100		25 - 150				08/22/22 19:26	08/24/22 03:30	1
13C5 PFNA	100		25 - 150				08/22/22 19:26	08/24/22 03:30	1
13C2 PFDA	96		25 - 150				08/22/22 19:26	08/24/22 03:30	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

Client Sample ID: V-900-A
Date Collected: 08/15/22 11:35
Date Received: 08/16/22 09:30

Lab Sample ID: 500-220941-2
Matrix: Water

Method: 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 PFluA	92		25 - 150	08/22/22 19:26	08/24/22 03:30	1
13C2 PFlDoA	88		25 - 150	08/22/22 19:26	08/24/22 03:30	1
13C2 PFlTeDA	83		25 - 150	08/22/22 19:26	08/24/22 03:30	1
13C2 PFlHxDA	87		25 - 150	08/22/22 19:26	08/24/22 03:30	1
13C3 PFlBS	89		25 - 150	08/22/22 19:26	08/24/22 03:30	1
18O2 PFlHxS	100		25 - 150	08/22/22 19:26	08/24/22 03:30	1
13C4 PFlOS	95		25 - 150	08/22/22 19:26	08/24/22 03:30	1
13C8 FOSA	94		10 - 150	08/22/22 19:26	08/24/22 03:30	1
d3-NMeFOSA	93		25 - 150	08/22/22 19:26	08/24/22 03:30	1
d5-NEtFOSA	96		25 - 150	08/22/22 19:26	08/24/22 03:30	1
d-N-MeFOSA-M	78		10 - 150	08/22/22 19:26	08/24/22 03:30	1
d-N-EtFOSA-M	74		10 - 150	08/22/22 19:26	08/24/22 03:30	1
d7-N-MeFOSE-M	73		10 - 150	08/22/22 19:26	08/24/22 03:30	1
d9-N-EtFOSE-M	67		10 - 150	08/22/22 19:26	08/24/22 03:30	1
M2-4:2 FTS	100		25 - 150	08/22/22 19:26	08/24/22 03:30	1
M2-6:2 FTS	100		25 - 150	08/22/22 19:26	08/24/22 03:30	1
M2-8:2 FTS	99		25 - 150	08/22/22 19:26	08/24/22 03:30	1
13C3 HFPO-DA	92		25 - 150	08/22/22 19:26	08/24/22 03:30	1
13C2 10:2 FTS	80		25 - 150	08/22/22 19:26	08/24/22 03:30	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

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 30128077.01 WPDES

Job ID: 500-220941-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-611333/1-A
Matrix: Water
Analysis Batch: 611570

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 611333

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		08/22/22 19:26	08/24/22 00:38	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		08/22/22 19:26	08/24/22 00:38	1
NEtFOSA	<0.87		2.0	0.87	ng/L		08/22/22 19:26	08/24/22 00:38	1
NMeFOSA	<0.43		2.0	0.43	ng/L		08/22/22 19:26	08/24/22 00:38	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		08/22/22 19:26	08/24/22 00:38	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		08/22/22 19:26	08/24/22 00:38	1
NMeFOSE	<1.4		4.0	1.4	ng/L		08/22/22 19:26	08/24/22 00:38	1
NEtFOSE	<0.85		2.0	0.85	ng/L		08/22/22 19:26	08/24/22 00:38	1
4:2 FTS	<0.24		2.0	0.24	ng/L		08/22/22 19:26	08/24/22 00:38	1
6:2 FTS	<2.5		5.0	2.5	ng/L		08/22/22 19:26	08/24/22 00:38	1
8:2 FTS	<0.46		2.0	0.46	ng/L		08/22/22 19:26	08/24/22 00:38	1
10:2 FTS	<0.67		2.0	0.67	ng/L		08/22/22 19:26	08/24/22 00:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		08/22/22 19:26	08/24/22 00:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		08/22/22 19:26	08/24/22 00:38	1
F-53B Major	<0.24		2.0	0.24	ng/L		08/22/22 19:26	08/24/22 00:38	1
F-53B Minor	<0.32		2.0	0.32	ng/L		08/22/22 19:26	08/24/22 00:38	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	83		25 - 150				08/22/22 19:26	08/24/22 00:38	1
13C5 PFPeA	86		25 - 150				08/22/22 19:26	08/24/22 00:38	1
13C2 PFHxA	90		25 - 150				08/22/22 19:26	08/24/22 00:38	1
13C4 PFHpA	89		25 - 150				08/22/22 19:26	08/24/22 00:38	1
13C4 PFOA	91		25 - 150				08/22/22 19:26	08/24/22 00:38	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

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

Lab Sample ID: MB 320-611333/1-A
Matrix: Water
Analysis Batch: 611570

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 611333

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	93		25 - 150	08/22/22 19:26	08/24/22 00:38	1
13C2 PFDA	89		25 - 150	08/22/22 19:26	08/24/22 00:38	1
13C2 PFUnA	90		25 - 150	08/22/22 19:26	08/24/22 00:38	1
13C2 PFDoA	89		25 - 150	08/22/22 19:26	08/24/22 00:38	1
13C2 PFTeDA	92		25 - 150	08/22/22 19:26	08/24/22 00:38	1
13C2 PFHxDA	88		25 - 150	08/22/22 19:26	08/24/22 00:38	1
13C3 PFBS	80		25 - 150	08/22/22 19:26	08/24/22 00:38	1
18O2 PFHxS	91		25 - 150	08/22/22 19:26	08/24/22 00:38	1
13C4 PFOS	87		25 - 150	08/22/22 19:26	08/24/22 00:38	1
13C8 FOSA	83		10 - 150	08/22/22 19:26	08/24/22 00:38	1
d3-NMeFOSAA	94		25 - 150	08/22/22 19:26	08/24/22 00:38	1
d5-NEtFOSAA	95		25 - 150	08/22/22 19:26	08/24/22 00:38	1
d-N-MeFOSA-M	78		10 - 150	08/22/22 19:26	08/24/22 00:38	1
d-N-EtFOSA-M	77		10 - 150	08/22/22 19:26	08/24/22 00:38	1
d7-N-MeFOSE-M	79		10 - 150	08/22/22 19:26	08/24/22 00:38	1
d9-N-EtFOSE-M	74		10 - 150	08/22/22 19:26	08/24/22 00:38	1
M2-4:2 FTS	97		25 - 150	08/22/22 19:26	08/24/22 00:38	1
M2-6:2 FTS	99		25 - 150	08/22/22 19:26	08/24/22 00:38	1
M2-8:2 FTS	94		25 - 150	08/22/22 19:26	08/24/22 00:38	1
13C3 HFPO-DA	85		25 - 150	08/22/22 19:26	08/24/22 00:38	1
13C2 10:2 FTS	91		25 - 150	08/22/22 19:26	08/24/22 00:38	1

Lab Sample ID: LCS 320-611333/2-A
Matrix: Water
Analysis Batch: 611570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 611333

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec	Limits
Perfluoropentanoic acid (PFPeA)	40.0	44.3		ng/L		111	60 - 135	
Perfluorohexanoic acid (PFHxA)	40.0	41.1		ng/L		103	60 - 135	
Perfluoroheptanoic acid (PFHpA)	40.0	44.1		ng/L		110	60 - 135	
Perfluorooctanoic acid (PFOA)	40.0	44.1		ng/L		110	60 - 135	
Perfluorononanoic acid (PFNA)	40.0	42.3		ng/L		106	60 - 135	
Perfluorodecanoic acid (PFDA)	40.0	41.0		ng/L		103	60 - 135	
Perfluoroundecanoic acid (PFUnA)	40.0	43.6		ng/L		109	60 - 135	
Perfluorododecanoic acid (PFDoA)	40.0	46.7		ng/L		117	60 - 135	
Perfluorotridecanoic acid (PFTriA)	40.0	44.8		ng/L		112	60 - 135	
Perfluorotetradecanoic acid (PFTeA)	40.0	41.7		ng/L		104	60 - 135	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	46.0		ng/L		115	60 - 135	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	42.3		ng/L		106	60 - 135	
Perfluorobutanesulfonic acid (PFBS)	35.5	40.2		ng/L		113	60 - 135	
Perfluoropentanesulfonic acid (PFPeS)	37.5	45.8		ng/L		122	60 - 135	

Eurofins Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

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

Lab Sample ID: LCS 320-611333/2-A
Matrix: Water
Analysis Batch: 611570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 611333

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.0		ng/L		93	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	44.1		ng/L		116	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	37.4		ng/L		100	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	44.6		ng/L		116	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	42.1		ng/L		109	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	40.0		ng/L		103	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	43.8		ng/L		110	60 - 135
NEtFOSA	40.0	44.2		ng/L		110	60 - 135
NMeFOSA	40.0	45.4		ng/L		113	60 - 135
NMeFOSAA	40.0	38.4		ng/L		96	60 - 135
NEtFOSAA	40.0	44.4		ng/L		111	60 - 135
NMeFOSE	40.0	43.0		ng/L		107	60 - 135
NEtFOSE	40.0	45.5		ng/L		114	60 - 135
4:2 FTS	37.5	40.7		ng/L		108	60 - 135
6:2 FTS	38.1	40.4		ng/L		106	60 - 135
8:2 FTS	38.4	38.4		ng/L		100	60 - 135
10:2 FTS	38.6	41.8		ng/L		108	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.2		ng/L		112	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	36.6		ng/L		91	60 - 135
F-53B Major	37.4	38.1		ng/L		102	60 - 135
F-53B Minor	37.8	40.8		ng/L		108	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	92		25 - 150
13C5 PFPeA	95		25 - 150
13C2 PFHxA	105		25 - 150
13C4 PFHpA	102		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	106		25 - 150
13C2 PFDA	104		25 - 150
13C2 PFUnA	103		25 - 150
13C2 PFDoA	101		25 - 150
13C2 PFTeDA	107		25 - 150
13C2 PFHxDA	102		25 - 150
13C3 PFBS	91		25 - 150
18O2 PFHxS	103		25 - 150
13C4 PFOS	99		25 - 150
13C8 FOSA	95		10 - 150
d3-NMeFOSAA	106		25 - 150
d5-NEtFOSAA	106		25 - 150
d-N-MeFOSA-M	87		10 - 150
d-N-EtFOSA-M	84		10 - 150

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

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

Lab Sample ID: LCS 320-611333/2-A
Matrix: Water
Analysis Batch: 611570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 611333

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	87		10 - 150
d9-N-EtFOSE-M	83		10 - 150
M2-4:2 FTS	107		25 - 150
M2-6:2 FTS	107		25 - 150
M2-8:2 FTS	111		25 - 150
13C3 HFPO-DA	102		25 - 150
13C2 10:2 FTS	109		25 - 150

Lab Sample ID: LCSD 320-611333/3-A
Matrix: Water
Analysis Batch: 611570

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 611333

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	42.3		ng/L		106	60 - 135	8	30
Perfluoropentanoic acid (PFPeA)	40.0	41.6		ng/L		104	60 - 135	6	30
Perfluorohexanoic acid (PFHxA)	40.0	42.2		ng/L		106	60 - 135	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.7		ng/L		109	60 - 135	1	30
Perfluorooctanoic acid (PFOA)	40.0	43.4		ng/L		109	60 - 135	1	30
Perfluorononanoic acid (PFNA)	40.0	42.2		ng/L		105	60 - 135	0	30
Perfluorodecanoic acid (PFDA)	40.0	41.6		ng/L		104	60 - 135	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	43.5		ng/L		109	60 - 135	0	30
Perfluorododecanoic acid (PFDoA)	40.0	46.4		ng/L		116	60 - 135	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	44.1		ng/L		110	60 - 135	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.2		ng/L		100	60 - 135	4	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.2		ng/L		113	60 - 135	2	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	39.2		ng/L		98	60 - 135	8	30
Perfluorobutanesulfonic acid (PFBS)	35.5	40.4		ng/L		114	60 - 135	1	30
Perfluoropentanesulfonic acid (PFPeS)	37.5	44.5		ng/L		119	60 - 135	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.0		ng/L		93	60 - 135	0	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.3		ng/L		114	60 - 135	2	30
Perfluorooctanesulfonic acid (PFOS)	37.2	37.0		ng/L		100	60 - 135	1	30
Perfluorononanesulfonic acid (PFNS)	38.5	44.0		ng/L		114	60 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)	38.6	42.5		ng/L		110	60 - 135	1	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	38.0		ng/L		98	60 - 135	5	30
Perfluorooctanesulfonamide (FOSA)	40.0	43.2		ng/L		108	60 - 135	1	30
NEtFOSA	40.0	45.0		ng/L		113	60 - 135	2	30
NMeFOSA	40.0	44.2		ng/L		110	60 - 135	3	30
NMeFOSAA	40.0	37.2		ng/L		93	60 - 135	3	30

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

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

Lab Sample ID: LCSD 320-611333/3-A
Matrix: Water
Analysis Batch: 611570

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 611333

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	43.2		ng/L		108	60 - 135	3	30
NMeFOSE	40.0	41.6		ng/L		104	60 - 135	3	30
NEtFOSE	40.0	44.5		ng/L		111	60 - 135	2	30
4:2 FTS	37.5	38.4		ng/L		102	60 - 135	6	30
6:2 FTS	38.1	38.2		ng/L		100	60 - 135	6	30
8:2 FTS	38.4	38.8		ng/L		101	60 - 135	1	30
10:2 FTS	38.6	39.3		ng/L		102	60 - 135	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.2		ng/L		106	60 - 135	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.0		ng/L		95	60 - 135	4	30
F-53B Major	37.4	37.1		ng/L		99	60 - 135	3	30
F-53B Minor	37.8	39.1		ng/L		103	60 - 135	4	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C4 PFBA	90		25 - 150
13C5 PFPeA	96		25 - 150
13C2 PFHxA	101		25 - 150
13C4 PFHpA	100		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	102		25 - 150
13C2 PFDA	100		25 - 150
13C2 PFUnA	101		25 - 150
13C2 PFDoA	99		25 - 150
13C2 PFTeDA	104		25 - 150
13C2 PFHxDA	101		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	104		25 - 150
13C4 PFOS	100		25 - 150
13C8 FOSA	94		10 - 150
d3-NMeFOSAA	107		25 - 150
d5-NEtFOSAA	110		25 - 150
d-N-MeFOSA-M	88		10 - 150
d-N-EtFOSA-M	83		10 - 150
d7-N-MeFOSE-M	88		10 - 150
d9-N-EtFOSE-M	85		10 - 150
M2-4:2 FTS	108		25 - 150
M2-6:2 FTS	110		25 - 150
M2-8:2 FTS	105		25 - 150
13C3 HFPO-DA	96		25 - 150
13C2 10:2 FTS	108		25 - 150

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

Client Sample ID: V-200-A

Date Collected: 08/15/22 11:30

Date Received: 08/16/22 09:30

Lab Sample ID: 500-220941-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			611333	AM	EET SAC	08/22/22 19:26
Total/NA	Analysis	537 (modified)		1	611570	RS1	EET SAC	08/24/22 03:20

Client Sample ID: V-900-A

Date Collected: 08/15/22 11:35

Date Received: 08/16/22 09:30

Lab Sample ID: 500-220941-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			611333	AM	EET SAC	08/22/22 19:26
Total/NA	Analysis	537 (modified)		1	611570	RS1	EET SAC	08/24/22 03:30

Laboratory References:

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 30128077.01 WPDES

Job ID: 500-220941-1

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

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

West Sacramento CA 95605-1500
phone 916 373.6600 fax 303.467 7248

Regulatory Program: DW NPDES RCRA Other

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

Client Contact Arcadia U.S., Inc. 128 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Phone: _____ FAX: _____ Project Name: Marinette, WI Site: Marinette, WI P O # 30128077.01 (WPDES)		Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A		Sampler: <u>Jacob Dominguez</u> Lab Contact: <u>Sandie Fredrick</u>		Date: <u>8-15-22</u> Carrier: <u>FedEx</u>		COC No: _____ 1 of 1 COCs	
500-220941 COC		Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Filled Samples (Y/N) Perform MS/MSD (Y/N) EPA 817 Modified (36 Compounds)		For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____ Lab Project Number 50015522 <u>500-220941</u> Sample Specific Notes: System Influent System Effluent			
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filled Samples (Y/N)	Perform MS/MSD (Y/N)	EPA 817 Modified (36 Compounds)	Sample Specific Notes
V-200-A	8-15-22	11:20	G	W	2	N	N	X	System Influent
V-900-A	✓	11:35	G	W	2	N	N	X	System Effluent
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other									
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.						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months			
Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7 <u>5 day TAT</u>									
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No. <u>1831846</u>		Cooler Temp. (°C) Obs'd: <u>41</u> Corr'd: <u>41</u>		Therm ID No.: <u>63</u>			
Relinquished by: <u>Jacob Dominguez</u>		Company: <u>Barley Excavating</u>		Date/Time: <u>8-15-22/12:05</u>		Received by: <u>Fed Ex</u>		Company: _____ Date/Time: _____	
Relinquished by: _____		Company: _____		Date/Time: _____		Received by: _____		Company: <u>EMSRK</u> Date/Time: <u>8/16/22-930</u>	
Relinquished by: _____		Company: _____		Date/Time: _____		Received in Laboratory by: _____		Company: _____ Date/Time: _____	

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski

Email: N/A
Tel/Fax: N/A
 CALENDAR DAYS WORKING DAYS
Analysis Turnaround Time
TAT if different from Below
 2 weeks
 1 week
 2 days
 1 day

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 # 30128077.01 (WPDES)

Sampler: *Jacob Laming*
Date: *8-15-22*
Carrier: FedEx

COC No: 1 of 1 COCs

For Lab Use Only:
Walk-in Client:
Lab Sampling:
Lab Project Number
50015522

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Performs MS/MSD (Y/N)	EPA 537 Modified (36 Compounds)
V-200-A	<i>8-15-22</i>	<i>11:30</i>	G	W	2	N	N	X
V-900-A	<i>8-15-22</i>	<i>11:35</i>	G	W	2	N	N	X

Sample Specific Notes:
System Influent
System Effluent



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other
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

Special Instructions/QC Requirements & Comments:
7-Day TAT Max or Prelim Report by Day 7
5 day TAT

Custody Seal No.: *153/886*
Company: Barley Excavating
Date/Time: *8-15-22 12:05*
Relinquished by: *Jacob Laming*
Date/Time:
Relinquished by:
Date/Time:

Received by: *Feed Ex*
Date/Time:
Received by:
Date/Time:
Received in Laboratory by:
Date/Time:

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

Return to Client Disposal by Lab Archive for _____ Months

Therm ID No.: *413*
Date/Time:
Date/Time:
Date/Time:



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-220941-1

Login Number: 220941

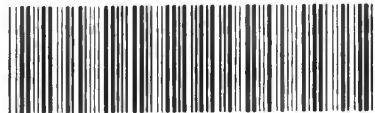
List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 08/16/22 10:00 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1831846
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	4.1C
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.	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	



500-220941 Field Sheet

Tracking #: 5887-6288-1510

Job: _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / 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-03 Corr. Factor: (+/-) 0 °C

ice Wet Gel _____ Other _____

Cooler Custody Seal: 1831846

Cooler ID: _____

Temp Observed: 4.1 °C Corrected: 4.1 °C

From: Temp Blank Sample

Opening/Processing The Shipment Yes No NA

Cooler compromised/tampered with?

Cooler Temperature is acceptable?

Frozen samples show signs of thaw?

Initials: SL Date: 8/16/22

Unpacking/Labeling The Samples Yes No NA

COC is complete w/o discrepancies?

Samples compromised/tampered with?

Containers are not broken or leaking?

Sample custody seal?

Sample containers have legible labels?

Sample date/times are provided?

Appropriate containers are used?

Sample bottles are completely filled?

Sample preservatives verified?

Is the Field Sampler's name on COC?

Samples require splitting/compositing?

Samples w/o discrepancies?

Zero headspace?

Alkalinity has no headspace?

Perchlorate has headspace?
(Methods 314, 331, 6850)

Multiphasic samples are not present?

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: S Date: 8-16-22

Notes: _____

Trizma Lot #(s): _____

Login Completion Yes No NA

Receipt Temperature on COC?

Samples received within hold time?

NCM Filed?

Log Release checked in TALS?

Initials: S Date: 8-16-22

ORIGIN ID:RRLA (906) 863-9373
JOE BARLEY
BARLEY EXCAVATING
1824 10TH AVE

SHIP DATE: 29JUL22
ACTWGT: 25.00 LB MAN
CAD: 0269688/CAFE3511

MENOMINEE, MI 49858
UNITED STATES US

TO **SAMPLE RECEIPT**
EUROFINS
880 RIVERSIDE PARKWAY

WEST SACRAMENTO CA 95605

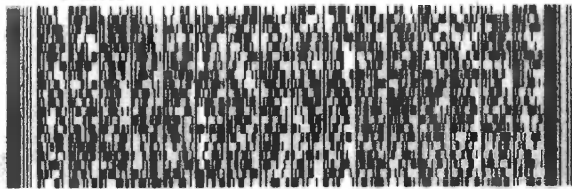
(262) 202-6966

REF:

PHU:

DEPT:

RMA: 



FedEx
Express



20121101.W

RETURNS MON-SAT
PRIORITY OVERNIGHT

TRK# 5887 6288 1510

FedEx
TRK# 5887 6288 1510
0221

TUE - 16 AUG AA
PRIORITY OVERNIGHT

95605
CA-US
SMF

NH BLUA



5191201 15Aug2022 GRBA 56D62/F39D/C088

F
10:30
1510
1816

RT 362

Environment Testing
TestAmerica
eurofins

1831846

Custody Seal 8-15-22
DATE SIGNATURE

Environment Testing
TestAmerica
eurofins

1831846

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

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-220941-1

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)
500-220941-1	V-200-A	86	92	109	97	99	101	103	100
500-220941-2	V-900-A	88	96	100	95	100	100	96	92
LCS 320-611333/2-A	Lab Control Sample	92	95	105	102	103	106	104	103
LCSD 320-611333/3-A	Lab Control Sample Dup	90	96	101	100	103	102	100	101
MB 320-611333/1-A	Method Blank	83	86	90	89	91	93	89	90

		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)
500-220941-1	V-200-A	95	87	80	92	107	103	100	100
500-220941-2	V-900-A	88	83	87	89	100	95	94	93
LCS 320-611333/2-A	Lab Control Sample	101	107	102	91	103	99	95	106
LCSD 320-611333/3-A	Lab Control Sample Dup	99	104	101	92	104	100	94	107
MB 320-611333/1-A	Method Blank	89	92	88	80	91	87	83	94

		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)
500-220941-1	V-200-A	109	88	84	80	77	107	101	115
500-220941-2	V-900-A	96	78	74	73	67	100	100	99
LCS 320-611333/2-A	Lab Control Sample	106	87	84	87	83	107	107	111
LCSD 320-611333/3-A	Lab Control Sample Dup	110	88	83	88	85	108	110	105
MB 320-611333/1-A	Method Blank	95	78	77	79	74	97	99	94

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-220941-1	V-200-A	92	103
500-220941-2	V-900-A	92	80
LCS 320-611333/2-A	Lab Control Sample	102	109
LCSD 320-611333/3-A	Lab Control Sample Dup	96	108
MB 320-611333/1-A	Method Blank	85	91

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 30128077.01 WPDES

Job ID: 500-220941-1

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

Eurofins Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-221226-1

Client Project/Site: Marinette, WI 30128077.01 WPDES

For:

ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski



Authorized for release by:

9/6/2022 7:55:19 AM

Sandie Fredrick, Project Manager II
(920)261-1660

Sandra.Fredrick@et.eurofinsus.com

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

Job ID: 500-221226-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-221226-1

Comments

No additional comments.

Receipt

The samples were received on 8/23/2022 9:45 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 2.2° C.

LCMS

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: 500-221226-2. These samples were reanalyzed with concurring results. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

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 320-613672.

PFC_IDA_WI

Water

preparation batch 320-613672

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



Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-221226-1	V-200-A	Water	08/22/22 12:30	08/23/22 09:45
500-221226-2	V-900-A	Water	08/22/22 12:35	08/23/22 09:45

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- 13
- 14

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

Client Sample ID: V-200-A

Lab Sample ID: 500-221226-1

Date Collected: 08/22/22 12:30

Matrix: Water

Date Received: 08/23/22 09:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.9	J	4.4	2.1	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluoropentanoic acid (PFPeA)	15		1.8	0.43	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorohexanoic acid (PFHxA)	8.2		1.8	0.51	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluoroheptanoic acid (PFHpA)	7.6		1.8	0.22	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorooctanoic acid (PFOA)	17		1.8	0.75	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorononanoic acid (PFNA)	2.8		1.8	0.24	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorodecanoic acid (PFDA)	2.1		1.8	0.27	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluoroundecanoic acid (PFUnA)	1.0	J	1.8	0.97	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorotetradecanoic acid (PFTeA)	<0.65		1.8	0.65	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.79		1.8	0.79	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.83		1.8	0.83	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorobutanesulfonic acid (PFBS)	0.64	J	1.8	0.18	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorohexanesulfonic acid (PFHxS)	1.8		1.8	0.50	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.8	0.17	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorooctanesulfonic acid (PFOS)	10		1.8	0.48	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorododecanesulfonic acid (PFDoS)	<0.86		1.8	0.86	ng/L		08/31/22 19:13	09/02/22 22:33	1
Perfluorooctanesulfonamide (FOSA)	<0.87		1.8	0.87	ng/L		08/31/22 19:13	09/02/22 22:33	1
NEtFOSA	<0.77		1.8	0.77	ng/L		08/31/22 19:13	09/02/22 22:33	1
NMeFOSA	<0.38		1.8	0.38	ng/L		08/31/22 19:13	09/02/22 22:33	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		08/31/22 19:13	09/02/22 22:33	1
NEtFOSAA	<1.2		4.4	1.2	ng/L		08/31/22 19:13	09/02/22 22:33	1
NMeFOSE	<1.2		3.5	1.2	ng/L		08/31/22 19:13	09/02/22 22:33	1
NEtFOSE	<0.75		1.8	0.75	ng/L		08/31/22 19:13	09/02/22 22:33	1
4:2 FTS	<0.21		1.8	0.21	ng/L		08/31/22 19:13	09/02/22 22:33	1
6:2 FTS	11		4.4	2.2	ng/L		08/31/22 19:13	09/02/22 22:33	1
8:2 FTS	16		1.8	0.41	ng/L		08/31/22 19:13	09/02/22 22:33	1
10:2 FTS	2.2		1.8	0.59	ng/L		08/31/22 19:13	09/02/22 22:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		08/31/22 19:13	09/02/22 22:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		08/31/22 19:13	09/02/22 22:33	1
F-53B Major	<0.21		1.8	0.21	ng/L		08/31/22 19:13	09/02/22 22:33	1
F-53B Minor	<0.28		1.8	0.28	ng/L		08/31/22 19:13	09/02/22 22:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	128		25 - 150				08/31/22 19:13	09/02/22 22:33	1
13C5 PFPeA	135		25 - 150				08/31/22 19:13	09/02/22 22:33	1
13C2 PFHxA	143		25 - 150				08/31/22 19:13	09/02/22 22:33	1
13C4 PFHpA	139		25 - 150				08/31/22 19:13	09/02/22 22:33	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

Client Sample ID: V-200-A

Lab Sample ID: 500-221226-1

Date Collected: 08/22/22 12:30

Matrix: Water

Date Received: 08/23/22 09:45

Method: 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>
13C4 PFOA	146		25 - 150	08/31/22 19:13	09/02/22 22:33	1
13C5 PFNA	135		25 - 150	08/31/22 19:13	09/02/22 22:33	1
13C2 PFDA	137		25 - 150	08/31/22 19:13	09/02/22 22:33	1
13C2 PFUnA	136		25 - 150	08/31/22 19:13	09/02/22 22:33	1
13C2 PFDoA	113		25 - 150	08/31/22 19:13	09/02/22 22:33	1
13C2 PFTeDA	111		25 - 150	08/31/22 19:13	09/02/22 22:33	1
13C2 PFHxDA	117		25 - 150	08/31/22 19:13	09/02/22 22:33	1
13C3 PFBS	148		25 - 150	08/31/22 19:13	09/02/22 22:33	1
18O2 PFHxS	148		25 - 150	08/31/22 19:13	09/02/22 22:33	1
13C4 PFOS	128		25 - 150	08/31/22 19:13	09/02/22 22:33	1
13C8 FOSA	125		10 - 150	08/31/22 19:13	09/02/22 22:33	1
d3-NMeFOSAA	117		25 - 150	08/31/22 19:13	09/02/22 22:33	1
d5-NEtFOSAA	122		25 - 150	08/31/22 19:13	09/02/22 22:33	1
d-N-MeFOSA-M	103		10 - 150	08/31/22 19:13	09/02/22 22:33	1
d-N-EtFOSA-M	103		10 - 150	08/31/22 19:13	09/02/22 22:33	1
d7-N-MeFOSE-M	97		10 - 150	08/31/22 19:13	09/02/22 22:33	1
d9-N-EtFOSE-M	97		10 - 150	08/31/22 19:13	09/02/22 22:33	1
M2-4:2 FTS	143		25 - 150	08/31/22 19:13	09/02/22 22:33	1
M2-6:2 FTS	138		25 - 150	08/31/22 19:13	09/02/22 22:33	1
M2-8:2 FTS	124		25 - 150	08/31/22 19:13	09/02/22 22:33	1
13C3 HFPO-DA	142		25 - 150	08/31/22 19:13	09/02/22 22:33	1
13C2 10:2 FTS	111		25 - 150	08/31/22 19:13	09/02/22 22:33	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

Client Sample ID: V-900-A

Lab Sample ID: 500-221226-2

Date Collected: 08/22/22 12:35

Matrix: Water

Date Received: 08/23/22 09:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.1		4.3	2.1	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluoropentanoic acid (PFPeA)	<0.43		1.7	0.43	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorohexanoic acid (PFHxA)	<0.50		1.7	0.50	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.7	0.22	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorooctanoic acid (PFOA)	<0.74		1.7	0.74	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorodecanoic acid (PFDA)	<0.27		1.7	0.27	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluoroundecanoic acid (PFUnA)	<0.96		1.7	0.96	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorododecanoic acid (PFDoA)	<0.48		1.7	0.48	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.7	0.64	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.77		1.7	0.77	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.82		1.7	0.82	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.7	0.26	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorohexanesulfonic acid (PFHxS)	<0.50		1.7	0.50	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.7	0.17	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorooctanesulfonic acid (PFOS)	<0.47		1.7	0.47	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.7	0.28	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorododecanesulfonic acid (PFDoS)	<0.84		1.7	0.84	ng/L		08/31/22 19:13	09/01/22 16:15	1
Perfluorooctanesulfonamide (FOSA)	<0.85		1.7	0.85	ng/L		08/31/22 19:13	09/01/22 16:15	1
NEtFOSA	<0.76		1.7	0.76	ng/L		08/31/22 19:13	09/01/22 16:15	1
NMeFOSA	<0.37		1.7	0.37	ng/L		08/31/22 19:13	09/01/22 16:15	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		08/31/22 19:13	09/01/22 16:15	1
NEtFOSAA	<1.1		4.3	1.1	ng/L		08/31/22 19:13	09/01/22 16:15	1
NMeFOSE	<1.2		3.5	1.2	ng/L		08/31/22 19:13	09/01/22 16:15	1
NEtFOSE	<0.74		1.7	0.74	ng/L		08/31/22 19:13	09/01/22 16:15	1
4:2 FTS	<0.21		1.7	0.21	ng/L		08/31/22 19:13	09/01/22 16:15	1
6:2 FTS	<2.2		4.3	2.2	ng/L		08/31/22 19:13	09/01/22 16:15	1
8:2 FTS	<0.40		1.7	0.40	ng/L		08/31/22 19:13	09/01/22 16:15	1
10:2 FTS	<0.58		1.7	0.58	ng/L		08/31/22 19:13	09/01/22 16:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.7	0.35	ng/L		08/31/22 19:13	09/01/22 16:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		08/31/22 19:13	09/01/22 16:15	1
F-53B Major	<0.21		1.7	0.21	ng/L		08/31/22 19:13	09/01/22 16:15	1
F-53B Minor	<0.28		1.7	0.28	ng/L		08/31/22 19:13	09/01/22 16:15	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	156	*	25 - 150				08/31/22 19:13	09/01/22 16:15	1
13C5 PFPeA	165	*	25 - 150				08/31/22 19:13	09/01/22 16:15	1
13C2 PFHxA	163	*	25 - 150				08/31/22 19:13	09/01/22 16:15	1
13C4 PFHpA	162	*	25 - 150				08/31/22 19:13	09/01/22 16:15	1
13C4 PFOA	172	*	25 - 150				08/31/22 19:13	09/01/22 16:15	1
13C5 PFNA	168	*	25 - 150				08/31/22 19:13	09/01/22 16:15	1
13C2 PFDA	162	*	25 - 150				08/31/22 19:13	09/01/22 16:15	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

Client Sample ID: V-900-A
Date Collected: 08/22/22 12:35
Date Received: 08/23/22 09:45

Lab Sample ID: 500-221226-2
Matrix: Water

Method: 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 PUnA	148		25 - 150	08/31/22 19:13	09/01/22 16:15	1
13C2 PFDaA	146		25 - 150	08/31/22 19:13	09/01/22 16:15	1
13C2 PFTeDA	142		25 - 150	08/31/22 19:13	09/01/22 16:15	1
13C2 PFHxDA	154 *		25 - 150	08/31/22 19:13	09/01/22 16:15	1
13C3 PFBS	160 *		25 - 150	08/31/22 19:13	09/01/22 16:15	1
18O2 PFHxS	172 *		25 - 150	08/31/22 19:13	09/01/22 16:15	1
13C4 PFOS	153 *		25 - 150	08/31/22 19:13	09/01/22 16:15	1
13C8 FOSA	143		10 - 150	08/31/22 19:13	09/01/22 16:15	1
d3-NMeFOSAA	135		25 - 150	08/31/22 19:13	09/01/22 16:15	1
d5-NEtFOSAA	141		25 - 150	08/31/22 19:13	09/01/22 16:15	1
d-N-MeFOSA-M	124		10 - 150	08/31/22 19:13	09/01/22 16:15	1
d-N-EtFOSA-M	129		10 - 150	08/31/22 19:13	09/01/22 16:15	1
d7-N-MeFOSE-M	122		10 - 150	08/31/22 19:13	09/01/22 16:15	1
d9-N-EtFOSE-M	121		10 - 150	08/31/22 19:13	09/01/22 16:15	1
M2-4:2 FTS	161 *		25 - 150	08/31/22 19:13	09/01/22 16:15	1
M2-6:2 FTS	173 *		25 - 150	08/31/22 19:13	09/01/22 16:15	1
M2-8:2 FTS	149		25 - 150	08/31/22 19:13	09/01/22 16:15	1
13C3 HFPO-DA	171 *		25 - 150	08/31/22 19:13	09/01/22 16:15	1
13C2 10:2 FTS	139		25 - 150	08/31/22 19:13	09/01/22 16:15	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
J	Reported value was between the limit of detection and the limit of quantitation.

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 30128077.01 WPDES

Job ID: 500-221226-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-613672/1-A
Matrix: Water
Analysis Batch: 613863

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 613672

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		08/31/22 19:13	09/01/22 15:35	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		08/31/22 19:13	09/01/22 15:35	1
NEtFOSA	<0.87		2.0	0.87	ng/L		08/31/22 19:13	09/01/22 15:35	1
NMeFOSA	<0.43		2.0	0.43	ng/L		08/31/22 19:13	09/01/22 15:35	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		08/31/22 19:13	09/01/22 15:35	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		08/31/22 19:13	09/01/22 15:35	1
NMeFOSE	<1.4		4.0	1.4	ng/L		08/31/22 19:13	09/01/22 15:35	1
NEtFOSE	<0.85		2.0	0.85	ng/L		08/31/22 19:13	09/01/22 15:35	1
4:2 FTS	<0.24		2.0	0.24	ng/L		08/31/22 19:13	09/01/22 15:35	1
6:2 FTS	<2.5		5.0	2.5	ng/L		08/31/22 19:13	09/01/22 15:35	1
8:2 FTS	<0.46		2.0	0.46	ng/L		08/31/22 19:13	09/01/22 15:35	1
10:2 FTS	<0.67		2.0	0.67	ng/L		08/31/22 19:13	09/01/22 15:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		08/31/22 19:13	09/01/22 15:35	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		08/31/22 19:13	09/01/22 15:35	1
F-53B Major	<0.24		2.0	0.24	ng/L		08/31/22 19:13	09/01/22 15:35	1
F-53B Minor	<0.32		2.0	0.32	ng/L		08/31/22 19:13	09/01/22 15:35	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	117		25 - 150				08/31/22 19:13	09/01/22 15:35	1
13C5 PFPeA	130		25 - 150				08/31/22 19:13	09/01/22 15:35	1
13C2 PFHxA	143		25 - 150				08/31/22 19:13	09/01/22 15:35	1
13C4 PFHpA	126		25 - 150				08/31/22 19:13	09/01/22 15:35	1
13C4 PFOA	144		25 - 150				08/31/22 19:13	09/01/22 15:35	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

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

Lab Sample ID: MB 320-613672/1-A
Matrix: Water
Analysis Batch: 613863

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 613672

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	141		25 - 150	08/31/22 19:13	09/01/22 15:35	1
13C2 PFDA	150		25 - 150	08/31/22 19:13	09/01/22 15:35	1
13C2 PFUnA	130		25 - 150	08/31/22 19:13	09/01/22 15:35	1
13C2 PFDoA	135		25 - 150	08/31/22 19:13	09/01/22 15:35	1
13C2 PFTeDA	132		25 - 150	08/31/22 19:13	09/01/22 15:35	1
13C2 PFHxDA	137		25 - 150	08/31/22 19:13	09/01/22 15:35	1
13C3 PFBS	133		25 - 150	08/31/22 19:13	09/01/22 15:35	1
18O2 PFHxS	133		25 - 150	08/31/22 19:13	09/01/22 15:35	1
13C4 PFOS	126		25 - 150	08/31/22 19:13	09/01/22 15:35	1
13C8 FOSA	121		10 - 150	08/31/22 19:13	09/01/22 15:35	1
d3-NMeFOSAA	121		25 - 150	08/31/22 19:13	09/01/22 15:35	1
d5-NEtFOSAA	125		25 - 150	08/31/22 19:13	09/01/22 15:35	1
d-N-MeFOSA-M	120		10 - 150	08/31/22 19:13	09/01/22 15:35	1
d-N-EtFOSA-M	114		10 - 150	08/31/22 19:13	09/01/22 15:35	1
d7-N-MeFOSE-M	122		10 - 150	08/31/22 19:13	09/01/22 15:35	1
d9-N-EtFOSE-M	116		10 - 150	08/31/22 19:13	09/01/22 15:35	1
M2-4:2 FTS	136		25 - 150	08/31/22 19:13	09/01/22 15:35	1
M2-6:2 FTS	136		25 - 150	08/31/22 19:13	09/01/22 15:35	1
M2-8:2 FTS	136		25 - 150	08/31/22 19:13	09/01/22 15:35	1
13C3 HFPO-DA	135		25 - 150	08/31/22 19:13	09/01/22 15:35	1
13C2 10:2 FTS	121		25 - 150	08/31/22 19:13	09/01/22 15:35	1

Lab Sample ID: LCS 320-613672/2-A
Matrix: Water
Analysis Batch: 613863

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 613672

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	45.1		ng/L		113	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	39.0		ng/L		98	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	46.7		ng/L		117	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	43.3		ng/L		108	60 - 135
Perfluorononanoic acid (PFNA)	40.0	43.3		ng/L		108	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	43.6		ng/L		109	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	42.4		ng/L		106	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	41.6		ng/L		104	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	40.6		ng/L		101	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	44.9		ng/L		112	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	43.3		ng/L		108	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	45.5		ng/L		114	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	37.0		ng/L		104	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	40.6		ng/L		108	60 - 135

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

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

Lab Sample ID: LCS 320-613672/2-A
Matrix: Water
Analysis Batch: 613863

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 613672

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.4		ng/L		100	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	42.2		ng/L		110	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	36.3		ng/L		98	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	40.6		ng/L		105	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	40.6		ng/L		105	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	36.5		ng/L		94	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	45.8		ng/L		114	60 - 135
NEtFOSA	40.0	45.5		ng/L		114	60 - 135
NMeFOSA	40.0	46.6		ng/L		117	60 - 135
NMeFOSAA	40.0	42.1		ng/L		105	60 - 135
NEtFOSAA	40.0	45.9		ng/L		115	60 - 135
NMeFOSE	40.0	43.9		ng/L		110	60 - 135
NEtFOSE	40.0	46.2		ng/L		116	60 - 135
4:2 FTS	37.5	39.5		ng/L		105	60 - 135
6:2 FTS	38.1	45.1		ng/L		118	60 - 135
8:2 FTS	38.4	38.6		ng/L		101	60 - 135
10:2 FTS	38.6	39.9		ng/L		103	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.0		ng/L		114	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.9		ng/L		110	60 - 135
F-53B Major	37.4	42.2		ng/L		113	60 - 135
F-53B Minor	37.8	37.6		ng/L		100	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	122		25 - 150
13C5 PFPeA	131		25 - 150
13C2 PFHxA	142		25 - 150
13C4 PFHpA	130		25 - 150
13C4 PFOA	136		25 - 150
13C5 PFNA	141		25 - 150
13C2 PFDA	144		25 - 150
13C2 PFUnA	145		25 - 150
13C2 PFDoA	137		25 - 150
13C2 PFTeDA	125		25 - 150
13C2 PFHxDA	139		25 - 150
13C3 PFBS	134		25 - 150
18O2 PFHxS	142		25 - 150
13C4 PFOS	134		25 - 150
13C8 FOSA	119		10 - 150
d3-NMeFOSAA	127		25 - 150
d5-NEtFOSAA	125		25 - 150
d-N-MeFOSA-M	114		10 - 150
d-N-EtFOSA-M	116		10 - 150

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

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

Lab Sample ID: LCS 320-613672/2-A
Matrix: Water
Analysis Batch: 613863

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 613672

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	120		10 - 150
d9-N-EtFOSE-M	116		10 - 150
M2-4:2 FTS	141		25 - 150
M2-6:2 FTS	128		25 - 150
M2-8:2 FTS	152 *		25 - 150
13C3 HFPO-DA	143		25 - 150
13C2 10:2 FTS	136		25 - 150

Lab Sample ID: LCSD 320-613672/3-A
Matrix: Water
Analysis Batch: 613863

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 613672

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	47.4		ng/L		118	60 - 135	6	30
Perfluoropentanoic acid (PFPeA)	40.0	41.3		ng/L		103	60 - 135	9	30
Perfluorohexanoic acid (PFHxA)	40.0	42.6		ng/L		107	60 - 135	9	30
Perfluoroheptanoic acid (PFHpA)	40.0	44.7		ng/L		112	60 - 135	4	30
Perfluorooctanoic acid (PFOA)	40.0	40.1		ng/L		100	60 - 135	8	30
Perfluorononanoic acid (PFNA)	40.0	42.9		ng/L		107	60 - 135	1	30
Perfluorodecanoic acid (PFDA)	40.0	42.3		ng/L		106	60 - 135	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	42.4		ng/L		106	60 - 135	0	30
Perfluorododecanoic acid (PFDoA)	40.0	42.3		ng/L		106	60 - 135	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	38.3		ng/L		96	60 - 135	6	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.3		ng/L		103	60 - 135	8	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	40.6		ng/L		102	60 - 135	6	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	40.8		ng/L		102	60 - 135	11	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.4		ng/L		108	60 - 135	4	30
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.3		ng/L		105	60 - 135	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	33.6		ng/L		92	60 - 135	8	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	40.8		ng/L		107	60 - 135	3	30
Perfluorooctanesulfonic acid (PFOS)	37.2	39.5		ng/L		106	60 - 135	8	30
Perfluorononanesulfonic acid (PFNS)	38.5	41.9		ng/L		109	60 - 135	3	30
Perfluorodecanesulfonic acid (PFDS)	38.6	37.2		ng/L		96	60 - 135	9	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	35.0		ng/L		90	60 - 135	4	30
Perfluorooctanesulfonamide (FOSA)	40.0	43.5		ng/L		109	60 - 135	5	30
NEtFOSA	40.0	42.8		ng/L		107	60 - 135	6	30
NMeFOSA	40.0	41.9		ng/L		105	60 - 135	11	30
NMeFOSAA	40.0	41.5		ng/L		104	60 - 135	1	30

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

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

Lab Sample ID: LCSD 320-613672/3-A
Matrix: Water
Analysis Batch: 613863

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 613672

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	41.9		ng/L		105	60 - 135	9	30
NMeFOSE	40.0	39.4		ng/L		99	60 - 135	11	30
NEtFOSE	40.0	46.6		ng/L		117	60 - 135	1	30
4:2 FTS	37.5	40.0		ng/L		107	60 - 135	1	30
6:2 FTS	38.1	37.8		ng/L		99	60 - 135	17	30
8:2 FTS	38.4	41.1		ng/L		107	60 - 135	6	30
10:2 FTS	38.6	40.6		ng/L		105	60 - 135	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.4		ng/L		110	60 - 135	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.9		ng/L		110	60 - 135	0	30
F-53B Major	37.4	41.6		ng/L		111	60 - 135	2	30
F-53B Minor	37.8	35.7		ng/L		95	60 - 135	5	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	109		25 - 150
13C5 PFPeA	123		25 - 150
13C2 PFHxA	135		25 - 150
13C4 PFHpA	131		25 - 150
13C4 PFOA	141		25 - 150
13C5 PFNA	138		25 - 150
13C2 PFDA	139		25 - 150
13C2 PFUnA	130		25 - 150
13C2 PFDoA	126		25 - 150
13C2 PFTeDA	129		25 - 150
13C2 PFHxDA	136		25 - 150
13C3 PFBS	131		25 - 150
18O2 PFHxS	135		25 - 150
13C4 PFOS	126		25 - 150
13C8 FOSA	115		10 - 150
d3-NMeFOSAA	116		25 - 150
d5-NEtFOSAA	117		25 - 150
d-N-MeFOSA-M	113		10 - 150
d-N-EtFOSA-M	112		10 - 150
d7-N-MeFOSE-M	120		10 - 150
d9-N-EtFOSE-M	112		10 - 150
M2-4:2 FTS	134		25 - 150
M2-6:2 FTS	138		25 - 150
M2-8:2 FTS	135		25 - 150
13C3 HFPO-DA	130		25 - 150
13C2 10:2 FTS	120		25 - 150

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

Client Sample ID: V-200-A
Date Collected: 08/22/22 12:30
Date Received: 08/23/22 09:45

Lab Sample ID: 500-221226-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			613672	AM	EET SAC	08/31/22 19:13
Total/NA	Analysis	537 (modified)		1	614246	D1R	EET SAC	09/02/22 22:33

Client Sample ID: V-900-A
Date Collected: 08/22/22 12:35
Date Received: 08/23/22 09:45

Lab Sample ID: 500-221226-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			613672	AM	EET SAC	08/31/22 19:13
Total/NA	Analysis	537 (modified)		1	613863	RS1	EET SAC	09/01/22 16:15

Laboratory References:

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 30128077.01 WPDES

Job ID: 500-221226-1

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

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

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

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

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski

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 # 30128077.01 (WPDES)

Project Manager: Lisa Rutkowski
Email: N/A
Tel/Fax: N/A

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
 TAT if different from Below _____
 2 weeks
 1 week
 2 days
 1 day

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)
V-200-A	8-22-22	12:30	G	W	2	N	N	X
V-900-A	8-22-22	12:35	G	W	2	N	N	X



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

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 Unknown

Special Instructions/QC Requirements & Comments:
 7-Day TAT Max or Prelim Report by Day 7

Sampler: Jacob Reminger
Lab Contact: Sandie Fredrick
Date: 8-22-22
Carrier: FedEx
COC No.: 1 of 1 COCs

For Lab Use Only:
Walk-in Client: _____
Lab Sampling: _____
Lab Project Number: 50015522

Sample Specific Notes:
 System Influent
 System Effluent

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal by Lab Archive for _____ Months

Therm ID No.: _____
Cooler Temp. (°C): Obs'd: _____ Corrd: _____

Received by: Fed Ex
Received by: FEI/SA
Received in Laboratory by: _____

Company: Barley Excavating
Company: _____
Company: _____

Date/Time: 8-22-22/1306
Date/Time: _____
Date/Time: _____

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-221226-1

Login Number: 221226

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 08/23/22 07:42 PM

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	1831847
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	2.2C
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.	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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Environment Testing America

Sacramento Sample Receiving Notes



500-221226 Field Sheet

Tracking #: 5887-6288-1439

Job: _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / 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-09 Corr. Factor: (+/-) 0 °C

Ice Wet Gel _____ Other _____

Cooler Custody Seal: 1831847

Cooler ID: _____

Temp Observed: 2.2 °C Corrected: 2.2 °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 checked="" type="checkbox"/>	<input type="checkbox"/>

Initials: JL Date: 8/23/22

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples require splitting/compositing?	<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, 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: 8-23-22

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<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: 8-23-22



Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221226-1

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)
500-221226-1	V-200-A	128	135	143	139	146	135	137	136
500-221226-2	V-900-A	156 *	165 *	163 *	162 *	172 *	168 *	162 *	148
LCS 320-613672/2-A	Lab Control Sample	122	131	142	130	136	141	144	145
LCSD 320-613672/3-A	Lab Control Sample Dup	109	123	135	131	141	138	139	130
MB 320-613672/1-A	Method Blank	117	130	143	126	144	141	150	130

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)
500-221226-1	V-200-A	113	111	117	148	148	128	125	117
500-221226-2	V-900-A	146	142	154 *	160 *	172 *	153 *	143	135
LCS 320-613672/2-A	Lab Control Sample	137	125	139	134	142	134	119	127
LCSD 320-613672/3-A	Lab Control Sample Dup	126	129	136	131	135	126	115	116
MB 320-613672/1-A	Method Blank	135	132	137	133	133	126	121	121

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)
500-221226-1	V-200-A	122	103	103	97	97	143	138	124
500-221226-2	V-900-A	141	124	129	122	121	161 *	173 *	149
LCS 320-613672/2-A	Lab Control Sample	125	114	116	120	116	141	128	152 *
LCSD 320-613672/3-A	Lab Control Sample Dup	117	113	112	120	112	134	138	135
MB 320-613672/1-A	Method Blank	125	120	114	122	116	136	136	136

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-221226-1	V-200-A	142	111
500-221226-2	V-900-A	171 *	139
LCS 320-613672/2-A	Lab Control Sample	143	136
LCSD 320-613672/3-A	Lab Control Sample Dup	130	120
MB 320-613672/1-A	Method Blank	135	121

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 30128077.01 WPDES

Job ID: 500-221226-1

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

Eurofins Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-221539-1

Client Project/Site: Marinette, WI 30128077.01 WPDES

For:

ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski



Authorized for release by:

9/8/2022 11:34:56 AM

Sandie Fredrick, Project Manager II
(920)261-1660

Sandra.Fredrick@et.eurofinsus.com

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

Job ID: 500-221539-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-221539-1

Comments

No additional comments.

Receipt

The samples were received on 8/30/2022 10:20 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 1.1° C.

LCMS

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

Organic Prep

Method 3535: The following sample in preparation batch 320-614495 was yellow in color prior extraction. 500-221539-1 and 500-221539-2

preparation batch 320-614495

Method: PFC_IDA_WI

Matrix: Water

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-614495.

Method: PFC_IDA_WI

Matrix: Water

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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 30128077.01 WPDES

Job ID: 500-221539-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-221539-1	V-200-A	Water	08/29/22 10:00	08/30/22 10:20
500-221539-2	V-900-A	Water	08/29/22 10:05	08/30/22 10:20

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

Client Sample ID: V-200-A

Lab Sample ID: 500-221539-1

Date Collected: 08/29/22 10:00

Matrix: Water

Date Received: 08/30/22 10:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	21		4.2	2.0	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluoropentanoic acid (PFPeA)	93		1.7	0.41	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorohexanoic acid (PFHxA)	54		1.7	0.49	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluoroheptanoic acid (PFHpA)	51		1.7	0.21	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorooctanoic acid (PFOA)	110		1.7	0.71	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorononanoic acid (PFNA)	18		1.7	0.23	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorodecanoic acid (PFDA)	15		1.7	0.26	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluoroundecanoic acid (PFUnA)	7.0		1.7	0.92	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorododecanoic acid (PFDoA)	0.52	J	1.7	0.46	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorotetradecanoic acid (PFTeA)	<0.61		1.7	0.61	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.75		1.7	0.75	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.79		1.7	0.79	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorobutanesulfonic acid (PFBS)	4.8		1.7	0.17	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluoropentanesulfonic acid (PFPeS)	0.40	J	1.7	0.25	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorohexanesulfonic acid (PFHxS)	10		1.7	0.48	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluoroheptanesulfonic acid (PFHpS)	0.34	J	1.7	0.16	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorooctanesulfonic acid (PFOS)	78		1.7	0.45	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluoronanesulfonic acid (PFNS)	<0.31		1.7	0.31	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorodecanesulfonic acid (PFDS)	<0.27		1.7	0.27	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorododecanesulfonic acid (PFDoS)	<0.81		1.7	0.81	ng/L		09/05/22 10:52	09/08/22 01:12	1
Perfluorooctanesulfonamide (FOSA)	2.9		1.7	0.82	ng/L		09/05/22 10:52	09/08/22 01:12	1
NEtFOSA	<0.73		1.7	0.73	ng/L		09/05/22 10:52	09/08/22 01:12	1
NMeFOSA	<0.36		1.7	0.36	ng/L		09/05/22 10:52	09/08/22 01:12	1
NMeFOSAA	<1.0		4.2	1.0	ng/L		09/05/22 10:52	09/08/22 01:12	1
NEtFOSAA	<1.1		4.2	1.1	ng/L		09/05/22 10:52	09/08/22 01:12	1
NMeFOSE	<1.2		3.4	1.2	ng/L		09/05/22 10:52	09/08/22 01:12	1
NEtFOSE	<0.71		1.7	0.71	ng/L		09/05/22 10:52	09/08/22 01:12	1
4:2 FTS	0.30	J	1.7	0.20	ng/L		09/05/22 10:52	09/08/22 01:12	1
6:2 FTS	65		4.2	2.1	ng/L		09/05/22 10:52	09/08/22 01:12	1
8:2 FTS	97		1.7	0.39	ng/L		09/05/22 10:52	09/08/22 01:12	1
10:2 FTS	11		1.7	0.56	ng/L		09/05/22 10:52	09/08/22 01:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		09/05/22 10:52	09/08/22 01:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		09/05/22 10:52	09/08/22 01:12	1
F-53B Major	<0.20		1.7	0.20	ng/L		09/05/22 10:52	09/08/22 01:12	1
F-53B Minor	<0.27		1.7	0.27	ng/L		09/05/22 10:52	09/08/22 01:12	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	82		25 - 150				09/05/22 10:52	09/08/22 01:12	1
13C5 PFPeA	85		25 - 150				09/05/22 10:52	09/08/22 01:12	1

Eurofins Chicago

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

Client Sample ID: V-200-A

Lab Sample ID: 500-221539-1

Date Collected: 08/29/22 10:00

Matrix: Water

Date Received: 08/30/22 10:20

Method: 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 PFHxA	99		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C4 PFHpA	91		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C4 PFOA	101		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C5 PFNA	105		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C2 PFDA	111		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C2 PFUnA	106		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C2 PFDoA	112		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C2 PFTeDA	92		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C2 PFHxDA	108		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C3 PFBS	93		25 - 150	09/05/22 10:52	09/08/22 01:12	1
18O2 PFHxS	95		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C4 PFOS	90		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C8 FOSA	91		10 - 150	09/05/22 10:52	09/08/22 01:12	1
d3-NMeFOSAA	94		25 - 150	09/05/22 10:52	09/08/22 01:12	1
d5-NEtFOSAA	95		25 - 150	09/05/22 10:52	09/08/22 01:12	1
d-N-MeFOSA-M	78		10 - 150	09/05/22 10:52	09/08/22 01:12	1
d-N-EtFOSA-M	75		10 - 150	09/05/22 10:52	09/08/22 01:12	1
d7-N-MeFOSE-M	84		10 - 150	09/05/22 10:52	09/08/22 01:12	1
d9-N-EtFOSE-M	83		10 - 150	09/05/22 10:52	09/08/22 01:12	1
M2-4:2 FTS	84		25 - 150	09/05/22 10:52	09/08/22 01:12	1
M2-6:2 FTS	79		25 - 150	09/05/22 10:52	09/08/22 01:12	1
M2-8:2 FTS	94		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C3 HFPO-DA	96		25 - 150	09/05/22 10:52	09/08/22 01:12	1
13C2 10:2 FTS	117		25 - 150	09/05/22 10:52	09/08/22 01:12	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

Client Sample ID: V-900-A

Lab Sample ID: 500-221539-2

Date Collected: 08/29/22 10:05

Matrix: Water

Date Received: 08/30/22 10:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.0	J	4.1	2.0	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluoropentanoic acid (PFPeA)	<0.40		1.6	0.40	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorohexanoic acid (PFHxA)	<0.47		1.6	0.47	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluoroheptanoic acid (PFHpA)	<0.20		1.6	0.20	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorooctanoic acid (PFOA)	<0.69		1.6	0.69	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorononanoic acid (PFNA)	<0.22		1.6	0.22	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorodecanoic acid (PFDA)	<0.25		1.6	0.25	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluoroundecanoic acid (PFUnA)	<0.89		1.6	0.89	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorododecanoic acid (PFDoA)	<0.45		1.6	0.45	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.6	1.1	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorotetradecanoic acid (PFTeA)	<0.59		1.6	0.59	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.72		1.6	0.72	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.76		1.6	0.76	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorobutanesulfonic acid (PFBS)	<0.16		1.6	0.16	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluoropentanesulfonic acid (PFPeS)	<0.24		1.6	0.24	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorohexanesulfonic acid (PFHxS)	<0.46		1.6	0.46	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.15		1.6	0.15	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorooctanesulfonic acid (PFOS)	<0.44		1.6	0.44	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorononanesulfonic acid (PFNS)	<0.30		1.6	0.30	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorodecanesulfonic acid (PFDS)	<0.26		1.6	0.26	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorododecanesulfonic acid (PFDoS)	<0.79		1.6	0.79	ng/L		09/05/22 10:52	09/08/22 01:22	1
Perfluorooctanesulfonamide (FOSA)	<0.80		1.6	0.80	ng/L		09/05/22 10:52	09/08/22 01:22	1
NEtFOSA	<0.71		1.6	0.71	ng/L		09/05/22 10:52	09/08/22 01:22	1
NMeFOSA	<0.35		1.6	0.35	ng/L		09/05/22 10:52	09/08/22 01:22	1
NMeFOSAA	<0.98		4.1	0.98	ng/L		09/05/22 10:52	09/08/22 01:22	1
NEtFOSAA	<1.1		4.1	1.1	ng/L		09/05/22 10:52	09/08/22 01:22	1
NMeFOSE	<1.1		3.3	1.1	ng/L		09/05/22 10:52	09/08/22 01:22	1
NEtFOSE	<0.69		1.6	0.69	ng/L		09/05/22 10:52	09/08/22 01:22	1
4:2 FTS	<0.20		1.6	0.20	ng/L		09/05/22 10:52	09/08/22 01:22	1
6:2 FTS	<2.0		4.1	2.0	ng/L		09/05/22 10:52	09/08/22 01:22	1
8:2 FTS	<0.37		1.6	0.37	ng/L		09/05/22 10:52	09/08/22 01:22	1
10:2 FTS	<0.55		1.6	0.55	ng/L		09/05/22 10:52	09/08/22 01:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.33		1.6	0.33	ng/L		09/05/22 10:52	09/08/22 01:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.2		3.3	1.2	ng/L		09/05/22 10:52	09/08/22 01:22	1
F-53B Major	<0.20		1.6	0.20	ng/L		09/05/22 10:52	09/08/22 01:22	1
F-53B Minor	<0.26		1.6	0.26	ng/L		09/05/22 10:52	09/08/22 01:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	90		25 - 150				09/05/22 10:52	09/08/22 01:22	1
13C5 PFPeA	89		25 - 150				09/05/22 10:52	09/08/22 01:22	1
13C2 PFHxA	102		25 - 150				09/05/22 10:52	09/08/22 01:22	1
13C4 PFHpA	93		25 - 150				09/05/22 10:52	09/08/22 01:22	1
13C4 PFOA	100		25 - 150				09/05/22 10:52	09/08/22 01:22	1
13C5 PFNA	99		25 - 150				09/05/22 10:52	09/08/22 01:22	1
13C2 PFDA	94		25 - 150				09/05/22 10:52	09/08/22 01:22	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

Client Sample ID: V-900-A

Lab Sample ID: 500-221539-2

Date Collected: 08/29/22 10:05

Matrix: Water

Date Received: 08/30/22 10:20

Method: 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 PFluA	83		25 - 150	09/05/22 10:52	09/08/22 01:22	1
13C2 PFlDoA	83		25 - 150	09/05/22 10:52	09/08/22 01:22	1
13C2 PFlTeDA	87		25 - 150	09/05/22 10:52	09/08/22 01:22	1
13C2 PFlHxDA	109		25 - 150	09/05/22 10:52	09/08/22 01:22	1
13C3 PFlBS	85		25 - 150	09/05/22 10:52	09/08/22 01:22	1
18O2 PFlHxS	89		25 - 150	09/05/22 10:52	09/08/22 01:22	1
13C4 PFlOS	82		25 - 150	09/05/22 10:52	09/08/22 01:22	1
13C8 FOSA	77		10 - 150	09/05/22 10:52	09/08/22 01:22	1
d3-NMeFOSAA	71		25 - 150	09/05/22 10:52	09/08/22 01:22	1
d5-NEtFOSAA	71		25 - 150	09/05/22 10:52	09/08/22 01:22	1
d-N-MeFOSA-M	66		10 - 150	09/05/22 10:52	09/08/22 01:22	1
d-N-EtFOSA-M	63		10 - 150	09/05/22 10:52	09/08/22 01:22	1
d7-N-MeFOSE-M	68		10 - 150	09/05/22 10:52	09/08/22 01:22	1
d9-N-EtFOSE-M	70		10 - 150	09/05/22 10:52	09/08/22 01:22	1
M2-4:2 FTS	75		25 - 150	09/05/22 10:52	09/08/22 01:22	1
M2-6:2 FTS	71		25 - 150	09/05/22 10:52	09/08/22 01:22	1
M2-8:2 FTS	71		25 - 150	09/05/22 10:52	09/08/22 01:22	1
13C3 HFPO-DA	93		25 - 150	09/05/22 10:52	09/08/22 01:22	1
13C2 10:2 FTS	78		25 - 150	09/05/22 10:52	09/08/22 01:22	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

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 30128077.01 WPDES

Job ID: 500-221539-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-614495/1-A
Matrix: Water
Analysis Batch: 614484

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 614495

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		09/05/22 10:52	09/06/22 12:33	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		09/05/22 10:52	09/06/22 12:33	1
NEtFOSA	<0.87		2.0	0.87	ng/L		09/05/22 10:52	09/06/22 12:33	1
NMeFOSA	<0.43		2.0	0.43	ng/L		09/05/22 10:52	09/06/22 12:33	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		09/05/22 10:52	09/06/22 12:33	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		09/05/22 10:52	09/06/22 12:33	1
NMeFOSE	<1.4		4.0	1.4	ng/L		09/05/22 10:52	09/06/22 12:33	1
NEtFOSE	<0.85		2.0	0.85	ng/L		09/05/22 10:52	09/06/22 12:33	1
4:2 FTS	<0.24		2.0	0.24	ng/L		09/05/22 10:52	09/06/22 12:33	1
6:2 FTS	<2.5		5.0	2.5	ng/L		09/05/22 10:52	09/06/22 12:33	1
8:2 FTS	<0.46		2.0	0.46	ng/L		09/05/22 10:52	09/06/22 12:33	1
10:2 FTS	<0.67		2.0	0.67	ng/L		09/05/22 10:52	09/06/22 12:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		09/05/22 10:52	09/06/22 12:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		09/05/22 10:52	09/06/22 12:33	1
F-53B Major	<0.24		2.0	0.24	ng/L		09/05/22 10:52	09/06/22 12:33	1
F-53B Minor	<0.32		2.0	0.32	ng/L		09/05/22 10:52	09/06/22 12:33	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	87		25 - 150				09/05/22 10:52	09/06/22 12:33	1
13C5 PFPeA	94		25 - 150				09/05/22 10:52	09/06/22 12:33	1
13C2 PFHxA	99		25 - 150				09/05/22 10:52	09/06/22 12:33	1
13C4 PFHpA	92		25 - 150				09/05/22 10:52	09/06/22 12:33	1
13C4 PFOA	101		25 - 150				09/05/22 10:52	09/06/22 12:33	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

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

Lab Sample ID: MB 320-614495/1-A
Matrix: Water
Analysis Batch: 614484

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 614495

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	101		25 - 150	09/05/22 10:52	09/06/22 12:33	1
13C2 PFDA	102		25 - 150	09/05/22 10:52	09/06/22 12:33	1
13C2 PFUnA	91		25 - 150	09/05/22 10:52	09/06/22 12:33	1
13C2 PFDoA	96		25 - 150	09/05/22 10:52	09/06/22 12:33	1
13C2 PFTeDA	98		25 - 150	09/05/22 10:52	09/06/22 12:33	1
13C2 PFHxDA	95		25 - 150	09/05/22 10:52	09/06/22 12:33	1
13C3 PFBS	99		25 - 150	09/05/22 10:52	09/06/22 12:33	1
18O2 PFHxS	103		25 - 150	09/05/22 10:52	09/06/22 12:33	1
13C4 PFOS	95		25 - 150	09/05/22 10:52	09/06/22 12:33	1
13C8 FOSA	81		10 - 150	09/05/22 10:52	09/06/22 12:33	1
d3-NMeFOSAA	81		25 - 150	09/05/22 10:52	09/06/22 12:33	1
d5-NEtFOSAA	84		25 - 150	09/05/22 10:52	09/06/22 12:33	1
d-N-MeFOSA-M	76		10 - 150	09/05/22 10:52	09/06/22 12:33	1
d-N-EtFOSA-M	78		10 - 150	09/05/22 10:52	09/06/22 12:33	1
d7-N-MeFOSE-M	81		10 - 150	09/05/22 10:52	09/06/22 12:33	1
d9-N-EtFOSE-M	74		10 - 150	09/05/22 10:52	09/06/22 12:33	1
M2-4:2 FTS	97		25 - 150	09/05/22 10:52	09/06/22 12:33	1
M2-6:2 FTS	94		25 - 150	09/05/22 10:52	09/06/22 12:33	1
M2-8:2 FTS	95		25 - 150	09/05/22 10:52	09/06/22 12:33	1
13C3 HFPO-DA	97		25 - 150	09/05/22 10:52	09/06/22 12:33	1
13C2 10:2 FTS	100		25 - 150	09/05/22 10:52	09/06/22 12:33	1

Lab Sample ID: LCS 320-614495/2-A
Matrix: Water
Analysis Batch: 614484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 614495

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	41.9		ng/L		105	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	43.1		ng/L		108	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	44.8		ng/L		112	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	42.5		ng/L		106	60 - 135
Perfluorononanoic acid (PFNA)	40.0	44.5		ng/L		111	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	37.5		ng/L		94	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	42.1		ng/L		105	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	40.2		ng/L		100	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	39.7		ng/L		99	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	41.8		ng/L		104	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	40.6		ng/L		102	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	47.1		ng/L		118	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	37.8		ng/L		106	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	38.1		ng/L		102	60 - 135

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

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

Lab Sample ID: LCS 320-614495/2-A
Matrix: Water
Analysis Batch: 614484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 614495

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.1		ng/L		99	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	41.5		ng/L		109	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	38.3		ng/L		103	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	39.4		ng/L		102	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	37.2		ng/L		96	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	35.5		ng/L		92	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	45.4		ng/L		113	60 - 135
NEtFOSA	40.0	43.5		ng/L		109	60 - 135
NMeFOSA	40.0	43.5		ng/L		109	60 - 135
NMeFOSAA	40.0	42.6		ng/L		107	60 - 135
NEtFOSAA	40.0	42.6		ng/L		106	60 - 135
NMeFOSE	40.0	40.6		ng/L		102	60 - 135
NEtFOSE	40.0	41.4		ng/L		103	60 - 135
4:2 FTS	37.5	41.6		ng/L		111	60 - 135
6:2 FTS	38.1	42.4		ng/L		111	60 - 135
8:2 FTS	38.4	44.3		ng/L		115	60 - 135
10:2 FTS	38.6	35.0		ng/L		91	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.3		ng/L		112	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.8		ng/L		110	60 - 135
F-53B Major	37.4	40.9		ng/L		110	60 - 135
F-53B Minor	37.8	37.9		ng/L		100	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	83		25 - 150
13C5 PFPeA	93		25 - 150
13C2 PFHxA	92		25 - 150
13C4 PFHpA	91		25 - 150
13C4 PFOA	97		25 - 150
13C5 PFNA	97		25 - 150
13C2 PFDA	99		25 - 150
13C2 PFUnA	97		25 - 150
13C2 PFDoA	93		25 - 150
13C2 PFTeDA	87		25 - 150
13C2 PFHxDA	95		25 - 150
13C3 PFBS	95		25 - 150
18O2 PFHxS	97		25 - 150
13C4 PFOS	92		25 - 150
13C8 FOSA	80		10 - 150
d3-NMeFOSAA	81		25 - 150
d5-NEtFOSAA	86		25 - 150
d-N-MeFOSA-M	69		10 - 150
d-N-EtFOSA-M	70		10 - 150

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

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

Lab Sample ID: LCS 320-614495/2-A
Matrix: Water
Analysis Batch: 614484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 614495

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	79		10 - 150
d9-N-EtFOSE-M	78		10 - 150
M2-4:2 FTS	90		25 - 150
M2-6:2 FTS	88		25 - 150
M2-8:2 FTS	84		25 - 150
13C3 HFPO-DA	94		25 - 150
13C2 10:2 FTS	96		25 - 150

Lab Sample ID: LCSD 320-614495/3-A
Matrix: Water
Analysis Batch: 614484

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 614495

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	43.4		ng/L		109	60 - 135	4	30
Perfluoropentanoic acid (PFPeA)	40.0	42.4		ng/L		106	60 - 135	1	30
Perfluorohexanoic acid (PFHxA)	40.0	42.0		ng/L		105	60 - 135	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.7		ng/L		109	60 - 135	2	30
Perfluorooctanoic acid (PFOA)	40.0	41.4		ng/L		104	60 - 135	3	30
Perfluorononanoic acid (PFNA)	40.0	41.3		ng/L		103	60 - 135	8	30
Perfluorodecanoic acid (PFDA)	40.0	37.4		ng/L		94	60 - 135	0	30
Perfluoroundecanoic acid (PFUnA)	40.0	43.1		ng/L		108	60 - 135	2	30
Perfluorododecanoic acid (PFDoA)	40.0	40.0		ng/L		100	60 - 135	0	30
Perfluorotridecanoic acid (PFTriA)	40.0	40.1		ng/L		100	60 - 135	1	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.8		ng/L		102	60 - 135	2	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	40.2		ng/L		101	60 - 135	1	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	46.3		ng/L		116	60 - 135	2	30
Perfluorobutanesulfonic acid (PFBS)	35.5	34.1		ng/L		96	60 - 135	10	30
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.3		ng/L		97	60 - 135	5	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.2		ng/L		97	60 - 135	3	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	41.0		ng/L		107	60 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	38.8		ng/L		104	60 - 135	1	30
Perfluorononanesulfonic acid (PFNS)	38.5	41.9		ng/L		109	60 - 135	6	30
Perfluorodecanesulfonic acid (PFDS)	38.6	40.6		ng/L		105	60 - 135	9	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	38.9		ng/L		100	60 - 135	9	30
Perfluorooctanesulfonamide (FOSA)	40.0	46.1		ng/L		115	60 - 135	1	30
NEtFOSA	40.0	41.9		ng/L		105	60 - 135	4	30
NMeFOSA	40.0	43.7		ng/L		109	60 - 135	0	30
NMeFOSAA	40.0	38.1		ng/L		95	60 - 135	11	30

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

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

Lab Sample ID: LCSD 320-614495/3-A
Matrix: Water
Analysis Batch: 614484

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 614495

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	39.3		ng/L		98	60 - 135	8	30
NMeFOSE	40.0	41.5		ng/L		104	60 - 135	2	30
NEtFOSE	40.0	44.1		ng/L		110	60 - 135	6	30
4:2 FTS	37.5	35.3		ng/L		94	60 - 135	16	30
6:2 FTS	38.1	40.6		ng/L		107	60 - 135	4	30
8:2 FTS	38.4	42.0		ng/L		109	60 - 135	5	30
10:2 FTS	38.6	35.6		ng/L		92	60 - 135	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.3		ng/L		112	60 - 135	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.8		ng/L		97	60 - 135	12	30
F-53B Major	37.4	39.0		ng/L		104	60 - 135	5	30
F-53B Minor	37.8	38.6		ng/L		102	60 - 135	2	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	97		25 - 150
13C5 PFPeA	98		25 - 150
13C2 PFHxA	102		25 - 150
13C4 PFHpA	103		25 - 150
13C4 PFOA	112		25 - 150
13C5 PFNA	111		25 - 150
13C2 PFDA	118		25 - 150
13C2 PFUnA	102		25 - 150
13C2 PFDoA	99		25 - 150
13C2 PFTeDA	100		25 - 150
13C2 PFHxDA	103		25 - 150
13C3 PFBS	111		25 - 150
18O2 PFHxS	108		25 - 150
13C4 PFOS	100		25 - 150
13C8 FOSA	88		10 - 150
d3-NMeFOSAA	87		25 - 150
d5-NEtFOSAA	94		25 - 150
d-N-MeFOSA-M	78		10 - 150
d-N-EtFOSA-M	77		10 - 150
d7-N-MeFOSE-M	85		10 - 150
d9-N-EtFOSE-M	86		10 - 150
M2-4:2 FTS	110		25 - 150
M2-6:2 FTS	103		25 - 150
M2-8:2 FTS	96		25 - 150
13C3 HFPO-DA	116		25 - 150
13C2 10:2 FTS	109		25 - 150

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

Client Sample ID: V-200-A

Date Collected: 08/29/22 10:00

Date Received: 08/30/22 10:20

Lab Sample ID: 500-221539-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			614495	FX	EET SAC	09/05/22 10:52
Total/NA	Analysis	537 (modified)		1	615059	S1M	EET SAC	09/08/22 01:12

Client Sample ID: V-900-A

Date Collected: 08/29/22 10:05

Date Received: 08/30/22 10:20

Lab Sample ID: 500-221539-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			614495	FX	EET SAC	09/05/22 10:52
Total/NA	Analysis	537 (modified)		1	615059	S1M	EET SAC	09/08/22 01:22

Laboratory References:

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 30128077.01 WPDES

Job ID: 500-221539-1

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

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

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.487.7248

Regulatory Program: DW NPDES RCRA Other:

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

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 # 30128077.01 (WPDES)		Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A		Sampler: Jacob Rominger Date: 8-29-22 Lab Contact: Sandie Fredrick Carrier: FedEx		COC No: 1 1 of 1 COCs			
Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Filtered Sample (Y/N) Perform MS / MSD (Y/N) EPA 837 Modified (36 Compounds)		500-221539 COC 		For Lab Use Only: Walk-In Client: Lab Sampling: Lab Project Number 50015522 500-221539 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 837 Modified (36 Compounds)	Sample Specific Notes
V-200-A	8-29-22	10:00	G	W	2	N	N	X	System Influent
V-900-A	↓	10:05	G	W	2	N	N	X	System Effluent
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other 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. <input checked="" type="checkbox"/> Non-Hazardous <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7 5 day - TAT									
Custody Seals Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.: 1831844		Cooler Temp. (°C) Obs'd: 6 Cor'd: 11		Therm ID No.: 626			
Relinquished by: Jacob Rominger		Company: Berley Excavating		Date/Time: 8-29-22/11:00		Received by: FedEx		Company:	
Relinquished by:		Company:		Date/Time:		Received by:		Company: SETAC	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:	

Regulatory Program: DW NPDES RCRA Other:

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 # 30128077.01 (WPDES)

Project Manager: Lisa Rutkowski
Email: N/A
Tel/Fax: N/A

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below _____
 2 weeks
 1 week
 2 days
 1 day

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)
V-200-A	8-29-22	10:00	G	W	2	N	N	X
V-900-A	↓	10:05	G	W	2	N	N	X



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other
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

Special Instructions/QC Requirements & Comments:
7-Day TAT Max or Prelim Report by Day 7
Sday-TAT

Sampler: Jacob Rominger
Lab Contact: Sandie Fredrick
Date: 8-29-22
Carrier: FedEx
COC No.: 1 of 1 COCs

Project Manager: Lisa Rutkowski
Received by: Jacob Rominger
Date/Time: 8-29-22/11:00
Company: Barley Excavating

Received by: [Signature]
Date/Time: 8-30-22
Company: W20

Received in Laboratory by: [Signature]

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-221539-1

Login Number: 221539

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 08/30/22 06:38 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1831844
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	1.1C
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.	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 America

Sacramento Sample Receiving Notes



Tracking #: 5887 6288 1509

Job: _____

SO (PO) / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / 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: <u>LOB</u> Corr. Factor: (+/-) <u>NA</u> °C	Notes: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____																				
Ice <input checked="" type="checkbox"/> Wet <input checked="" type="checkbox"/> Gel _____ Other _____																					
Cooler Custody Seal: <u>1831844</u>																					
Cooler ID: _____																					
Temp Observed: <u>11</u> °C Corrected: <u>1.1</u> °C From: Temp Blank <input checked="" type="checkbox"/> Sample <input type="checkbox"/>																					
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: <u>SO</u> Date: <u>8-30-22</u>																					
Unpacking/Labeling The Samples Yes No NA	Trizma Lot #(s): _____ _____ _____																				
COC is complete w/o discrepancies? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Samples compromised/tampered with? <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>																					
Containers are not broken or leaking? <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 checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<table border="0"> <tr> <td>Login Completion</td> <td>Yes</td> <td>No</td> <td>NA</td> </tr> <tr> <td>Receipt Temperature on COC?</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Samples received within hold time?</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>NCM Filed?</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Log Release checked in TALS?</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Login Completion	Yes	No	NA	Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NCM Filed?	<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"/>
Login Completion		Yes	No	NA																	
Receipt Temperature on COC?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
Samples received within hold time?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
NCM Filed?		<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"/>																	
Samples require splitting/compositing? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Samples w/o discrepancies? <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <u>SO F-3000</u>																					
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? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (Methods 314, 331, 6850)																					
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: <u>SO</u> Date: <u>8-30-22</u>	Initials: <u>SO</u> Date: <u>8-30-22</u>																				

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 WPDES

Job ID: 500-221539-1

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)
500-221539-1	V-200-A	82	85	99	91	101	105	111	106
500-221539-2	V-900-A	90	89	102	93	100	99	94	83
LCS 320-614495/2-A	Lab Control Sample	83	93	92	91	97	97	99	97
LCSD 320-614495/3-A	Lab Control Sample Dup	97	98	102	103	112	111	118	102
MB 320-614495/1-A	Method Blank	87	94	99	92	101	101	102	91

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)
500-221539-1	V-200-A	112	92	108	93	95	90	91	94
500-221539-2	V-900-A	83	87	109	85	89	82	77	71
LCS 320-614495/2-A	Lab Control Sample	93	87	95	95	97	92	80	81
LCSD 320-614495/3-A	Lab Control Sample Dup	99	100	103	111	108	100	88	87
MB 320-614495/1-A	Method Blank	96	98	95	99	103	95	81	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)
500-221539-1	V-200-A	95	78	75	84	83	84	79	94
500-221539-2	V-900-A	71	66	63	68	70	75	71	71
LCS 320-614495/2-A	Lab Control Sample	86	69	70	79	78	90	88	84
LCSD 320-614495/3-A	Lab Control Sample Dup	94	78	77	85	86	110	103	96
MB 320-614495/1-A	Method Blank	84	76	78	81	74	97	94	95

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-221539-1	V-200-A	96	117
500-221539-2	V-900-A	93	78
LCS 320-614495/2-A	Lab Control Sample	94	96
LCSD 320-614495/3-A	Lab Control Sample Dup	116	109
MB 320-614495/1-A	Method Blank	97	100

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 30128077.01 WPDES

Job ID: 500-221539-1

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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Appendix C

Ditch A Flow Monitoring and Reporting Methods

Ditch A Flow Monitoring and Reporting Methods – Revised April 2023

Background

Per the Wisconsin Department of Natural Resources' (WDNR's) request in a letter dated April 20, 2021, Tyco Fire Products LP (Tyco) will collect the data outlined below as part of the Operation, Maintenance, and Long-Term Monitoring Plan (OM&M Plan). Calculation methods for each parameter are provided herein.

- Record or estimate the stream flow in Ditch A during each weekly monitoring event.
- Record or estimate the duration of Ditch A check dam overtopping events and the depth of flow above the check dam.
- Collect a per- and polyfluoroalkyl substances (PFAS) sample from the surface water in Ditch A at location downstream of the treatment system at least once per month. Use the 36 PFAS analyte list Tyco is required to report.

Tyco submitted the OM&M Plan for the Ditch A treatment system on July 19, 2021. Revisions to Appendix B: Ditch A Flow Monitoring and Reporting Methods were requested by WDNR in a letter dated October 29, 2021. The requested revisions were incorporated into a submittal dated November 18, 2021. Subsequent revisions made to the data tabulated in the Semi-Annual Operation, Maintenance, and Optimization Progress Reports (October 2022 revision) and flow descriptions (April 2023 revision) are included herein. This document serves as a replacement for Appendix B of the Ditch A treatment system OM&M Plan.

Ditch A Treatment System Flow Rate

Electromagnetic flow meters FIT-05 and FIT-07 are installed immediately upstream of the two granular activated carbon (GAC) treatment trains (herein referred to as the 100-train and 200-train, respectively) that serve as the primary method of PFAS removal in the Ditch A Treatment System. The flow rates and totalizer readings from these flow meters are recorded by the supervisory control and data acquisition (SCADA) system on an hourly basis. The Ditch A treatment system flow rate calculation is described by Equation 1, where V_{System} is the total daily volume processed by the Ditch A treatment system in gallons, V_{100} is the daily totalized volume recorded by FIT-05 in gallons, and V_{200} is the daily totalized volume recorded by FIT-07 in gallons. The daily values will be summed and reported on a weekly basis in the Semi-Annual Operation, Maintenance, and Optimization Progress Reports. The flow rate will be reported on a daily basis in the monthly electronic discharge monitoring reports (eDMRs).

$$V_{System} = V_{100} + V_{200} \quad (1)$$

Ditch A Stream Flow Rate

A permeable check dam constructed of Wisconsin Department of Transportation heavy rip rap ($D_{50} = 1.33$ feet) and sandbags to create a uniform elevation along the top is installed in Ditch A between the system intake and outfall. Pressure transducers installed in stilling wells located upstream and downstream of the check dam record surface water levels on an hourly basis by the SCADA system. The Ditch A stream flow rate will be estimated as

described below. The daily values will be summed and reported on a weekly basis in the Semi-Annual Operation, Maintenance, and Optimization Progress Reports.

Condition 1: Normal Operation (No Overtopping of Check Dam)

The Ditch A treatment system operates at 100 gallons per minute under normal operating conditions. However, the system may be operated at lower flow rates during low flow or freezing conditions. While the upstream surface water level is below the height of the check dam (as measured by the upstream stilling well), the Ditch A stream flow rate will be estimated to be equal to the system operating flow rate. This relationship is described by Equation 2, where V_{Stream} is the estimated Ditch A daily stream flow volume in gallons and V_{System} is as described in Equation 1.

$$V_{Stream} = V_{System} \quad (2)$$

Condition 2: Overtopping of Check Dam

Overtopping of the Ditch A check dam occurs infrequently throughout the year (seven occurrences in 2020) and is typically resolved within 24 hours. In the event that the upstream surface water level rises above the height of the check dam and the downstream surface water level elevation (as indicated by the levels in the stilling wells), the duration of the overtopping event and the depth of flow above the check dam will be recorded. Overtopping events have historically been infrequent persisted for short durations. Therefore, flow estimates will be based on the water height above the check dam, duration of the overtopping event, and typical flow rate ranges observed in Ditch A. During overtopping events, the Ditch A stream flow rate will be described by Equation 3 below where $V_{Overtop}$ is the daily volume of water overtopping the Ditch A check dam and V_{System} is as described in Equation 1.

$$V_{Stream} = V_{System} + V_{Overtop} \quad (3)$$

Low Flow Adjustments

The treatment system flow rate will be decreased as necessary during low flow conditions to maintain continuous operation of the treatment system. In the event that Ditch A is dewatered to the extent that continuous operation cannot be maintained, the treatment system will be disabled via the human-machine interface (HMI). Water levels will be monitored on a daily basis and the treatment system will be re-enabled once sufficient flow is present to resume normal operation.

Appendix D

Ditch A Downstream Surface Water Analytical Results

ANALYTICAL REPORT

Eurofins Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-219099-1

Client Project/Site: Marinette, WI 30128077.01 Ditch A SW

For:

ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski

Jodie Bracken

Authorized for release by:

7/13/2022 1:09:01 PM

Jodie Bracken, Project Management Assistant II

Jodie.Bracken@et.eurofinsus.com

Designee for

Sandie Fredrick, Project Manager II

(920)261-1660

Sandra.Fredrick@et.eurofinsus.com

LINKS

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results through



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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Job ID: 500-219099-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-219099-1

Comments

No additional comments.

Receipt

The samples were received on 7/7/2022 9:45 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 1.1° C.

LCMS

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

Organic Prep

Method 3535: Due to the matrix, the following samples 500-219099-1, 500-219099-2 and 500-219099-3 were prepared with an LCS/LCSD instead of a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-601666.

Method Code: 3535_PFC

Matrix: Aqueous

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-219099-1	SW-40 (7-6-22)	Water	07/06/22 10:45	07/07/22 09:45
500-219099-2	DUP-01-A (7-6-22)	Water	07/06/22 00:00	07/07/22 09:45
500-219099-3	Field Blank-A (7-6-22)	Water	07/06/22 10:55	07/07/22 09:45

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Client Sample ID: SW-40 (7-6-22)

Lab Sample ID: 500-219099-1

Date Collected: 07/06/22 10:45

Matrix: Water

Date Received: 07/07/22 09:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.6	J	4.3	2.0	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluoropentanoic acid (PFPeA)	7.2		1.7	0.42	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorohexanoic acid (PFHxA)	5.4		1.7	0.50	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluoroheptanoic acid (PFHpA)	3.7		1.7	0.21	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorooctanoic acid (PFOA)	19		1.7	0.73	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorononanoic acid (PFNA)	1.5	J	1.7	0.23	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorodecanoic acid (PFDA)	0.55	J	1.7	0.26	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluoroundecanoic acid (PFUnA)	<1.7		1.7	0.94	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.47	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorotridecanoic acid (PFTriA)	<1.7		1.7	1.1	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.62	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.76	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7		1.7	0.80	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorobutanesulfonic acid (PFBS)	<1.7		1.7	0.17	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.26	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.7	0.49	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.7		1.7	0.16	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorooctanesulfonic acid (PFOS)	6.6		1.7	0.46	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluoronanesulfonic acid (PFNS)	<1.7		1.7	0.32	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.27	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.83	ng/L		07/08/22 12:55	07/12/22 18:39	1
Perfluorooctanesulfonamide (FOSA)	<1.7		1.7	0.84	ng/L		07/08/22 12:55	07/12/22 18:39	1
NEtFOSA	<1.7		1.7	0.74	ng/L		07/08/22 12:55	07/12/22 18:39	1
NMeFOSA	<1.7		1.7	0.37	ng/L		07/08/22 12:55	07/12/22 18:39	1
NMeFOSAA	<4.3		4.3	1.0	ng/L		07/08/22 12:55	07/12/22 18:39	1
NEtFOSAA	<4.3		4.3	1.1	ng/L		07/08/22 12:55	07/12/22 18:39	1
NMeFOSE	<3.4		3.4	1.2	ng/L		07/08/22 12:55	07/12/22 18:39	1
NEtFOSE	<1.7		1.7	0.73	ng/L		07/08/22 12:55	07/12/22 18:39	1
4:2 FTS	<1.7		1.7	0.20	ng/L		07/08/22 12:55	07/12/22 18:39	1
6:2 FTS	17		4.3	2.1	ng/L		07/08/22 12:55	07/12/22 18:39	1
8:2 FTS	12		1.7	0.39	ng/L		07/08/22 12:55	07/12/22 18:39	1
10:2 FTS	1.2	J	1.7	0.57	ng/L		07/08/22 12:55	07/12/22 18:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.34	ng/L		07/08/22 12:55	07/12/22 18:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.4		3.4	1.3	ng/L		07/08/22 12:55	07/12/22 18:39	1
F-53B Major	<1.7		1.7	0.20	ng/L		07/08/22 12:55	07/12/22 18:39	1
F-53B Minor	<1.7		1.7	0.27	ng/L		07/08/22 12:55	07/12/22 18:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	79		25 - 150				07/08/22 12:55	07/12/22 18:39	1
13C5 PFPeA	78		25 - 150				07/08/22 12:55	07/12/22 18:39	1
13C2 PFHxA	81		25 - 150				07/08/22 12:55	07/12/22 18:39	1
13C4 PFHpA	84		25 - 150				07/08/22 12:55	07/12/22 18:39	1
13C4 PFOA	82		25 - 150				07/08/22 12:55	07/12/22 18:39	1

Eurofins Chicago

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Client Sample ID: SW-40 (7-6-22)

Lab Sample ID: 500-219099-1

Date Collected: 07/06/22 10:45

Matrix: Water

Date Received: 07/07/22 09:45

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

<u>Isotope Dilution</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
13C5 PFNA	80		25 - 150	07/08/22 12:55	07/12/22 18:39	1
13C2 PFDA	73		25 - 150	07/08/22 12:55	07/12/22 18:39	1
13C2 PFUnA	70		25 - 150	07/08/22 12:55	07/12/22 18:39	1
13C2 PFDoA	62		25 - 150	07/08/22 12:55	07/12/22 18:39	1
13C2 PFTeDA	58		25 - 150	07/08/22 12:55	07/12/22 18:39	1
13C2 PFHxDA	63		25 - 150	07/08/22 12:55	07/12/22 18:39	1
13C3 PFBS	73		25 - 150	07/08/22 12:55	07/12/22 18:39	1
18O2 PFHxS	77		25 - 150	07/08/22 12:55	07/12/22 18:39	1
13C4 PFOS	69		25 - 150	07/08/22 12:55	07/12/22 18:39	1
13C8 FOSA	74		10 - 150	07/08/22 12:55	07/12/22 18:39	1
d3-NMeFOSAA	61		25 - 150	07/08/22 12:55	07/12/22 18:39	1
d5-NEtFOSAA	62		25 - 150	07/08/22 12:55	07/12/22 18:39	1
d-N-MeFOSA-M	58		10 - 150	07/08/22 12:55	07/12/22 18:39	1
d-N-EtFOSA-M	52		10 - 150	07/08/22 12:55	07/12/22 18:39	1
d7-N-MeFOSE-M	56		10 - 150	07/08/22 12:55	07/12/22 18:39	1
d9-N-EtFOSE-M	52		10 - 150	07/08/22 12:55	07/12/22 18:39	1
M2-4:2 FTS	79		25 - 150	07/08/22 12:55	07/12/22 18:39	1
M2-6:2 FTS	75		25 - 150	07/08/22 12:55	07/12/22 18:39	1
M2-8:2 FTS	72		25 - 150	07/08/22 12:55	07/12/22 18:39	1
13C3 HFPO-DA	76		25 - 150	07/08/22 12:55	07/12/22 18:39	1
13C2 10:2 FTS	62		25 - 150	07/08/22 12:55	07/12/22 18:39	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Client Sample ID: DUP-01-A (7-6-22)

Lab Sample ID: 500-219099-2

Date Collected: 07/06/22 00:00

Matrix: Water

Date Received: 07/07/22 09:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.6	J	4.3	2.1	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluoropentanoic acid (PFPeA)	6.9		1.7	0.42	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorohexanoic acid (PFHxA)	5.7		1.7	0.50	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluoroheptanoic acid (PFHpA)	3.7		1.7	0.22	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorooctanoic acid (PFOA)	18		1.7	0.74	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorononanoic acid (PFNA)	1.5	J	1.7	0.23	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorodecanoic acid (PFDA)	0.52	J	1.7	0.27	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluoroundecanoic acid (PFUnA)	<1.7		1.7	0.95	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.48	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorotridecanoic acid (PFTriA)	<1.7		1.7	1.1	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.63	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.77	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7		1.7	0.81	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorobutanesulfonic acid (PFBS)	<1.7		1.7	0.17	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.26	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.7	0.49	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.7		1.7	0.16	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorooctanesulfonic acid (PFOS)	5.5		1.7	0.47	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorononanesulfonic acid (PFNS)	<1.7		1.7	0.32	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.28	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.84	ng/L		07/08/22 12:55	07/12/22 18:49	1
Perfluorooctanesulfonamide (FOSA)	2.1		1.7	0.85	ng/L		07/08/22 12:55	07/12/22 18:49	1
NEtFOSA	<1.7		1.7	0.75	ng/L		07/08/22 12:55	07/12/22 18:49	1
NMeFOSA	<1.7		1.7	0.37	ng/L		07/08/22 12:55	07/12/22 18:49	1
NMeFOSAA	<4.3		4.3	1.0	ng/L		07/08/22 12:55	07/12/22 18:49	1
NEtFOSAA	<4.3		4.3	1.1	ng/L		07/08/22 12:55	07/12/22 18:49	1
NMeFOSE	<3.5		3.5	1.2	ng/L		07/08/22 12:55	07/12/22 18:49	1
NEtFOSE	<1.7		1.7	0.74	ng/L		07/08/22 12:55	07/12/22 18:49	1
4:2 FTS	<1.7		1.7	0.21	ng/L		07/08/22 12:55	07/12/22 18:49	1
6:2 FTS	17		4.3	2.2	ng/L		07/08/22 12:55	07/12/22 18:49	1
8:2 FTS	11		1.7	0.40	ng/L		07/08/22 12:55	07/12/22 18:49	1
10:2 FTS	1.2	J	1.7	0.58	ng/L		07/08/22 12:55	07/12/22 18:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.35	ng/L		07/08/22 12:55	07/12/22 18:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.5		3.5	1.3	ng/L		07/08/22 12:55	07/12/22 18:49	1
F-53B Major	<1.7		1.7	0.21	ng/L		07/08/22 12:55	07/12/22 18:49	1
F-53B Minor	<1.7		1.7	0.28	ng/L		07/08/22 12:55	07/12/22 18:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	65		25 - 150				07/08/22 12:55	07/12/22 18:49	1
13C5 PFPeA	65		25 - 150				07/08/22 12:55	07/12/22 18:49	1
13C2 PFHxA	67		25 - 150				07/08/22 12:55	07/12/22 18:49	1
13C4 PFHpA	69		25 - 150				07/08/22 12:55	07/12/22 18:49	1
13C4 PFOA	69		25 - 150				07/08/22 12:55	07/12/22 18:49	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Client Sample ID: DUP-01-A (7-6-22)

Lab Sample ID: 500-219099-2

Date Collected: 07/06/22 00:00

Matrix: Water

Date Received: 07/07/22 09:45

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

<u>Isotope Dilution</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
13C5 PFNA	68		25 - 150	07/08/22 12:55	07/12/22 18:49	1
13C2 PFDA	63		25 - 150	07/08/22 12:55	07/12/22 18:49	1
13C2 PFUnA	61		25 - 150	07/08/22 12:55	07/12/22 18:49	1
13C2 PFDoA	54		25 - 150	07/08/22 12:55	07/12/22 18:49	1
13C2 PFTeDA	51		25 - 150	07/08/22 12:55	07/12/22 18:49	1
13C2 PFHxDA	54		25 - 150	07/08/22 12:55	07/12/22 18:49	1
13C3 PFBS	62		25 - 150	07/08/22 12:55	07/12/22 18:49	1
18O2 PFHxS	66		25 - 150	07/08/22 12:55	07/12/22 18:49	1
13C4 PFOS	62		25 - 150	07/08/22 12:55	07/12/22 18:49	1
13C8 FOSA	63		10 - 150	07/08/22 12:55	07/12/22 18:49	1
d3-NMeFOSAA	53		25 - 150	07/08/22 12:55	07/12/22 18:49	1
d5-NEtFOSAA	54		25 - 150	07/08/22 12:55	07/12/22 18:49	1
d-N-MeFOSA-M	51		10 - 150	07/08/22 12:55	07/12/22 18:49	1
d-N-EtFOSA-M	47		10 - 150	07/08/22 12:55	07/12/22 18:49	1
d7-N-MeFOSE-M	51		10 - 150	07/08/22 12:55	07/12/22 18:49	1
d9-N-EtFOSE-M	45		10 - 150	07/08/22 12:55	07/12/22 18:49	1
M2-4:2 FTS	65		25 - 150	07/08/22 12:55	07/12/22 18:49	1
M2-6:2 FTS	63		25 - 150	07/08/22 12:55	07/12/22 18:49	1
M2-8:2 FTS	62		25 - 150	07/08/22 12:55	07/12/22 18:49	1
13C3 HFPO-DA	62		25 - 150	07/08/22 12:55	07/12/22 18:49	1
13C2 10:2 FTS	51		25 - 150	07/08/22 12:55	07/12/22 18:49	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Client Sample ID: Field Blank-A (7-6-22)

Lab Sample ID: 500-219099-3

Date Collected: 07/06/22 10:55

Matrix: Water

Date Received: 07/07/22 09:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.2		4.2	2.0	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluoropentanoic acid (PFPeA)	<1.7		1.7	0.41	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorohexanoic acid (PFHxA)	<1.7		1.7	0.49	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluoroheptanoic acid (PFHpA)	<1.7		1.7	0.21	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorooctanoic acid (PFOA)	<1.7		1.7	0.71	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorononanoic acid (PFNA)	<1.7		1.7	0.23	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorodecanoic acid (PFDA)	<1.7		1.7	0.26	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluoroundecanoic acid (PFUnA)	<1.7		1.7	0.92	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.46	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorotridecanoic acid (PFTriA)	<1.7		1.7	1.1	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.61	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.74	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7		1.7	0.79	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorobutanesulfonic acid (PFBS)	<1.7		1.7	0.17	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.25	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorohexanesulfonic acid (PFHxS)	<1.7		1.7	0.48	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.7		1.7	0.16	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorooctanesulfonic acid (PFOS)	<1.7		1.7	0.45	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorononanesulfonic acid (PFNS)	<1.7		1.7	0.31	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.27	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.81	ng/L		07/08/22 12:55	07/12/22 19:00	1
Perfluorooctanesulfonamide (FOSA)	<1.7		1.7	0.82	ng/L		07/08/22 12:55	07/12/22 19:00	1
NEtFOSA	<1.7		1.7	0.73	ng/L		07/08/22 12:55	07/12/22 19:00	1
NMeFOSA	<1.7		1.7	0.36	ng/L		07/08/22 12:55	07/12/22 19:00	1
NMeFOSAA	<4.2		4.2	1.0	ng/L		07/08/22 12:55	07/12/22 19:00	1
NEtFOSAA	<4.2		4.2	1.1	ng/L		07/08/22 12:55	07/12/22 19:00	1
NMeFOSE	<3.3		3.3	1.2	ng/L		07/08/22 12:55	07/12/22 19:00	1
NEtFOSE	<1.7		1.7	0.71	ng/L		07/08/22 12:55	07/12/22 19:00	1
4:2 FTS	<1.7		1.7	0.20	ng/L		07/08/22 12:55	07/12/22 19:00	1
6:2 FTS	<4.2		4.2	2.1	ng/L		07/08/22 12:55	07/12/22 19:00	1
8:2 FTS	<1.7		1.7	0.38	ng/L		07/08/22 12:55	07/12/22 19:00	1
10:2 FTS	<1.7		1.7	0.56	ng/L		07/08/22 12:55	07/12/22 19:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.33	ng/L		07/08/22 12:55	07/12/22 19:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.3		3.3	1.3	ng/L		07/08/22 12:55	07/12/22 19:00	1
F-53B Major	<1.7		1.7	0.20	ng/L		07/08/22 12:55	07/12/22 19:00	1
F-53B Minor	<1.7		1.7	0.27	ng/L		07/08/22 12:55	07/12/22 19:00	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	94		25 - 150				07/08/22 12:55	07/12/22 19:00	1
13C5 PFPeA	91		25 - 150				07/08/22 12:55	07/12/22 19:00	1
13C2 PFHxA	94		25 - 150				07/08/22 12:55	07/12/22 19:00	1
13C4 PFHpA	97		25 - 150				07/08/22 12:55	07/12/22 19:00	1
13C4 PFOA	98		25 - 150				07/08/22 12:55	07/12/22 19:00	1
13C5 PFNA	97		25 - 150				07/08/22 12:55	07/12/22 19:00	1
13C2 PFDA	95		25 - 150				07/08/22 12:55	07/12/22 19:00	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Client Sample ID: Field Blank-A (7-6-22)

Lab Sample ID: 500-219099-3

Date Collected: 07/06/22 10:55

Matrix: Water

Date Received: 07/07/22 09:45

Method: 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 PFluA	96		25 - 150	07/08/22 12:55	07/12/22 19:00	1
13C2 PFlDoA	89		25 - 150	07/08/22 12:55	07/12/22 19:00	1
13C2 PFlTeDA	91		25 - 150	07/08/22 12:55	07/12/22 19:00	1
13C2 PFlHxDA	88		25 - 150	07/08/22 12:55	07/12/22 19:00	1
13C3 PFlBS	89		25 - 150	07/08/22 12:55	07/12/22 19:00	1
18O2 PFlHxS	92		25 - 150	07/08/22 12:55	07/12/22 19:00	1
13C4 PFlOS	86		25 - 150	07/08/22 12:55	07/12/22 19:00	1
13C8 FOSA	89		10 - 150	07/08/22 12:55	07/12/22 19:00	1
d3-NMeFOSA	81		25 - 150	07/08/22 12:55	07/12/22 19:00	1
d5-NEtFOSA	84		25 - 150	07/08/22 12:55	07/12/22 19:00	1
d-N-MeFOSA-M	76		10 - 150	07/08/22 12:55	07/12/22 19:00	1
d-N-EtFOSA-M	75		10 - 150	07/08/22 12:55	07/12/22 19:00	1
d7-N-MeFOSE-M	83		10 - 150	07/08/22 12:55	07/12/22 19:00	1
d9-N-EtFOSE-M	79		10 - 150	07/08/22 12:55	07/12/22 19:00	1
M2-4:2 FTS	97		25 - 150	07/08/22 12:55	07/12/22 19:00	1
M2-6:2 FTS	94		25 - 150	07/08/22 12:55	07/12/22 19:00	1
M2-8:2 FTS	90		25 - 150	07/08/22 12:55	07/12/22 19:00	1
13C3 HFPO-DA	88		25 - 150	07/08/22 12:55	07/12/22 19:00	1
13C2 10:2 FTS	87		25 - 150	07/08/22 12:55	07/12/22 19:00	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-601666/1-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 601666

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		07/08/22 12:55	07/12/22 14:16	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		07/08/22 12:55	07/12/22 14:16	1
NEtFOSA	<2.0		2.0	0.87	ng/L		07/08/22 12:55	07/12/22 14:16	1
NMeFOSA	<2.0		2.0	0.43	ng/L		07/08/22 12:55	07/12/22 14:16	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		07/08/22 12:55	07/12/22 14:16	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		07/08/22 12:55	07/12/22 14:16	1
NMeFOSE	<4.0		4.0	1.4	ng/L		07/08/22 12:55	07/12/22 14:16	1
NEtFOSE	<2.0		2.0	0.85	ng/L		07/08/22 12:55	07/12/22 14:16	1
4:2 FTS	<2.0		2.0	0.24	ng/L		07/08/22 12:55	07/12/22 14:16	1
6:2 FTS	<5.0		5.0	2.5	ng/L		07/08/22 12:55	07/12/22 14:16	1
8:2 FTS	<2.0		2.0	0.46	ng/L		07/08/22 12:55	07/12/22 14:16	1
10:2 FTS	<2.0		2.0	0.67	ng/L		07/08/22 12:55	07/12/22 14:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		07/08/22 12:55	07/12/22 14:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		07/08/22 12:55	07/12/22 14:16	1
F-53B Major	<2.0		2.0	0.24	ng/L		07/08/22 12:55	07/12/22 14:16	1
F-53B Minor	<2.0		2.0	0.32	ng/L		07/08/22 12:55	07/12/22 14:16	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	80		25 - 150				07/08/22 12:55	07/12/22 14:16	1
13C5 PFPeA	81		25 - 150				07/08/22 12:55	07/12/22 14:16	1
13C2 PFHxA	80		25 - 150				07/08/22 12:55	07/12/22 14:16	1
13C4 PFHpA	84		25 - 150				07/08/22 12:55	07/12/22 14:16	1
13C4 PFOA	82		25 - 150				07/08/22 12:55	07/12/22 14:16	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

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

Lab Sample ID: MB 320-601666/1-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 601666

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	86		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFDA	80		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFUnA	82		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFDoA	77		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFTeDA	74		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 PFHxDA	75		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C3 PFBS	74		25 - 150	07/08/22 12:55	07/12/22 14:16	1
18O2 PFHxS	79		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C4 PFOS	75		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C8 FOSA	75		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d3-NMeFOSAA	70		25 - 150	07/08/22 12:55	07/12/22 14:16	1
d5-NEtFOSAA	72		25 - 150	07/08/22 12:55	07/12/22 14:16	1
d-N-MeFOSA-M	64		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d-N-EtFOSA-M	63		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d7-N-MeFOSE-M	72		10 - 150	07/08/22 12:55	07/12/22 14:16	1
d9-N-EtFOSE-M	66		10 - 150	07/08/22 12:55	07/12/22 14:16	1
M2-4:2 FTS	86		25 - 150	07/08/22 12:55	07/12/22 14:16	1
M2-6:2 FTS	82		25 - 150	07/08/22 12:55	07/12/22 14:16	1
M2-8:2 FTS	79		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C3 HFPO-DA	78		25 - 150	07/08/22 12:55	07/12/22 14:16	1
13C2 10:2 FTS	76		25 - 150	07/08/22 12:55	07/12/22 14:16	1

Lab Sample ID: LCS 320-601666/2-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 601666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	43.7		ng/L		109	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	40.9		ng/L		102	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	42.5		ng/L		106	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	40.5		ng/L		101	60 - 135
Perfluorononanoic acid (PFNA)	40.0	43.6		ng/L		109	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	42.9		ng/L		107	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	39.6		ng/L		99	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.7		ng/L		109	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	46.5		ng/L		116	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	42.4		ng/L		106	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.1		ng/L		113	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	38.3		ng/L		96	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	39.3		ng/L		111	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	44.9		ng/L		120	60 - 135

Eurofins Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

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

Lab Sample ID: LCS 320-601666/2-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 601666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.2		ng/L		99	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.8		ng/L		115	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	39.9		ng/L		107	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	42.4		ng/L		110	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	40.2		ng/L		104	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	40.7		ng/L		105	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.4		ng/L		106	60 - 135
NEtFOSA	40.0	41.0		ng/L		102	60 - 135
NMeFOSA	40.0	45.7		ng/L		114	60 - 135
NMeFOSAA	40.0	38.9		ng/L		97	60 - 135
NEtFOSAA	40.0	45.6		ng/L		114	60 - 135
NMeFOSE	40.0	43.5		ng/L		109	60 - 135
NEtFOSE	40.0	45.6		ng/L		114	60 - 135
4:2 FTS	37.5	42.2		ng/L		112	60 - 135
6:2 FTS	38.1	42.2		ng/L		111	60 - 135
8:2 FTS	38.4	41.5		ng/L		108	60 - 135
10:2 FTS	38.6	43.2		ng/L		112	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.9		ng/L		119	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.4		ng/L		109	60 - 135
F-53B Major	37.4	39.4		ng/L		106	60 - 135
F-53B Minor	37.8	40.2		ng/L		106	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	74		25 - 150
13C5 PFPeA	74		25 - 150
13C2 PFHxA	74		25 - 150
13C4 PFHpA	77		25 - 150
13C4 PFOA	78		25 - 150
13C5 PFNA	77		25 - 150
13C2 PFDA	74		25 - 150
13C2 PFUnA	79		25 - 150
13C2 PFDoA	72		25 - 150
13C2 PFTeDA	70		25 - 150
13C2 PFHxDA	72		25 - 150
13C3 PFBS	68		25 - 150
18O2 PFHxS	76		25 - 150
13C4 PFOS	72		25 - 150
13C8 FOSA	71		10 - 150
d3-NMeFOSAA	67		25 - 150
d5-NEtFOSAA	68		25 - 150
d-N-MeFOSA-M	56		10 - 150
d-N-EtFOSA-M	58		10 - 150

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

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

Lab Sample ID: LCS 320-601666/2-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 601666

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	65		10 - 150
d9-N-EtFOSE-M	63		10 - 150
M2-4:2 FTS	74		25 - 150
M2-6:2 FTS	76		25 - 150
M2-8:2 FTS	74		25 - 150
13C3 HFPO-DA	72		25 - 150
13C2 10:2 FTS	67		25 - 150

Lab Sample ID: LCSD 320-601666/3-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 601666

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD 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)	40.0	46.4		ng/L		116	60 - 135	2	30
Perfluoropentanoic acid (PFPeA)	40.0	45.0		ng/L		112	60 - 135	3	30
Perfluorohexanoic acid (PFHxA)	40.0	38.7		ng/L		97	60 - 135	5	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.7		ng/L		109	60 - 135	3	30
Perfluorooctanoic acid (PFOA)	40.0	40.7		ng/L		102	60 - 135	1	30
Perfluorononanoic acid (PFNA)	40.0	42.2		ng/L		106	60 - 135	3	30
Perfluorodecanoic acid (PFDA)	40.0	43.4		ng/L		108	60 - 135	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	40.5		ng/L		101	60 - 135	2	30
Perfluorododecanoic acid (PFDoA)	40.0	45.1		ng/L		113	60 - 135	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	46.7		ng/L		117	60 - 135	0	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.3		ng/L		103	60 - 135	2	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	46.0		ng/L		115	60 - 135	2	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	39.4		ng/L		99	60 - 135	3	30
Perfluorobutanesulfonic acid (PFBS)	35.5	39.0		ng/L		110	60 - 135	1	30
Perfluoropentanesulfonic acid (PFPeS)	37.5	45.0		ng/L		120	60 - 135	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.9		ng/L		101	60 - 135	2	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.2		ng/L		113	60 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	40.0		ng/L		107	60 - 135	0	30
Perfluorononanesulfonic acid (PFNS)	38.5	42.0		ng/L		109	60 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)	38.6	38.8		ng/L		101	60 - 135	4	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	41.8		ng/L		108	60 - 135	3	30
Perfluorooctanesulfonamide (FOSA)	40.0	42.8		ng/L		107	60 - 135	1	30
NEtFOSA	40.0	43.7		ng/L		109	60 - 135	6	30
NMeFOSA	40.0	45.4		ng/L		113	60 - 135	1	30
NMeFOSAA	40.0	38.6		ng/L		97	60 - 135	1	30

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

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

Lab Sample ID: LCSD 320-601666/3-A
Matrix: Water
Analysis Batch: 602495

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 601666

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	45.6		ng/L		114	60 - 135	0	30
NMeFOSE	40.0	42.8		ng/L		107	60 - 135	2	30
NEtFOSE	40.0	45.5		ng/L		114	60 - 135	0	30
4:2 FTS	37.5	40.5		ng/L		108	60 - 135	4	30
6:2 FTS	38.1	41.1		ng/L		108	60 - 135	3	30
8:2 FTS	38.4	42.2		ng/L		110	60 - 135	2	30
10:2 FTS	38.6	40.3		ng/L		104	60 - 135	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.3		ng/L		120	60 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.9		ng/L		110	60 - 135	1	30
F-53B Major	37.4	40.6		ng/L		109	60 - 135	3	30
F-53B Minor	37.8	42.2		ng/L		112	60 - 135	5	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	77		25 - 150
13C5 PFPeA	77		25 - 150
13C2 PFHxA	81		25 - 150
13C4 PFHpA	84		25 - 150
13C4 PFOA	84		25 - 150
13C5 PFNA	85		25 - 150
13C2 PFDA	78		25 - 150
13C2 PFUnA	84		25 - 150
13C2 PFDoA	76		25 - 150
13C2 PFTeDA	78		25 - 150
13C2 PFHxDA	79		25 - 150
13C3 PFBS	75		25 - 150
18O2 PFHxS	79		25 - 150
13C4 PFOS	77		25 - 150
13C8 FOSA	77		10 - 150
d3-NMeFOSAA	72		25 - 150
d5-NEtFOSAA	74		25 - 150
d-N-MeFOSA-M	60		10 - 150
d-N-EtFOSA-M	62		10 - 150
d7-N-MeFOSE-M	74		10 - 150
d9-N-EtFOSE-M	69		10 - 150
M2-4:2 FTS	82		25 - 150
M2-6:2 FTS	82		25 - 150
M2-8:2 FTS	79		25 - 150
13C3 HFPO-DA	79		25 - 150
13C2 10:2 FTS	78		25 - 150

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

Client Sample ID: SW-40 (7-6-22)

Lab Sample ID: 500-219099-1

Date Collected: 07/06/22 10:45

Matrix: Water

Date Received: 07/07/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			601666	07/08/22 12:55	MRP	TAL SAC
Total/NA	Analysis	537 (modified)		1	602495	07/12/22 18:39	S1M	TAL SAC

Client Sample ID: DUP-01-A (7-6-22)

Lab Sample ID: 500-219099-2

Date Collected: 07/06/22 00:00

Matrix: Water

Date Received: 07/07/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			601666	07/08/22 12:55	MRP	TAL SAC
Total/NA	Analysis	537 (modified)		1	602495	07/12/22 18:49	S1M	TAL SAC

Client Sample ID: Field Blank-A (7-6-22)

Lab Sample ID: 500-219099-3

Date Collected: 07/06/22 10:55

Matrix: Water

Date Received: 07/07/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			601666	07/08/22 12:55	MRP	TAL SAC
Total/NA	Analysis	537 (modified)		1	602495	07/12/22 19:00	S1M	TAL SAC

Laboratory References:

TAL 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 30128077.01 Ditch A SW

Job ID: 500-219099-1

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-22

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



West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Regulatory Program: DW NPDES RCRA Other:

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

Client Contact Arcadis U.S., Inc. 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Phone _____ FAX _____ Project Name: Ditch A Surface Water Site: Marinette, WI P O # 30128077.01		Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A		Site Contact: Lab Contact: Sandie Fredrick Date: 7-6-22 Carrier: Fed Ex COC No: 1 of 1 COCs TALS Project #: 500192556	
Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below _____ Standard <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.: Sample Specific Notes: Downstream Duplicate Field Blank			
Sample Identification SW-40 (7-6-22) DUP-01-A (7-6-22) Field Blank-A (7-6-22)		Sample Date 7-6-22 10:45 10:55		Sample Type (C=Comp, G=Grab) G G G	
Matrix W W W		# of Cont. 2 2 2		Filtered Sample (Y/N) N N N	
Perform MS / MSD (Y/N) PFAS 537 Modified 36 Compound		Sample Specific Notes: Downstream Duplicate Field Blank			
500-219099 Chain of Custody					
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 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.					
Special Instructions/QC Requirements & Comments: Questions call Lisa Rutkowski, Liz Hover					
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Cooler Temp. (°C): Obs'd: 67 Cor'd: 67		Therm ID No.: Date/Time:	
Relinquished by: <i>Jacob Ranning</i>		Received by: Fed Ex		Company:	
Relinquished by:		Received by:		Company:	
Relinquished by:		Received in Laboratory by:		Company:	



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-219099-1

Login Number: 219099

List Number: 2

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 07/07/22 06:32 PM

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	1831832
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	1.1C
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	
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Environment Testing
TestAmerica

Sacramento
Sample Receiving Notes



500-219099 Field Sheet

Tracking #: 5120 6510 6933

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Job: _____

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: W6 Corr. Factor: (+/-) N/A °C

Ice Wet Gel _____ Other _____

Cooler Custody Seal: 1831832

Cooler ID: _____

Temp Observed: 1.1 °C Corrected: 1.1 °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: SO Date: 7-7-22

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<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 require splitting/compositing?	<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, 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: 7-7-22

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<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: 7-7-22



Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-219099-1

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)
500-219099-1	SW-40 (7-6-22)	79	78	81	84	82	80	73	70
500-219099-2	DUP-01-A (7-6-22)	65	65	67	69	69	68	63	61
500-219099-3	Field Blank-A (7-6-22)	94	91	94	97	98	97	95	96
LCS 320-601666/2-A	Lab Control Sample	74	74	74	77	78	77	74	79
LCSD 320-601666/3-A	Lab Control Sample Dup	77	77	81	84	84	85	78	84
MB 320-601666/1-A	Method Blank	80	81	80	84	82	86	80	82

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)	d3NMFS (25-150)
500-219099-1	SW-40 (7-6-22)	62	58	63	73	77	69	74	61
500-219099-2	DUP-01-A (7-6-22)	54	51	54	62	66	62	63	53
500-219099-3	Field Blank-A (7-6-22)	89	91	88	89	92	86	89	81
LCS 320-601666/2-A	Lab Control Sample	72	70	72	68	76	72	71	67
LCSD 320-601666/3-A	Lab Control Sample Dup	76	78	79	75	79	77	77	72
MB 320-601666/1-A	Method Blank	77	74	75	74	79	75	75	70

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)
500-219099-1	SW-40 (7-6-22)	62	58	52	56	52	79	75	72
500-219099-2	DUP-01-A (7-6-22)	54	51	47	51	45	65	63	62
500-219099-3	Field Blank-A (7-6-22)	84	76	75	83	79	97	94	90
LCS 320-601666/2-A	Lab Control Sample	68	56	58	65	63	74	76	74
LCSD 320-601666/3-A	Lab Control Sample Dup	74	60	62	74	69	82	82	79
MB 320-601666/1-A	Method Blank	72	64	63	72	66	86	82	79

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-219099-1	SW-40 (7-6-22)	76	62
500-219099-2	DUP-01-A (7-6-22)	62	51
500-219099-3	Field Blank-A (7-6-22)	88	87
LCS 320-601666/2-A	Lab Control Sample	72	67
LCSD 320-601666/3-A	Lab Control Sample Dup	79	78
MB 320-601666/1-A	Method Blank	78	76

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

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.

Job ID: 500-219099-1

Project/Site: Marinette, WI 30128077.01 Ditch A SW

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

Eurofins Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-220267-1

Client Project/Site: Marinette, WI 30128077.01 Ditch A SW

For:

ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski



Authorized for release by:
8/31/2022 8:08:41 AM

Sandie Fredrick, Project Manager II
(920)261-1660
Sandra.Fredrick@et.eurofinsus.com

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Job ID: 500-220267-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-220267-1

Comments

No additional comments.

Receipt

The samples were received on 8/2/2022 9:20 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 1.7° C.

LCMS

Method 537 (modified): Several analytes were detected above the reporting limit (RL) in the method blank associated with preparation batch 320-609445 and analytical batch 320-609406 as well as in the following samples: 500-220267-1, 500-220267-2 and 500-220267-3. All affected samples were re-extracted and re-analyzed outside of holding time. Both sets of data have been reported.

Method 537 (modified): The method blank for preparation batch 320-609445 contained several analytes above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 537 (modified): Internal standard (ISTD) response of the CCB for the following samples in analytical batch 320-609406 was outside acceptance criteria: CCB 320-609406/16. The CCB is normally submitted after a CCV is to demonstrate no carryover from the CCV. There is no impact to the carryover check; 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.

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-609445.

Method: 3535_PFC_28D

Matrix: Water

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-220267-1	SW-40 (8-1-22)	Water	08/01/22 12:10	08/02/22 09:20
500-220267-2	DUP-01-A (8-1-22)	Water	08/01/22 00:00	08/02/22 09:20
500-220267-3	Field Blank-A (8-1-22)	Water	08/01/22 12:05	08/02/22 09:20

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Client Sample ID: SW-40 (8-1-22)

Lab Sample ID: 500-220267-1

Date Collected: 08/01/22 12:10

Matrix: Water

Date Received: 08/02/22 09:20

Method: 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		08/14/22 20:08	08/16/22 00:02	1
Perfluoropentanoic acid (PFPeA)	2.5		1.7	0.42	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorohexanoic acid (PFHxA)	1.8		1.7	0.50	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluoroheptanoic acid (PFHpA)	1.5 J		1.7	0.22	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorooctanoic acid (PFOA)	3.8 B		1.7	0.73	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorononanoic acid (PFNA)	0.90 J		1.7	0.23	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorodecanoic acid (PFDA)	1.0 J		1.7	0.27	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluoroundecanoic acid (PFUnA)	1.1 J		1.7	0.95	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.47	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorotridecanoic acid (PFTriA)	<1.7		1.7	1.1	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.63	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.77	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7		1.7	0.81	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorobutanesulfonic acid (PFBS)	0.24 J		1.7	0.17	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.26	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorohexanesulfonic acid (PFHxS)	<1.7		1.7	0.49	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.7		1.7	0.16	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorooctanesulfonic acid (PFOS)	4.8		1.7	0.47	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorononanesulfonic acid (PFNS)	<1.7		1.7	0.32	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.28	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.84	ng/L		08/14/22 20:08	08/16/22 00:02	1
Perfluorooctanesulfonamide (FOSA)	<1.7		1.7	0.84	ng/L		08/14/22 20:08	08/16/22 00:02	1
NEtFOSA	<1.7		1.7	0.75	ng/L		08/14/22 20:08	08/16/22 00:02	1
NMeFOSA	<1.7		1.7	0.37	ng/L		08/14/22 20:08	08/16/22 00:02	1
NMeFOSAA	<4.3		4.3	1.0	ng/L		08/14/22 20:08	08/16/22 00:02	1
NEtFOSAA	<4.3		4.3	1.1	ng/L		08/14/22 20:08	08/16/22 00:02	1
NMeFOSE	<3.4		3.4	1.2	ng/L		08/14/22 20:08	08/16/22 00:02	1
NEtFOSE	<1.7		1.7	0.73	ng/L		08/14/22 20:08	08/16/22 00:02	1
4:2 FTS	<1.7		1.7	0.21	ng/L		08/14/22 20:08	08/16/22 00:02	1
6:2 FTS	<4.3		4.3	2.2	ng/L		08/14/22 20:08	08/16/22 00:02	1
8:2 FTS	10		1.7	0.40	ng/L		08/14/22 20:08	08/16/22 00:02	1
10:2 FTS	4.7		1.7	0.58	ng/L		08/14/22 20:08	08/16/22 00:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.34	ng/L		08/14/22 20:08	08/16/22 00:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.4		3.4	1.3	ng/L		08/14/22 20:08	08/16/22 00:02	1
F-53B Major	<1.7		1.7	0.21	ng/L		08/14/22 20:08	08/16/22 00:02	1
F-53B Minor	<1.7		1.7	0.28	ng/L		08/14/22 20:08	08/16/22 00:02	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	102		25 - 150				08/14/22 20:08	08/16/22 00:02	1
13C5 PFPeA	107		25 - 150				08/14/22 20:08	08/16/22 00:02	1
13C2 PFHxA	98		25 - 150				08/14/22 20:08	08/16/22 00:02	1
13C4 PFHpA	102		25 - 150				08/14/22 20:08	08/16/22 00:02	1
13C4 PFOA	101		25 - 150				08/14/22 20:08	08/16/22 00:02	1

Eurofins Chicago

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Client Sample ID: SW-40 (8-1-22)

Lab Sample ID: 500-220267-1

Date Collected: 08/01/22 12:10

Matrix: Water

Date Received: 08/02/22 09:20

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	95		25 - 150	08/14/22 20:08	08/16/22 00:02	1
13C2 PFDA	98		25 - 150	08/14/22 20:08	08/16/22 00:02	1
13C2 PFUnA	101		25 - 150	08/14/22 20:08	08/16/22 00:02	1
13C2 PFDoA	87		25 - 150	08/14/22 20:08	08/16/22 00:02	1
13C2 PFTeDA	76		25 - 150	08/14/22 20:08	08/16/22 00:02	1
13C2 PFHxDA	83		25 - 150	08/14/22 20:08	08/16/22 00:02	1
13C3 PFBS	103		25 - 150	08/14/22 20:08	08/16/22 00:02	1
18O2 PFHxS	93		25 - 150	08/14/22 20:08	08/16/22 00:02	1
13C4 PFOS	84		25 - 150	08/14/22 20:08	08/16/22 00:02	1
13C8 FOSA	92		10 - 150	08/14/22 20:08	08/16/22 00:02	1
d3-NMeFOSAA	83		25 - 150	08/14/22 20:08	08/16/22 00:02	1
d5-NEtFOSAA	85		25 - 150	08/14/22 20:08	08/16/22 00:02	1
d-N-MeFOSA-M	73		10 - 150	08/14/22 20:08	08/16/22 00:02	1
d-N-EtFOSA-M	75		10 - 150	08/14/22 20:08	08/16/22 00:02	1
d7-N-MeFOSE-M	76		10 - 150	08/14/22 20:08	08/16/22 00:02	1
d9-N-EtFOSE-M	74		10 - 150	08/14/22 20:08	08/16/22 00:02	1
M2-4:2 FTS	104		25 - 150	08/14/22 20:08	08/16/22 00:02	1
M2-6:2 FTS	99		25 - 150	08/14/22 20:08	08/16/22 00:02	1
M2-8:2 FTS	101		25 - 150	08/14/22 20:08	08/16/22 00:02	1
13C3 HFPO-DA	90		25 - 150	08/14/22 20:08	08/16/22 00:02	1
13C2 10:2 FTS	92		25 - 150	08/14/22 20:08	08/16/22 00:02	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.5		4.5	2.1	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluoropentanoic acid (PFPeA)	3.3		1.8	0.44	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorohexanoic acid (PFHxA)	2.2		1.8	0.52	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluoroheptanoic acid (PFHpA)	1.8		1.8	0.22	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorooctanoic acid (PFOA)	4.5		1.8	0.76	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorononanoic acid (PFNA)	0.80	J	1.8	0.24	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorodecanoic acid (PFDA)	0.78	J	1.8	0.28	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	0.98	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.49	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.2	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.65	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.79	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.84	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorobutanesulfonic acid (PFBS)	0.35	J	1.8	0.18	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.27	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.51	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorooctanesulfonic acid (PFOS)	3.5		1.8	0.48	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.33	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		08/25/22 12:59	08/27/22 16:24	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Client Sample ID: SW-40 (8-1-22)

Lab Sample ID: 500-220267-1

Date Collected: 08/01/22 12:10

Matrix: Water

Date Received: 08/02/22 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.87	ng/L		08/25/22 12:59	08/27/22 16:24	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.87	ng/L		08/25/22 12:59	08/27/22 16:24	1
NEtFOSA	<1.8		1.8	0.78	ng/L		08/25/22 12:59	08/27/22 16:24	1
NMeFOSA	<1.8		1.8	0.38	ng/L		08/25/22 12:59	08/27/22 16:24	1
NMeFOSAA	<4.5		4.5	1.1	ng/L		08/25/22 12:59	08/27/22 16:24	1
NEtFOSAA	<4.5		4.5	1.2	ng/L		08/25/22 12:59	08/27/22 16:24	1
NMeFOSE	<3.6		3.6	1.2	ng/L		08/25/22 12:59	08/27/22 16:24	1
NEtFOSE	<1.8		1.8	0.76	ng/L		08/25/22 12:59	08/27/22 16:24	1
4:2 FTS	<1.8		1.8	0.21	ng/L		08/25/22 12:59	08/27/22 16:24	1
6:2 FTS	2.3	J	4.5	2.2	ng/L		08/25/22 12:59	08/27/22 16:24	1
8:2 FTS	7.8		1.8	0.41	ng/L		08/25/22 12:59	08/27/22 16:24	1
10:2 FTS	4.7		1.8	0.60	ng/L		08/25/22 12:59	08/27/22 16:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		08/25/22 12:59	08/27/22 16:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.6		3.6	1.3	ng/L		08/25/22 12:59	08/27/22 16:24	1
F-53B Major	<1.8		1.8	0.21	ng/L		08/25/22 12:59	08/27/22 16:24	1
F-53B Minor	<1.8		1.8	0.29	ng/L		08/25/22 12:59	08/27/22 16:24	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	93		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C5 PFPeA	89		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C2 PFHxA	103		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C4 PFHpA	93		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C4 PFOA	102		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C5 PFNA	101		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C2 PFDA	98		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C2 PFUnA	86		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C2 PFDoA	83		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C2 PFTeDA	71		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C2 PFHxDA	92		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C3 PFBS	93		25 - 150				08/25/22 12:59	08/27/22 16:24	1
18O2 PFHxS	102		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C4 PFOS	91		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C8 FOSA	87		10 - 150				08/25/22 12:59	08/27/22 16:24	1
d3-NMeFOSAA	89		25 - 150				08/25/22 12:59	08/27/22 16:24	1
d5-NEtFOSAA	91		25 - 150				08/25/22 12:59	08/27/22 16:24	1
d-N-MeFOSA-M	56		10 - 150				08/25/22 12:59	08/27/22 16:24	1
d-N-EtFOSA-M	52		10 - 150				08/25/22 12:59	08/27/22 16:24	1
d7-N-MeFOSE-M	61		10 - 150				08/25/22 12:59	08/27/22 16:24	1
d9-N-EtFOSE-M	55		10 - 150				08/25/22 12:59	08/27/22 16:24	1
M2-4:2 FTS	92		25 - 150				08/25/22 12:59	08/27/22 16:24	1
M2-6:2 FTS	87		25 - 150				08/25/22 12:59	08/27/22 16:24	1
M2-8:2 FTS	91		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C3 HFPO-DA	96		25 - 150				08/25/22 12:59	08/27/22 16:24	1
13C2 10:2 FTS	83		25 - 150				08/25/22 12:59	08/27/22 16:24	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Client Sample ID: DUP-01-A (8-1-22)

Lab Sample ID: 500-220267-2

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/02/22 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.2		4.2	2.0	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluoropentanoic acid (PFPeA)	2.7		1.7	0.42	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorohexanoic acid (PFHxA)	1.6	J	1.7	0.49	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluoroheptanoic acid (PFHpA)	1.4	J	1.7	0.21	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorooctanoic acid (PFOA)	3.8	B	1.7	0.72	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorononanoic acid (PFNA)	<1.7		1.7	0.23	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorodecanoic acid (PFDA)	0.46	J	1.7	0.26	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluoroundecanoic acid (PFUnA)	<1.7		1.7	0.93	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.47	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorotridecanoic acid (PFTriA)	<1.7		1.7	1.1	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.62	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.75	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7		1.7	0.80	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorobutanesulfonic acid (PFBS)	<1.7		1.7	0.17	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.25	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorohexanesulfonic acid (PFHxS)	0.49	J	1.7	0.48	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.7		1.7	0.16	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorooctanesulfonic acid (PFOS)	2.6		1.7	0.46	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorononanesulfonic acid (PFNS)	<1.7		1.7	0.31	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.27	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.82	ng/L		08/14/22 20:08	08/16/22 00:12	1
Perfluorooctanesulfonamide (FOSA)	<1.7		1.7	0.83	ng/L		08/14/22 20:08	08/16/22 00:12	1
NEtFOSA	<1.7		1.7	0.74	ng/L		08/14/22 20:08	08/16/22 00:12	1
NMeFOSA	<1.7		1.7	0.36	ng/L		08/14/22 20:08	08/16/22 00:12	1
NMeFOSAA	<4.2		4.2	1.0	ng/L		08/14/22 20:08	08/16/22 00:12	1
NEtFOSAA	<4.2		4.2	1.1	ng/L		08/14/22 20:08	08/16/22 00:12	1
NMeFOSE	<3.4		3.4	1.2	ng/L		08/14/22 20:08	08/16/22 00:12	1
NEtFOSE	<1.7		1.7	0.72	ng/L		08/14/22 20:08	08/16/22 00:12	1
4:2 FTS	<1.7		1.7	0.20	ng/L		08/14/22 20:08	08/16/22 00:12	1
6:2 FTS	<4.2		4.2	2.1	ng/L		08/14/22 20:08	08/16/22 00:12	1
8:2 FTS	6.2		1.7	0.39	ng/L		08/14/22 20:08	08/16/22 00:12	1
10:2 FTS	3.3		1.7	0.57	ng/L		08/14/22 20:08	08/16/22 00:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.34	ng/L		08/14/22 20:08	08/16/22 00:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.4		3.4	1.3	ng/L		08/14/22 20:08	08/16/22 00:12	1
F-53B Major	<1.7		1.7	0.20	ng/L		08/14/22 20:08	08/16/22 00:12	1
F-53B Minor	<1.7		1.7	0.27	ng/L		08/14/22 20:08	08/16/22 00:12	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	101		25 - 150				08/14/22 20:08	08/16/22 00:12	1
13C5 PFPeA	97		25 - 150				08/14/22 20:08	08/16/22 00:12	1
13C2 PFHxA	98		25 - 150				08/14/22 20:08	08/16/22 00:12	1
13C4 PFHpA	96		25 - 150				08/14/22 20:08	08/16/22 00:12	1
13C4 PFOA	99		25 - 150				08/14/22 20:08	08/16/22 00:12	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Client Sample ID: DUP-01-A (8-1-22)

Lab Sample ID: 500-220267-2

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/02/22 09:20

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	101		25 - 150	08/14/22 20:08	08/16/22 00:12	1
13C2 PFDA	105		25 - 150	08/14/22 20:08	08/16/22 00:12	1
13C2 PFUnA	92		25 - 150	08/14/22 20:08	08/16/22 00:12	1
13C2 PFDoA	85		25 - 150	08/14/22 20:08	08/16/22 00:12	1
13C2 PFTeDA	77		25 - 150	08/14/22 20:08	08/16/22 00:12	1
13C2 PFHxDA	89		25 - 150	08/14/22 20:08	08/16/22 00:12	1
13C3 PFBS	97		25 - 150	08/14/22 20:08	08/16/22 00:12	1
18O2 PFHxS	86		25 - 150	08/14/22 20:08	08/16/22 00:12	1
13C4 PFOS	88		25 - 150	08/14/22 20:08	08/16/22 00:12	1
13C8 FOSA	94		10 - 150	08/14/22 20:08	08/16/22 00:12	1
d3-NMeFOSAA	89		25 - 150	08/14/22 20:08	08/16/22 00:12	1
d5-NEtFOSAA	86		25 - 150	08/14/22 20:08	08/16/22 00:12	1
d-N-MeFOSA-M	75		10 - 150	08/14/22 20:08	08/16/22 00:12	1
d-N-EtFOSA-M	72		10 - 150	08/14/22 20:08	08/16/22 00:12	1
d7-N-MeFOSE-M	76		10 - 150	08/14/22 20:08	08/16/22 00:12	1
d9-N-EtFOSE-M	76		10 - 150	08/14/22 20:08	08/16/22 00:12	1
M2-4:2 FTS	98		25 - 150	08/14/22 20:08	08/16/22 00:12	1
M2-6:2 FTS	106		25 - 150	08/14/22 20:08	08/16/22 00:12	1
M2-8:2 FTS	95		25 - 150	08/14/22 20:08	08/16/22 00:12	1
13C3 HFPO-DA	93		25 - 150	08/14/22 20:08	08/16/22 00:12	1
13C2 10:2 FTS	89		25 - 150	08/14/22 20:08	08/16/22 00:12	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.4		4.4	2.1	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluoropentanoic acid (PFPeA)	3.2		1.8	0.44	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorohexanoic acid (PFHxA)	2.1		1.8	0.52	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluoroheptanoic acid (PFHpA)	1.8		1.8	0.22	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorooctanoic acid (PFOA)	4.7		1.8	0.76	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorononanoic acid (PFNA)	0.78 J		1.8	0.24	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorodecanoic acid (PFDA)	0.92 J		1.8	0.28	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluoroundecanoic acid (PFUnA)	1.2 J		1.8	0.98	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.49	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorotridecanoic acid (PFTrIA)	<1.8		1.8	1.2	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.65	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.79	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.84	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorobutanesulfonic acid (PFBS)	0.28 J		1.8	0.18	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.27	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.51	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorooctanesulfonic acid (PFOS)	4.2		1.8	0.48	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.33	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.28	ng/L		08/25/22 12:59	08/27/22 16:34	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Client Sample ID: DUP-01-A (8-1-22)

Lab Sample ID: 500-220267-2

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/02/22 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.86	ng/L		08/25/22 12:59	08/27/22 16:34	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.87	ng/L		08/25/22 12:59	08/27/22 16:34	1
NEtFOSA	<1.8		1.8	0.77	ng/L		08/25/22 12:59	08/27/22 16:34	1
NMeFOSA	<1.8		1.8	0.38	ng/L		08/25/22 12:59	08/27/22 16:34	1
NMeFOSAA	<4.4		4.4	1.1	ng/L		08/25/22 12:59	08/27/22 16:34	1
NEtFOSAA	<4.4		4.4	1.2	ng/L		08/25/22 12:59	08/27/22 16:34	1
NMeFOSE	<3.6		3.6	1.2	ng/L		08/25/22 12:59	08/27/22 16:34	1
NEtFOSE	<1.8		1.8	0.76	ng/L		08/25/22 12:59	08/27/22 16:34	1
4:2 FTS	<1.8		1.8	0.21	ng/L		08/25/22 12:59	08/27/22 16:34	1
6:2 FTS	2.5	J	4.4	2.2	ng/L		08/25/22 12:59	08/27/22 16:34	1
8:2 FTS	9.7		1.8	0.41	ng/L		08/25/22 12:59	08/27/22 16:34	1
10:2 FTS	5.7		1.8	0.60	ng/L		08/25/22 12:59	08/27/22 16:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		08/25/22 12:59	08/27/22 16:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.6		3.6	1.3	ng/L		08/25/22 12:59	08/27/22 16:34	1
F-53B Major	<1.8		1.8	0.21	ng/L		08/25/22 12:59	08/27/22 16:34	1
F-53B Minor	<1.8		1.8	0.28	ng/L		08/25/22 12:59	08/27/22 16:34	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	89		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C5 PFPeA	90		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C2 PFHxA	101		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C4 PFHpA	90		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C4 PFOA	99		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C5 PFNA	100		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C2 PFDA	97		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C2 PFUnA	88		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C2 PFDoA	88		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C2 PFTeDA	76		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C2 PFHxDA	97		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C3 PFBS	93		25 - 150				08/25/22 12:59	08/27/22 16:34	1
18O2 PFHxS	96		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C4 PFOS	89		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C8 FOSA	86		10 - 150				08/25/22 12:59	08/27/22 16:34	1
d3-NMeFOSAA	85		25 - 150				08/25/22 12:59	08/27/22 16:34	1
d5-NEtFOSAA	92		25 - 150				08/25/22 12:59	08/27/22 16:34	1
d-N-MeFOSA-M	65		10 - 150				08/25/22 12:59	08/27/22 16:34	1
d-N-EtFOSA-M	58		10 - 150				08/25/22 12:59	08/27/22 16:34	1
d7-N-MeFOSE-M	68		10 - 150				08/25/22 12:59	08/27/22 16:34	1
d9-N-EtFOSE-M	62		10 - 150				08/25/22 12:59	08/27/22 16:34	1
M2-4:2 FTS	88		25 - 150				08/25/22 12:59	08/27/22 16:34	1
M2-6:2 FTS	86		25 - 150				08/25/22 12:59	08/27/22 16:34	1
M2-8:2 FTS	85		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C3 HFPO-DA	91		25 - 150				08/25/22 12:59	08/27/22 16:34	1
13C2 10:2 FTS	87		25 - 150				08/25/22 12:59	08/27/22 16:34	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Client Sample ID: Field Blank-A (8-1-22)

Lab Sample ID: 500-220267-3

Date Collected: 08/01/22 12:05

Matrix: Water

Date Received: 08/02/22 09:20

Method: 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		08/14/22 20:08	08/16/22 00:22	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8	0.44	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.53	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.23	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.77	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.25	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.28	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	1.0	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.50	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.2	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.66	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.81	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.85	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.27	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.52	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.49	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.34	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorodecanesulfonic acid (PFDS)	6.1	B	1.8	0.29	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.88	ng/L		08/14/22 20:08	08/16/22 00:22	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.89	ng/L		08/14/22 20:08	08/16/22 00:22	1
NEtFOSA	<1.8		1.8	0.79	ng/L		08/14/22 20:08	08/16/22 00:22	1
NMeFOSA	<1.8		1.8	0.39	ng/L		08/14/22 20:08	08/16/22 00:22	1
NMeFOSAA	<4.5		4.5	1.1	ng/L		08/14/22 20:08	08/16/22 00:22	1
NEtFOSAA	2.3	J B	4.5	1.2	ng/L		08/14/22 20:08	08/16/22 00:22	1
NMeFOSE	<3.6		3.6	1.3	ng/L		08/14/22 20:08	08/16/22 00:22	1
NEtFOSE	<1.8		1.8	0.77	ng/L		08/14/22 20:08	08/16/22 00:22	1
4:2 FTS	<1.8		1.8	0.22	ng/L		08/14/22 20:08	08/16/22 00:22	1
6:2 FTS	<4.5		4.5	2.3	ng/L		08/14/22 20:08	08/16/22 00:22	1
8:2 FTS	<1.8		1.8	0.42	ng/L		08/14/22 20:08	08/16/22 00:22	1
10:2 FTS	<1.8		1.8	0.61	ng/L		08/14/22 20:08	08/16/22 00:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		08/14/22 20:08	08/16/22 00:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.6		3.6	1.4	ng/L		08/14/22 20:08	08/16/22 00:22	1
F-53B Major	<1.8		1.8	0.22	ng/L		08/14/22 20:08	08/16/22 00:22	1
F-53B Minor	<1.8		1.8	0.29	ng/L		08/14/22 20:08	08/16/22 00:22	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	109		25 - 150				08/14/22 20:08	08/16/22 00:22	1
13C5 PFPeA	108		25 - 150				08/14/22 20:08	08/16/22 00:22	1
13C2 PFHxA	101		25 - 150				08/14/22 20:08	08/16/22 00:22	1
13C4 PFHpA	107		25 - 150				08/14/22 20:08	08/16/22 00:22	1
13C4 PFOA	107		25 - 150				08/14/22 20:08	08/16/22 00:22	1
13C5 PFNA	103		25 - 150				08/14/22 20:08	08/16/22 00:22	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Client Sample ID: Field Blank-A (8-1-22)

Lab Sample ID: 500-220267-3

Date Collected: 08/01/22 12:05

Matrix: Water

Date Received: 08/02/22 09:20

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	110		25 - 150	08/14/22 20:08	08/16/22 00:22	1
13C2 PFUnA	105		25 - 150	08/14/22 20:08	08/16/22 00:22	1
13C2 PFDoA	99		25 - 150	08/14/22 20:08	08/16/22 00:22	1
13C2 PFTeDA	99		25 - 150	08/14/22 20:08	08/16/22 00:22	1
13C2 PFHxDA	97		25 - 150	08/14/22 20:08	08/16/22 00:22	1
13C3 PFBS	105		25 - 150	08/14/22 20:08	08/16/22 00:22	1
18O2 PFHxS	98		25 - 150	08/14/22 20:08	08/16/22 00:22	1
13C4 PFOS	97		25 - 150	08/14/22 20:08	08/16/22 00:22	1
13C8 FOSA	95		10 - 150	08/14/22 20:08	08/16/22 00:22	1
d3-NMeFOSAA	94		25 - 150	08/14/22 20:08	08/16/22 00:22	1
d5-NEtFOSAA	87		25 - 150	08/14/22 20:08	08/16/22 00:22	1
d-N-MeFOSA-M	85		10 - 150	08/14/22 20:08	08/16/22 00:22	1
d-N-EtFOSA-M	87		10 - 150	08/14/22 20:08	08/16/22 00:22	1
d7-N-MeFOSE-M	86		10 - 150	08/14/22 20:08	08/16/22 00:22	1
d9-N-EtFOSE-M	84		10 - 150	08/14/22 20:08	08/16/22 00:22	1
M2-4:2 FTS	119		25 - 150	08/14/22 20:08	08/16/22 00:22	1
M2-6:2 FTS	114		25 - 150	08/14/22 20:08	08/16/22 00:22	1
M2-8:2 FTS	106		25 - 150	08/14/22 20:08	08/16/22 00:22	1
13C3 HFPO-DA	97		25 - 150	08/14/22 20:08	08/16/22 00:22	1
13C2 10:2 FTS	106		25 - 150	08/14/22 20:08	08/16/22 00:22	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.4		4.4	2.1	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8	0.43	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.51	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.22	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.74	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.24	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.27	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	0.96	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.48	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.1	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.64	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.78	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.82	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.26	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.50	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.47	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.32	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.28	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.85	ng/L		08/25/22 12:59	08/27/22 16:45	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.86	ng/L		08/25/22 12:59	08/27/22 16:45	1
NEtFOSA	<1.8		1.8	0.76	ng/L		08/25/22 12:59	08/27/22 16:45	1

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Client Sample ID: Field Blank-A (8-1-22)

Lab Sample ID: 500-220267-3

Date Collected: 08/01/22 12:05

Matrix: Water

Date Received: 08/02/22 09:20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NMeFOSA	<1.8		1.8	0.38	ng/L		08/25/22 12:59	08/27/22 16:45	1
NMeFOSAA	<4.4		4.4	1.1	ng/L		08/25/22 12:59	08/27/22 16:45	1
NEtFOSAA	<4.4		4.4	1.1	ng/L		08/25/22 12:59	08/27/22 16:45	1
NMeFOSE	<3.5		3.5	1.2	ng/L		08/25/22 12:59	08/27/22 16:45	1
NEtFOSE	<1.8		1.8	0.74	ng/L		08/25/22 12:59	08/27/22 16:45	1
4:2 FTS	<1.8		1.8	0.21	ng/L		08/25/22 12:59	08/27/22 16:45	1
6:2 FTS	<4.4		4.4	2.2	ng/L		08/25/22 12:59	08/27/22 16:45	1
8:2 FTS	<1.8		1.8	0.40	ng/L		08/25/22 12:59	08/27/22 16:45	1
10:2 FTS	<1.8		1.8	0.59	ng/L		08/25/22 12:59	08/27/22 16:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.35	ng/L		08/25/22 12:59	08/27/22 16:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.5		3.5	1.3	ng/L		08/25/22 12:59	08/27/22 16:45	1
F-53B Major	<1.8		1.8	0.21	ng/L		08/25/22 12:59	08/27/22 16:45	1
F-53B Minor	<1.8		1.8	0.28	ng/L		08/25/22 12:59	08/27/22 16:45	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	89		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C5 PFPeA	91		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C2 PFHxA	101		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C4 PFHpA	92		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C4 PFOA	99		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C5 PFNA	104		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C2 PFDA	101		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C2 PFUnA	93		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C2 PFDoA	100		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C2 PFTeDA	97		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C2 PFHxDA	101		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C3 PFBS	95		25 - 150				08/25/22 12:59	08/27/22 16:45	1
18O2 PFHxS	101		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C4 PFOS	90		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C8 FOSA	86		10 - 150				08/25/22 12:59	08/27/22 16:45	1
d3-NMeFOSAA	90		25 - 150				08/25/22 12:59	08/27/22 16:45	1
d5-NEtFOSAA	95		25 - 150				08/25/22 12:59	08/27/22 16:45	1
d-N-MeFOSA-M	63		10 - 150				08/25/22 12:59	08/27/22 16:45	1
d-N-EtFOSA-M	63		10 - 150				08/25/22 12:59	08/27/22 16:45	1
d7-N-MeFOSE-M	79		10 - 150				08/25/22 12:59	08/27/22 16:45	1
d9-N-EtFOSE-M	80		10 - 150				08/25/22 12:59	08/27/22 16:45	1
M2-4:2 FTS	91		25 - 150				08/25/22 12:59	08/27/22 16:45	1
M2-6:2 FTS	88		25 - 150				08/25/22 12:59	08/27/22 16:45	1
M2-8:2 FTS	94		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C3 HFPO-DA	93		25 - 150				08/25/22 12:59	08/27/22 16:45	1
13C2 10:2 FTS	104		25 - 150				08/25/22 12:59	08/27/22 16:45	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Qualifiers

LCMS

Qualifier	Qualifier Description
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.

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 30128077.01 Ditch A SW

Job ID: 500-220267-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-609445/1-A
Matrix: Water
Analysis Batch: 609406

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 609445

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorooctanoic acid (PFOA)	1.31	J	2.0	0.85	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorododecanoic acid (PFDoA)	0.883	J	2.0	0.55	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorotetradecanoic acid (PFTeA)	3.92		2.0	0.73	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorodecanesulfonic acid (PFDS)	17.5		2.0	0.32	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		08/14/22 20:08	08/15/22 21:00	1
Perfluorooctanesulfonamide (FOSA)	2.12		2.0	0.98	ng/L		08/14/22 20:08	08/15/22 21:00	1
NEtFOSA	<2.0		2.0	0.87	ng/L		08/14/22 20:08	08/15/22 21:00	1
NMeFOSA	<2.0		2.0	0.43	ng/L		08/14/22 20:08	08/15/22 21:00	1
NMeFOSAA	1.27	J	5.0	1.2	ng/L		08/14/22 20:08	08/15/22 21:00	1
NEtFOSAA	1.79	J	5.0	1.3	ng/L		08/14/22 20:08	08/15/22 21:00	1
NMeFOSE	9.54		4.0	1.4	ng/L		08/14/22 20:08	08/15/22 21:00	1
NEtFOSE	4.76		2.0	0.85	ng/L		08/14/22 20:08	08/15/22 21:00	1
4:2 FTS	<2.0		2.0	0.24	ng/L		08/14/22 20:08	08/15/22 21:00	1
6:2 FTS	<5.0		5.0	2.5	ng/L		08/14/22 20:08	08/15/22 21:00	1
8:2 FTS	<2.0		2.0	0.46	ng/L		08/14/22 20:08	08/15/22 21:00	1
10:2 FTS	<2.0		2.0	0.67	ng/L		08/14/22 20:08	08/15/22 21:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		08/14/22 20:08	08/15/22 21:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		08/14/22 20:08	08/15/22 21:00	1
F-53B Major	<2.0		2.0	0.24	ng/L		08/14/22 20:08	08/15/22 21:00	1
F-53B Minor	<2.0		2.0	0.32	ng/L		08/14/22 20:08	08/15/22 21:00	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	110		25 - 150				08/14/22 20:08	08/15/22 21:00	1
13C5 PFPeA	110		25 - 150				08/14/22 20:08	08/15/22 21:00	1
13C2 PFHxA	103		25 - 150				08/14/22 20:08	08/15/22 21:00	1
13C4 PFHpA	108		25 - 150				08/14/22 20:08	08/15/22 21:00	1
13C4 PFOA	105		25 - 150				08/14/22 20:08	08/15/22 21:00	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

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

Lab Sample ID: MB 320-609445/1-A
Matrix: Water
Analysis Batch: 609406

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 609445

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	110		25 - 150	08/14/22 20:08	08/15/22 21:00	1
13C2 PFDA	106		25 - 150	08/14/22 20:08	08/15/22 21:00	1
13C2 PFUnA	119		25 - 150	08/14/22 20:08	08/15/22 21:00	1
13C2 PFDoA	106		25 - 150	08/14/22 20:08	08/15/22 21:00	1
13C2 PFTeDA	97		25 - 150	08/14/22 20:08	08/15/22 21:00	1
13C2 PFHxDA	100		25 - 150	08/14/22 20:08	08/15/22 21:00	1
13C3 PFBS	107		25 - 150	08/14/22 20:08	08/15/22 21:00	1
18O2 PFHxS	104		25 - 150	08/14/22 20:08	08/15/22 21:00	1
13C4 PFOS	97		25 - 150	08/14/22 20:08	08/15/22 21:00	1
13C8 FOSA	97		10 - 150	08/14/22 20:08	08/15/22 21:00	1
d3-NMeFOSAA	98		25 - 150	08/14/22 20:08	08/15/22 21:00	1
d5-NEtFOSAA	100		25 - 150	08/14/22 20:08	08/15/22 21:00	1
d-N-MeFOSA-M	88		10 - 150	08/14/22 20:08	08/15/22 21:00	1
d-N-EtFOSA-M	92		10 - 150	08/14/22 20:08	08/15/22 21:00	1
d7-N-MeFOSE-M	91		10 - 150	08/14/22 20:08	08/15/22 21:00	1
d9-N-EtFOSE-M	87		10 - 150	08/14/22 20:08	08/15/22 21:00	1
M2-4:2 FTS	121		25 - 150	08/14/22 20:08	08/15/22 21:00	1
M2-6:2 FTS	116		25 - 150	08/14/22 20:08	08/15/22 21:00	1
M2-8:2 FTS	108		25 - 150	08/14/22 20:08	08/15/22 21:00	1
13C3 HFPO-DA	101		25 - 150	08/14/22 20:08	08/15/22 21:00	1
13C2 10:2 FTS	118		25 - 150	08/14/22 20:08	08/15/22 21:00	1

Lab Sample ID: LCS 320-609445/2-A
Matrix: Water
Analysis Batch: 609406

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 609445

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	39.5		ng/L		99	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	35.9		ng/L		90	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	39.8		ng/L		99	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	35.9		ng/L		90	60 - 135
Perfluorononanoic acid (PFNA)	40.0	34.3		ng/L		86	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	34.4		ng/L		86	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	35.1		ng/L		88	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	37.3		ng/L		93	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	37.3		ng/L		93	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	36.9		ng/L		92	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	37.9		ng/L		95	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	35.4		ng/L		88	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	32.1		ng/L		90	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	34.4		ng/L		92	60 - 135

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

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

Lab Sample ID: LCS 320-609445/2-A
Matrix: Water
Analysis Batch: 609406

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 609445

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.2		ng/L		94	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	41.3		ng/L		108	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	36.6		ng/L		98	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	44.1		ng/L		115	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	37.6		ng/L		97	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	39.3		ng/L		101	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	37.0		ng/L		92	60 - 135
NEtFOSA	40.0	37.0		ng/L		93	60 - 135
NMeFOSA	40.0	40.4		ng/L		101	60 - 135
NMeFOSAA	40.0	36.8		ng/L		92	60 - 135
NEtFOSAA	40.0	41.2		ng/L		103	60 - 135
NMeFOSE	40.0	36.7		ng/L		92	60 - 135
NEtFOSE	40.0	39.6		ng/L		99	60 - 135
4:2 FTS	37.5	34.7		ng/L		93	60 - 135
6:2 FTS	38.1	34.9		ng/L		92	60 - 135
8:2 FTS	38.4	37.6		ng/L		98	60 - 135
10:2 FTS	38.6	33.5		ng/L		87	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.0		ng/L		111	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	37.9		ng/L		95	60 - 135
F-53B Major	37.4	40.2		ng/L		108	60 - 135
F-53B Minor	37.8	40.3		ng/L		107	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	106		25 - 150
13C5 PFPeA	103		25 - 150
13C2 PFHxA	101		25 - 150
13C4 PFHpA	105		25 - 150
13C4 PFOA	108		25 - 150
13C5 PFNA	113		25 - 150
13C2 PFDA	114		25 - 150
13C2 PFUnA	111		25 - 150
13C2 PFDoA	104		25 - 150
13C2 PFTeDA	102		25 - 150
13C2 PFHxDA	101		25 - 150
13C3 PFBS	101		25 - 150
18O2 PFHxS	94		25 - 150
13C4 PFOS	89		25 - 150
13C8 FOSA	102		10 - 150
d3-NMeFOSAA	100		25 - 150
d5-NEtFOSAA	100		25 - 150
d-N-MeFOSA-M	86		10 - 150
d-N-EtFOSA-M	93		10 - 150

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

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

Lab Sample ID: LCS 320-609445/2-A
Matrix: Water
Analysis Batch: 609406

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 609445

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
d7-N-MeFOSE-M	92		10 - 150
d9-N-EtFOSE-M	94		10 - 150
M2-4:2 FTS	112		25 - 150
M2-6:2 FTS	115		25 - 150
M2-8:2 FTS	109		25 - 150
13C3 HFPO-DA	99		25 - 150
13C2 10:2 FTS	114		25 - 150

Lab Sample ID: LCSD 320-609445/3-A
Matrix: Water
Analysis Batch: 609406

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 609445

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	40.0	37.2		ng/L		93	60 - 135	5	30	
Perfluoropentanoic acid (PFPeA)	40.0	40.0		ng/L		100	60 - 135	1	30	
Perfluorohexanoic acid (PFHxA)	40.0	37.5		ng/L		94	60 - 135	4	30	
Perfluoroheptanoic acid (PFHpA)	40.0	40.7		ng/L		102	60 - 135	2	30	
Perfluorooctanoic acid (PFOA)	40.0	39.1		ng/L		98	60 - 135	8	30	
Perfluorononanoic acid (PFNA)	40.0	35.1		ng/L		88	60 - 135	2	30	
Perfluorodecanoic acid (PFDA)	40.0	36.0		ng/L		90	60 - 135	4	30	
Perfluoroundecanoic acid (PFUnA)	40.0	33.8		ng/L		84	60 - 135	4	30	
Perfluorododecanoic acid (PFDoA)	40.0	36.3		ng/L		91	60 - 135	3	30	
Perfluorotridecanoic acid (PFTriA)	40.0	36.6		ng/L		92	60 - 135	2	30	
Perfluorotetradecanoic acid (PFTeA)	40.0	38.6		ng/L		96	60 - 135	5	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	38.3		ng/L		96	60 - 135	1	30	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	40.3		ng/L		101	60 - 135	13	30	
Perfluorobutanesulfonic acid (PFBS)	35.5	33.6		ng/L		94	60 - 135	4	30	
Perfluoropentanesulfonic acid (PFPeS)	37.5	35.6		ng/L		95	60 - 135	4	30	
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.7		ng/L		95	60 - 135	1	30	
Perfluoroheptanesulfonic acid (PFHpS)	38.2	38.8		ng/L		102	60 - 135	6	30	
Perfluorooctanesulfonic acid (PFOS)	37.2	34.3		ng/L		92	60 - 135	6	30	
Perfluorononanesulfonic acid (PFNS)	38.5	38.1		ng/L		99	60 - 135	15	30	
Perfluorodecanesulfonic acid (PFDS)	38.6	34.2		ng/L		89	60 - 135	9	30	
Perfluorododecanesulfonic acid (PFDoS)	38.8	35.0		ng/L		90	60 - 135	12	30	
Perfluorooctanesulfonamide (FOSA)	40.0	39.0		ng/L		97	60 - 135	5	30	
NEtFOSA	40.0	41.1		ng/L		103	60 - 135	10	30	
NMeFOSA	40.0	43.8		ng/L		109	60 - 135	8	30	
NMeFOSAA	40.0	36.5		ng/L		91	60 - 135	1	30	

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

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

Lab Sample ID: LCSD 320-609445/3-A
Matrix: Water
Analysis Batch: 609406

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 609445

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	41.3		ng/L		103	60 - 135	0	30
NMeFOSE	40.0	42.6		ng/L		107	60 - 135	15	30
NEtFOSE	40.0	40.8		ng/L		102	60 - 135	3	30
4:2 FTS	37.5	37.7		ng/L		101	60 - 135	8	30
6:2 FTS	38.1	39.4		ng/L		104	60 - 135	12	30
8:2 FTS	38.4	36.9		ng/L		96	60 - 135	2	30
10:2 FTS	38.6	39.4		ng/L		102	60 - 135	16	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.7		ng/L		108	60 - 135	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.0		ng/L		100	60 - 135	5	30
F-53B Major	37.4	36.9		ng/L		99	60 - 135	9	30
F-53B Minor	37.8	35.3		ng/L		94	60 - 135	13	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	108		25 - 150
13C5 PFPeA	104		25 - 150
13C2 PFHxA	104		25 - 150
13C4 PFHpA	104		25 - 150
13C4 PFOA	107		25 - 150
13C5 PFNA	110		25 - 150
13C2 PFDA	111		25 - 150
13C2 PFUnA	115		25 - 150
13C2 PFDoA	102		25 - 150
13C2 PFTeDA	101		25 - 150
13C2 PFHxDA	100		25 - 150
13C3 PFBS	101		25 - 150
18O2 PFHxS	98		25 - 150
13C4 PFOS	98		25 - 150
13C8 FOSA	97		10 - 150
d3-NMeFOSAA	99		25 - 150
d5-NEtFOSAA	98		25 - 150
d-N-MeFOSA-M	80		10 - 150
d-N-EtFOSA-M	85		10 - 150
d7-N-MeFOSE-M	85		10 - 150
d9-N-EtFOSE-M	93		10 - 150
M2-4:2 FTS	116		25 - 150
M2-6:2 FTS	112		25 - 150
M2-8:2 FTS	132		25 - 150
13C3 HFPO-DA	97		25 - 150
13C2 10:2 FTS	117		25 - 150

Lab Sample ID: MB 320-612108/1-A
Matrix: Water
Analysis Batch: 612677

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 612108

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		08/25/22 12:59	08/27/22 16:04	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

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

Lab Sample ID: MB 320-612108/1-A
Matrix: Water
Analysis Batch: 612677

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 612108

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		08/25/22 12:59	08/27/22 16:04	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		08/25/22 12:59	08/27/22 16:04	1
NEtFOSA	<2.0		2.0	0.87	ng/L		08/25/22 12:59	08/27/22 16:04	1
NMeFOSA	<2.0		2.0	0.43	ng/L		08/25/22 12:59	08/27/22 16:04	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		08/25/22 12:59	08/27/22 16:04	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		08/25/22 12:59	08/27/22 16:04	1
NMeFOSE	<4.0		4.0	1.4	ng/L		08/25/22 12:59	08/27/22 16:04	1
NEtFOSE	<2.0		2.0	0.85	ng/L		08/25/22 12:59	08/27/22 16:04	1
4:2 FTS	<2.0		2.0	0.24	ng/L		08/25/22 12:59	08/27/22 16:04	1
6:2 FTS	<5.0		5.0	2.5	ng/L		08/25/22 12:59	08/27/22 16:04	1
8:2 FTS	<2.0		2.0	0.46	ng/L		08/25/22 12:59	08/27/22 16:04	1
10:2 FTS	<2.0		2.0	0.67	ng/L		08/25/22 12:59	08/27/22 16:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		08/25/22 12:59	08/27/22 16:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		08/25/22 12:59	08/27/22 16:04	1
F-53B Major	<2.0		2.0	0.24	ng/L		08/25/22 12:59	08/27/22 16:04	1
F-53B Minor	<2.0		2.0	0.32	ng/L		08/25/22 12:59	08/27/22 16:04	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA	87		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C5 PFPeA	90		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C2 PFHxA	98		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C4 PFHpA	90		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C4 PFOA	98		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C5 PFNA	98		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C2 PFDA	96		25 - 150	08/25/22 12:59	08/27/22 16:04	1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

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

Lab Sample ID: MB 320-612108/1-A
Matrix: Water
Analysis Batch: 612677

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 612108

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFUnA	88		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C2 PFDoA	95		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C2 PFTeDA	89		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C2 PFHxDA	98		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C3 PFBS	92		25 - 150	08/25/22 12:59	08/27/22 16:04	1
18O2 PFHxS	98		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C4 PFOS	91		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C8 FOSA	86		10 - 150	08/25/22 12:59	08/27/22 16:04	1
d3-NMeFOSAA	87		25 - 150	08/25/22 12:59	08/27/22 16:04	1
d5-NEtFOSAA	94		25 - 150	08/25/22 12:59	08/27/22 16:04	1
d-N-MeFOSA-M	63		10 - 150	08/25/22 12:59	08/27/22 16:04	1
d-N-EtFOSA-M	62		10 - 150	08/25/22 12:59	08/27/22 16:04	1
d7-N-MeFOSE-M	77		10 - 150	08/25/22 12:59	08/27/22 16:04	1
d9-N-EtFOSE-M	78		10 - 150	08/25/22 12:59	08/27/22 16:04	1
M2-4:2 FTS	93		25 - 150	08/25/22 12:59	08/27/22 16:04	1
M2-6:2 FTS	87		25 - 150	08/25/22 12:59	08/27/22 16:04	1
M2-8:2 FTS	96		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C3 HFPO-DA	91		25 - 150	08/25/22 12:59	08/27/22 16:04	1
13C2 10:2 FTS	107		25 - 150	08/25/22 12:59	08/27/22 16:04	1

Lab Sample ID: LCS 320-612108/2-A
Matrix: Water
Analysis Batch: 612677

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 612108

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	42.7		ng/L		107	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	40.9		ng/L		102	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	48.6		ng/L		122	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	41.6		ng/L		104	60 - 135
Perfluorononanoic acid (PFNA)	40.0	41.9		ng/L		105	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	39.3		ng/L		98	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	43.2		ng/L		108	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.0		ng/L		107	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	40.6		ng/L		101	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	40.2		ng/L		101	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	44.2		ng/L		111	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	38.7		ng/L		97	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	37.3		ng/L		105	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	41.2		ng/L		110	60 - 135
Perfluorohexanesulfonic acid (PFHxS)	36.5	32.3		ng/L		88	60 - 135

Eurofins Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

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

Lab Sample ID: LCS 320-612108/2-A
Matrix: Water
Analysis Batch: 612677

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 612108

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.4		ng/L		114	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	38.1		ng/L		102	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	43.5		ng/L		113	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	41.9		ng/L		109	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	36.2		ng/L		93	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	44.9		ng/L		112	60 - 135
NEtFOSA	40.0	44.4		ng/L		111	60 - 135
NMeFOSA	40.0	45.4		ng/L		113	60 - 135
NMeFOSAA	40.0	39.6		ng/L		99	60 - 135
NEtFOSAA	40.0	42.2		ng/L		105	60 - 135
NMeFOSE	40.0	42.2		ng/L		105	60 - 135
NEtFOSE	40.0	43.4		ng/L		109	60 - 135
4:2 FTS	37.5	37.0		ng/L		99	60 - 135
6:2 FTS	38.1	40.1		ng/L		105	60 - 135
8:2 FTS	38.4	41.5		ng/L		108	60 - 135
10:2 FTS	38.6	38.1		ng/L		99	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.5		ng/L		113	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.0		ng/L		97	60 - 135
F-53B Major	37.4	38.1		ng/L		102	60 - 135
F-53B Minor	37.8	40.3		ng/L		107	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	88		25 - 150
13C5 PFPeA	90		25 - 150
13C2 PFHxA	98		25 - 150
13C4 PFHpA	86		25 - 150
13C4 PFOA	99		25 - 150
13C5 PFNA	98		25 - 150
13C2 PFDA	98		25 - 150
13C2 PFUnA	94		25 - 150
13C2 PFDoA	97		25 - 150
13C2 PFTeDA	91		25 - 150
13C2 PFHxDA	102		25 - 150
13C3 PFBS	94		25 - 150
18O2 PFHxS	100		25 - 150
13C4 PFOS	91		25 - 150
13C8 FOSA	84		10 - 150
d3-NMeFOSAA	87		25 - 150
d5-NEtFOSAA	95		25 - 150
d-N-MeFOSA-M	68		10 - 150
d-N-EtFOSA-M	65		10 - 150
d7-N-MeFOSE-M	78		10 - 150
d9-N-EtFOSE-M	78		10 - 150

Eurofins Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

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

Lab Sample ID: LCS 320-612108/2-A
Matrix: Water
Analysis Batch: 612677

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 612108

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>M2-4:2 FTS</i>	95		25 - 150
<i>M2-6:2 FTS</i>	86		25 - 150
<i>M2-8:2 FTS</i>	97		25 - 150
<i>13C3 HFPO-DA</i>	88		25 - 150
<i>13C2 10:2 FTS</i>	109		25 - 150

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

Client Sample ID: SW-40 (8-1-22)

Date Collected: 08/01/22 12:10

Date Received: 08/02/22 09:20

Lab Sample ID: 500-220267-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			609445	FX	EET SAC	08/14/22 20:08
Total/NA	Analysis	537 (modified)		1	609406	K1S	EET SAC	08/16/22 00:02
Total/NA	Prep	3535	RE		612108	KAA	EET SAC	08/25/22 12:59
Total/NA	Analysis	537 (modified)	RE	1	612677	S1M	EET SAC	08/27/22 16:24

Client Sample ID: DUP-01-A (8-1-22)

Date Collected: 08/01/22 00:00

Date Received: 08/02/22 09:20

Lab Sample ID: 500-220267-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			609445	FX	EET SAC	08/14/22 20:08
Total/NA	Analysis	537 (modified)		1	609406	K1S	EET SAC	08/16/22 00:12
Total/NA	Prep	3535	RE		612108	KAA	EET SAC	08/25/22 12:59
Total/NA	Analysis	537 (modified)	RE	1	612677	S1M	EET SAC	08/27/22 16:34

Client Sample ID: Field Blank-A (8-1-22)

Date Collected: 08/01/22 12:05

Date Received: 08/02/22 09:20

Lab Sample ID: 500-220267-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			609445	FX	EET SAC	08/14/22 20:08
Total/NA	Analysis	537 (modified)		1	609406	K1S	EET SAC	08/16/22 00:22
Total/NA	Prep	3535	RE		612108	KAA	EET SAC	08/25/22 12:59
Total/NA	Analysis	537 (modified)	RE	1	612677	S1M	EET SAC	08/27/22 16:45

Laboratory References:

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 30128077.01 Ditch A SW

Job ID: 500-220267-1

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
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- 8
- 9
- 10
- 11
- 12
- 13
- 14

Eurofins TestAmerica, Sacramento
880 Riverside Parkway

Chain of Custody Record



West Sacramento, CA 95605-1500
phone 916 373.5600 fax 303.467.7248

Regulatory Program: DW NPDES RCRA Other

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

Client Contact		Project Manager: Lisa Rutkowski		Site Contact:		Date: 8-1-22		COC No: 1 of 1 COCs	
Arcadis U.S., Inc.		Email: N/A		Lab Contact: Sandie Fredrick		Carrier: FedEx		TALS Project #: 50019256	
128 North Jefferson Street, Suite 400		Tel/Fax: N/A		Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below Standard <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Fibered Sample (Y/N) Perform MS/MSD (Y/N) PFAS 537 Modified 36 Compound		Sampler: Freda Karsmeyer	
Milwaukee, WI 53202		Phr						For Lab Use Only:	
Project Name: Ditch A Surface Water		FA						Walk-in Client	
Site: Marinette, WI		P O #: 30128077.01		Job / SDG No.: 500-220267		Lab Sampling			
500-220267 COC		Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sample Specific Notes:
		SW-40 (8-1-22)		8-1-22	12:10	G	W	2	N N X Downstream
		DUP-01-A (8-1-22)		↓	—	G	W	2	N N X Duplicate
		Field Blank-A (8-1-22)		↓	12:05	G	W	2	N N X Field Blank
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other		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		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
Special Instructions/QC Requirements & Comments: Questions call Lisa Rutkowski, Liz Hover		<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposed by Lab <input type="checkbox"/> Archive for _____ Months					
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No: 1831835		Cooler Temp (°C): Obs'd: 3.0		Corr'd: 1.7		Therm ID No: F-11	
Relinquished by: Jacob Karsmeyer		Company: Berley Excavating		Date/Time: 8-1-22 12:00		Received by: FedEx		Company: _____ Date/Time: _____	
Relinquished by:		Company:		Date/Time:		Received by:		Company: _____ Date/Time: 8:00 AM	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company: _____ Date/Time: _____	

123

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Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-220267-1

Login Number: 220267

List Number: 1

Creator: Scott, Sherri L

List Source: Eurofins Chicago

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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	1.7
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: 500-220267-1

Login Number: 220267

List Number: 2

Creator: Her, David A

List Source: Eurofins Sacramento

List Creation: 08/05/22 08:10 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1831835
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	1.7 c
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.	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	



500-220267 Field Sheet

Tracking #: 577605978726

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

Job: _____

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: 611 Corr. Factor: (+/-) - °C

Ice / Wet / Gel / Other

Cooler Custody Seal: 1831835

Cooler ID: _____

Temp Observed: 1.7 °C Corrected: 1.7 °C

From: Temp Blank [x] 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: 8-2-22

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>
Is the Field Sampler's name on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples require splitting/compositing?	<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: 50 Date: 8-4-22

Notes: _____

Trizma Lot #(s): _____

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

Initials: [Signature] Date: 8/5/22

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

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)
500-220267-1	SW-40 (8-1-22)	102	107	98	102	101	95	98	101
500-220267-1 - RE	SW-40 (8-1-22)	93	89	103	93	102	101	98	86
500-220267-2	DUP-01-A (8-1-22)	101	97	98	96	99	101	105	92
500-220267-2 - RE	DUP-01-A (8-1-22)	89	90	101	90	99	100	97	88
500-220267-3	Field Blank-A (8-1-22)	109	108	101	107	107	103	110	105
500-220267-3 - RE	Field Blank-A (8-1-22)	89	91	101	92	99	104	101	93
LCS 320-609445/2-A	Lab Control Sample	106	103	101	105	108	113	114	111
LCS 320-612108/2-A	Lab Control Sample	88	90	98	86	99	98	98	94
LCSD 320-609445/3-A	Lab Control Sample Dup	108	104	104	104	107	110	111	115
MB 320-609445/1-A	Method Blank	110	110	103	108	105	110	106	119
MB 320-612108/1-A	Method Blank	87	90	98	90	98	98	96	88

		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)
500-220267-1	SW-40 (8-1-22)	87	76	83	103	93	84	92	83
500-220267-1 - RE	SW-40 (8-1-22)	83	71	92	93	102	91	87	89
500-220267-2	DUP-01-A (8-1-22)	85	77	89	97	86	88	94	89
500-220267-2 - RE	DUP-01-A (8-1-22)	88	76	97	93	96	89	86	85
500-220267-3	Field Blank-A (8-1-22)	99	99	97	105	98	97	95	94
500-220267-3 - RE	Field Blank-A (8-1-22)	100	97	101	95	101	90	86	90
LCS 320-609445/2-A	Lab Control Sample	104	102	101	101	94	89	102	100
LCS 320-612108/2-A	Lab Control Sample	97	91	102	94	100	91	84	87
LCSD 320-609445/3-A	Lab Control Sample Dup	102	101	100	101	98	98	97	99
MB 320-609445/1-A	Method Blank	106	97	100	107	104	97	97	98
MB 320-612108/1-A	Method Blank	95	89	98	92	98	91	86	87

		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)
500-220267-1	SW-40 (8-1-22)	85	73	75	76	74	104	99	101
500-220267-1 - RE	SW-40 (8-1-22)	91	56	52	61	55	92	87	91
500-220267-2	DUP-01-A (8-1-22)	86	75	72	76	76	98	106	95
500-220267-2 - RE	DUP-01-A (8-1-22)	92	65	58	68	62	88	86	85
500-220267-3	Field Blank-A (8-1-22)	87	85	87	86	84	119	114	106
500-220267-3 - RE	Field Blank-A (8-1-22)	95	63	63	79	80	91	88	94
LCS 320-609445/2-A	Lab Control Sample	100	86	93	92	94	112	115	109
LCS 320-612108/2-A	Lab Control Sample	95	68	65	78	78	95	86	97
LCSD 320-609445/3-A	Lab Control Sample Dup	98	80	85	85	93	116	112	132
MB 320-609445/1-A	Method Blank	100	88	92	91	87	121	116	108
MB 320-612108/1-A	Method Blank	94	63	62	77	78	93	87	96

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-220267-1	SW-40 (8-1-22)	90	92
500-220267-1 - RE	SW-40 (8-1-22)	96	83
500-220267-2	DUP-01-A (8-1-22)	93	89
500-220267-2 - RE	DUP-01-A (8-1-22)	91	87
500-220267-3	Field Blank-A (8-1-22)	97	106
500-220267-3 - RE	Field Blank-A (8-1-22)	93	104
LCS 320-609445/2-A	Lab Control Sample	99	114

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30128077.01 Ditch A SW

Job ID: 500-220267-1

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
LCS 320-612108/2-A	Lab Control Sample	88	109
LCSD 320-609445/3-A	Lab Control Sample Dup	97	117
MB 320-609445/1-A	Method Blank	101	118
MB 320-612108/1-A	Method Blank	91	107

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



Appendix E

Waste Management Documentation

**NON-HAZARDOUS
WASTE MANIFEST**

1. Generator ID Number: **WIT560011850** 2. Page 1 of **1** 3. Emergency Response Phone: **(800)-424-9300** 4. Waste Tracking Number: **W026-003-10**

5. Generator's Name and Mailing Address: **JCI/Tyco
1 Stanton Street
Marinette WI 54143**
Generator's Phone: **715 753-7411 Ext. 84025**
Att: **Ryan Suennen**
Generator's Site Address (if different than mailing address): **JCI/Tyco
2700 Industrial Parkway S
Marinette WI 54143**

6. Transporter 1 Company Name: **Endpoint Waste Solutions Corp.** U.S. EPA ID Number: **WI R000170027**

7. Transporter 2 Company Name: _____ U.S. EPA ID Number: _____

8. Designated Facility Name and Site Address: **Endpoint Waste Solutions Corp.
1024 Western Drive
Hartford WI 53027**
Facility's Phone: **414 427-1200**
U.S. EPA ID Number: _____
License 4704

9. Waste Shipping Name and Description	10. Containers		11. Total Quantity	12. Unit Wt./Vol.
	No.	Type		
1. Non-RCRA, non-DOT	0033	DF	9900	P
2. Non-RCRA, non-DOT	0000	—	—	—
3. Non-RCRA, non-DOT	0000	—	—	—
4. Non-RCRA; Non-DOT	0002	DM	300	P

13. Special Handling Instructions and Additional Information:
 1. Jute Filters and AFF Foam Profile# 05162022TIP-03-SH
 2. Waste Flux Profile# 05162022TIP-04-SW
 3. Steel Shot for Recycling Profile# 05162022TIP-02-RCY
 4. **Bag house dust**

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offor's Printed/Typed Name: **Tim J. Hanson** Signature: *[Signature]* Month: **7** Day: **14** Year: **22**

15. International Shipments: Import to U.S. Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____

16. Transporter Acknowledgment of Receipt of Materials
 Transporter 1 Printed/Typed Name: **Steven Bachtell** Signature: *[Signature]* Month: **07** Day: **14** Year: **22**
 Transporter 2 Printed/Typed Name: _____ Signature: _____ Month: _____ Day: _____ Year: _____

17. Discrepancy
 17a. Discrepancy Indication Space: Quantity Type Residue Partial Rejection Full Rejection
 Manifest Reference Number: _____

17b. Alternate Facility (or Generator): _____ U.S. EPA ID Number: _____
 Facility's Phone: _____

17c. Signature of Alternate Facility (or Generator): _____ Month: _____ Day: _____ Year: _____

18. Designated Facility Owner or Operator. Certification of receipt of materials covered by the manifest except as noted in Item 17a
 Printed/Typed Name: **Tim J. Hanson** Signature: *[Signature]* Month: **7** Day: **18** Year: **22**

GENERATOR

TRANSPORTER

DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: **WIT560011850** 2. Page 1 of 1 3. Emergency Response Phone: **(800) 424-9300** 4. Waste Tracking Number: **W026-003-12**

5. Generator's Name and Mailing Address: **JCI/Tyco, 1 Stanton Street, Marinette WI 54143**
 Generator's Site Address (if different than mailing address): **Att: Ryan Suennen, JCI/Tyco, 2700 Industrial Parkway S, Marinette WI 54143**

6. Transporter 1 Company Name: **Endpoint Waste Solutions Corp.** U.S. EPA ID Number: **WIR000170027**
 Generator's Phone: **715 753-7411 Ext. 84025**

7. Transporter 2 Company Name: _____ U.S. EPA ID Number: _____

8. Designated Facility Name and Site Address: **Endpoint Waste Solutions Corp., 1024 Western Drive, Hartford WI 53027** U.S. EPA ID Number: **License 4704**
 Facility's Phone: **414 427-1200**

9. Waste Shipping Name and Description	10. Containers		11. Total Quantity	12. Unit Wt./Vol.
	No.	Type		
1. Non-RCRA, non-DOT	0016	DF	6400	P
2. Non-RCRA, non-DOT	0021	DM	9450	P
3. Non-RCRA, non-DOT	0004	DM	7200	P
4. Non-RCRA, Non DOT	0007	DM	2100	P

13. Special Handling Instructions and Additional Information:
 1. Jute Filters and AFF Foam Profile# 05162022TIP-03-3H
 2. Waste Flux Profile# 05162022TIP-04-3W
 3. Steel Shot for Recycling Profile# 05162022TIP-02-RCY
 4. Baghouse Dust

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offoror's Printed/Typed Name: **Fred J Ringle** Signature: *Fred J Ringle* Month: **09** Day: **09** Year: **22**

15. International Shipments: Import to U.S. Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____

16. Transporter Acknowledgment of Receipt of Materials: Transporter Signature (for exports only): _____ Date leaving U.S.: _____

Transporter 1 Printed/Typed Name: **Steven Bachtell** Signature: *Stv Bachtell* Month: **9** Day: **9** Year: **22**

Transporter 2 Printed/Typed Name: _____ Signature: _____ Month: _____ Day: _____ Year: _____

17. Discrepancy: 17a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection

Manifest Reference Number: _____ U.S. EPA ID Number: _____

17b. Alternate Facility (or Generator): _____ U.S. EPA ID Number: _____

17c. Signature of Alternate Facility (or Generator): _____ Month: _____ Day: _____ Year: _____

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: **Fred J Ringle** Signature: *Fred J Ringle* Month: **09** Day: **09** Year: **22**

GENERATOR
INT'L
TRANSPORTER
DESIGNATED FACILITY

490893 md 10-12-22

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: 1704
2. Page 1 of 2
3. Emergency Response Phone: 282-339-3762
4. Waste Tracking Number: 598-2022-15-02

5. Generator's Name and Mailing Address: Endpoint Waste Solutions Corp, 8871 S Lowers Lane, Franklin, WI 53132
Generator's Site Address (if different than mailing address): Attn: Landi Martinec, Endpoint Waste Solutions Corp, 1024 Western Drive, Hartford, WI 53027

6. Transporter 1 Company Name: Ziron Environmental Services Inc
U.S. EPA ID Number: ILR000107501

7. Transporter 2 Company Name: CN Railway
U.S. EPA ID Number: ~~ILR00180109~~

8. Designated Facility Name and Site Address: Chemical Waste Management Inc, 17820 Cedar Springs Lane, Arlington, OR 97012-9709
Facility's Phone: 541-964-2642
U.S. EPA ID Number: ILR000180109 md 10-12-22

9. Waste Shipping Name and Description	10. Containers		11. Total Quantity	12. Unit Wt./Vol.
	No.	Type		
1. Non-RCRA, non-DOT	11036	CF	31345	P
2. Non-RCRA, non-DOT	0003	CF	1526	P
3. Non-RCRA, non-DOT	0001	DF	0030	G
4. Non-RCRA, Non-DOT	0003	DM	1253	P

13. Special Handling Instructions and Additional Information:
1. 02369641: Spent Bag Filter/Dust/Debris & Foam contaminated with PFA monomers
2. 02369642: Spent Impacted PPE/Equipment (Non-Rag)
3. 02369655: Skinned surface water with TPA monomers 1x55 gal
4. 0R349642: PFAS Impacted PPE/Equipment (Non Rag) 3x55 gal
Containers # WMA 90735, 970735

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Officer's Printed/Typed Name: Fred S. [Signature] Signature: [Signature] Month: 10, Day: 17, Year: 22

15. International Shipments: Import to U.S. Export from U.S. Port of entry/exit: Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials: Transporter 1 Printed/Typed Name: [Signature] Signature: [Signature] Month: , Day: , Year:

Transporter 2 Printed/Typed Name: YEMENYA SHIPP for CN Signature: [Signature] Month: 18, Day: 17, Year: 22

17. Discrepancy: 17a. Discrepancy Indication Space: Quantity Type Residue Partial Rejection Full Rejection
Manifest Reference Number: U.S. EPA ID Number:

17b. Alternate Facility (or Generator): Facility's Phone: U.S. EPA ID Number:

17c. Signature of Alternate Facility (or Generator): Month: , Day: , Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Dawn Dunge Signature: [Signature] Month: 19, Day: 21, Year: 22

bms

490893

md 10-12-22

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)

19. Generator ID Number LICENSE 4704

20. Page 2 of 2

21. Waste Tracking Number 598-2022-15-08

md 10-17-22

22. Generator's Name ENDPOINT WASTE SOLUTIONS

md 10-12-22

U.S. EPA ID Number ILR000180109

23. Transporter 3 Company Name BNSF RAILWAY

24. Transporter 4 Company Name UNION PACIFIC RAILROAD

U.S. EPA ID Number NED001792910

25. Waste Shipping Name and Description

26. Containers

No. Type

27. Total Quantity

28. Unit Wt./Vol.

GENERATOR

29. Special Handling Instructions and Additional Information

md 10-12-22

30. Transporter 3 Acknowledgment of Receipt of Materials

Printed/Typed Name YEMAYA SHIPP FOR BNSF

Signature

Month Day Year 8 25 22

31. Transporter 4 Acknowledgment of Receipt of Materials

Printed/Typed Name YEMAYA SHIPP FOR UPRR

Signature

Month Day Year 9 10 22

32. Discrepancy

TRANSPORTER

DESIGNATED FACILITY

490861

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number

2. Page 1 of 3
3. Emergency Response Phone

4. Waste Tracking Number

License 4704

282 339-8782

598-2022-20-08

Att: Fred Ringle

Generator's Site Address (if different than mailing address)

5. Generator's Name and Mailing Address

Endpoint Waste Solutions Corp.
1024 Western Drive
Hartford WI 53027

U.S. EPA ID Number

ILR000107581

Generator's Phone: 414 858-2104

6. Transporter 1 Company Name

Ziron Environmental Services Inc.

U.S. EPA ID Number

ILR00180109

7. Transporter 2 Company Name

CN Railway

U.S. EPA ID Number

ILR000180109

8. Designated Facility Name and Site Address

Chemical Waste Management, Inc.
17829 Cedar Springs Lane
Arlington OR 97812-9709

ORD088452353

Facility's Phone: 541 454-2843

9. Waste Shipping Name and Description

10. Containers

11. Total Quantity

12. Unit Wt./Vol.

No.

Type

1. Non-RCRA, non-DOT

0040 CF 2342 P

2.

3.

4.

13. Special Handling Instructions and Additional Information

1) OR349641: Spent Bag Filters & Jute Netting Box WMXU 970250

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offor's Printed/Typed Name

Signature

Month Day Year

Fred J Ringle

Fred J Ringle

08/08/22

15. International Shipments Import to U.S.

Export from U.S.

Port of entry/exit:

Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Signature

Month Day Year

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space Quantity

Type

Residue

Partial Rejection

Full Rejection

Manifest Reference Number:

U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a

Printed/Typed Name

Signature

Month Day Year

Dawn Ringle

[Signature]

9/21/22

DESIGNATED FACILITY TO GENERATOR

MD/MS

md 10.12.22 CWMI

490861

NON-HAZARDOUS WASTE MANIFEST
(Continuation Sheet)

19. Generator ID Number
LICENSE 4704

20. Page 2
of 2

21. Waste Tracking Number
598-2022-20-0B

22. Generator's Name
ENDPOINT WASTE SOLUTIONS
md 10.12.22

U.S. EPA ID Number
ILR000180109

23. Transporter 3 Company Name
BNSF RAILWAY

U.S. EPA ID Number
NED001792910

24. Transporter 4 Company Name
UNION PACIFIC RAILROAD

25. Waste Shipping Name and Description

26. Containers
No. Type

27. Total
Quantity

28. Unit
Wt./Vol.

GENERATOR

29. Special Handling Instructions and Additional Information

30. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name

Signature

Month Day Year
8 25 22

YEMAYA SHIPP FOR BNSF

31. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name

Signature

Month Day Year
9 10 22

YEMAYA SHIPP FOR UPRR

32. Discrepancy

TRANSPORTER

DESIGNATED FACILITY

DESIGNATED FACILITY TO GENERATOR

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number <i>License 4704</i>	2. Page 1 of <i>1</i>	3. Emergency Response Phone <i>262 339-8782</i>	4. Waste Tracking Number <i>598-2022-25-OB</i>		
5. Generator's Name and Mailing Address <i>Endpoint Waste Solutions Corp 6871 S Lovers Lane Franklin WI 53132</i>		Generator's Site Address (if different than mailing address) <i>Att. Landi Martinez Endpoint Waste Solutions Corp 1024 Western Drive Hartford WI 53027</i>				
Generator's Phone: <i>414 427-1200</i>		U.S. EPA ID Number <i>ILR000107581</i>				
6. Transporter 1 Company Name <i>Ziron Environmental Services Inc.</i>		U.S. EPA ID Number				
7. Transporter 2 Company Name		U.S. EPA ID Number				
8. Designated Facility Name and Site Address <i>Chemical Waste Management, Inc. 17829 Cedar Springs Lane Arlington OR 97112-8709</i>		U.S. EPA ID Number <i>ORD089452353</i>				
Facility's Phone: <i>541 454-2843</i>						
GENERATOR	9. Waste Shipping Name and Description	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	
		No.	Type			
	1. <i>Non-RCRA, non-DOT</i>	<i>0014</i>	<i>CF</i>	<i>8931</i>	<i>P</i>	
	2. <i>Non-RCRA, non-DOT</i>	<i>0001</i>	<i>DF</i>	<i>0005</i>	<i>G</i>	
	3.					
4.						
13. Special Handling Instructions and Additional Information <i>1. OR349641: Spent Bag Filters/Jute Netting & Boom contaminated with PFA (non-reg) 2. OR349686: Skimmed surface water with TRA (non-reg) Box # 970837</i>						
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.						
Generator's/Offeor's Printed/Typed Name <i>Fred J Ringle</i>		Signature <i>Fred J Ringle</i>		Month <i>11</i>	Day <i>17</i>	Year <i>22</i>
TRANSPORTER INT'L	15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit:			Date leaving U.S.:
	Transporter Signature (for exports only):					
	16. Transporter Acknowledgment of Receipt of Materials					
	Transporter 1 Printed/Typed Name <i>Steve</i>		Signature <i>[Signature]</i>		Month <i>11</i>	Day <i>17</i>
Transporter 2 Printed/Typed Name		Signature		Month	Day	Year
DESIGNATED FACILITY	17. Discrepancy					
	17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
	Manifest Reference Number:					
	17b. Alternate Facility (or Generator)		U.S. EPA ID Number			
	Facility's Phone:					
17c. Signature of Alternate Facility (or Generator)				Month	Day	Year
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a						
Printed/Typed Name		Signature		Month	Day	Year



CERTIFICATE OF RECYCLING

This document certifies all materials from below listed site and service order designation has been re-activated for beneficial re-use in accordance with all applicable state and federal laws pertaining to handling and treatment of waste materials.

Site Location: TYCO ANSUL FTC Site 2700 Industrial Parkway South Marinette, WI 54143

Dates and dry volumes below: **Generator:** TYCO

5/10/2022	Delivery/Pick-up	20,000 lbs
	Pick-Up	20,000 lbs
5/24/2022	Delivery/Pick-up	20,000 lbs
	Pick-Up	20,000 lbs
6/6/2022	Delivery/Pick-up	20,000 lbs
	Pick-Up	20,000 lbs
6/21/2022	Delivery/Pick-up	20,000 lbs
	Pick-Up	20,000 lbs
7/6/2022	Delivery/Pick-up	20,000 lbs
	Pick-Up	20,000 lbs
7/19/2022	Delivery/Pick-up	20,000 lbs
	Pick-Up	20,000 lbs

Steve Jordan

Signature

8/24/2022

Date



CERTIFICATE OF RECYCLING

This document certifies all materials from below listed site and service order designation has been re-activated for beneficial re-use in accordance with all applicable state and federal laws pertaining to handling and treatment of waste materials.

Site Location: TYCO ANSUL FTC Site 2700 Industrial Parkway South Marinette, WI 54143

Dates and dry volumes below: **Generator:** TYCO

DATE	TASK	Spent Carbon Shipped (lbs.)
8/9/2022	Delivery/Pick-up	20,000
8/23/2022	Delivery/Pick-up	20,000
	Pick-Up	20,000
9/13/2022	Delivery/Pick-up	20,000
	Pick-Up	20,000
10/4/2022	Delivery/Pick-up	20,000
	Pick-Up	20,000
10/27/2022	Delivery/Pick-up	20,000
11/8/2022	Delivery/Pick-up	20,000
12/5/2022	Delivery/Pick-up	20,000
	Pick-Up	20,000
1/3/2023	Delivery/Pick-up	20,000
1/4/2023	Pick-Up	20,000
1/18/2023	Delivery/Pick-up	20,000
	Pick-Up	20,000
2/8/2023	Delivery/Pick-up	16,000

Steve Jordan

2/27/2023

Signature

Date

Appendix F

Ditch A Maintenance Documentation

Technical Memorandum



FROM

Arcadis U.S., Inc.
126 N Jefferson St., #400
Milwaukee, WI 53202

TO

Wisconsin Department of Natural
Resources

DATE

March 22, 2023

PROJECT NUMBER

30171092

SUBJECT

Ditch A Surface Water Extraction and Treatment System - Ditch A Maintenance Documentation
BRRTS# 02-38-580694

This Technical Memorandum Ditch A Surface Water Extraction and Treatment System - Ditch A Maintenance Documentation (technical memorandum) is a summary of the maintenance completed on October 20, 2022 at the Ditch A Surface Water Extraction and Treatment System (Ditch A System) located at the Tyco Fire Products LLC (Tyco) Fire Technology Center (FTC) located in Marinette, Wisconsin (Site). Barley Excavating, Inc. (Barley) completed the maintenance under direction of Arcadis U.S., Inc. (Arcadis). Coleman Engineering Company (Coleman) provided on-Site construction and as-built survey services. This technical memorandum is being submitted as an Appendix to the *Semi-Annual Operation, Maintenance and Optimization Progress Report #8*.

The maintenance was focused on the repair of the in-stream check dam (check dam) that is located downstream of the cone screen inlet structure. The maintenance was completed in conformance with the Wisconsin Department of Natural Resources (WDNR) and U.S. Army Corps of Engineer permits for the Ditch A System including:

1. United States Army Corps of Engineers Nationwide Permit (NWP) No. 33 Temporary Construction, Access, and Dewatering
2. WDNR Miscellaneous Structure Individual Permit IP-NE-2018-38-02939
3. WDNR Wetland Statewide General Permit for Wetland Fill or Disturbance for Residential, Commercial, or Industrial Development WDNR-GP1-2017
4. Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit for Contaminated Groundwater from Remedial Action Operations (No. WI-0046566-07-0)

List of Contractors

This following is a list of contractors involved in the maintenance:

Consultant

Arcadis U.S., Inc.
126 North Jefferson St., #400
Milwaukee, WI 53202

Contractor

Barley Excavating, Inc.
1824 10th Ave.
Menominee, MI 49858

Surveyor

Coleman Engineering Company
790 Marvella Ln., Unit 3
Green Bay, WI 54304

Background

The Ditch A System was constructed in fall 2018 and start-up commenced in January 2019. The general dimensions of the check dam (the check dam extends to the Ditch A bank at the ordinary high-water mark) is 15 feet and 2-3 sandbags wide with a height of approximately three feet above the Ditch A stream bottom. The Ditch A System operates continuously when there is sufficient surface water in the ditch to operate the system. The Ditch A System does not operate during dry conditions (winter and dry summer months). In 2022, the sandbags and geomembrane were observed to be deteriorating (see Photograph 1). Maintenance of the check dam was determined necessary and scheduled when a dry period was observed in Ditch A.

Photograph 1. Ditch A In-stream check dam condition prior to maintenance.



Maintenance

The maintenance of the check dam was started and completed on October 20, 2022. Initially, Coleman surveyed the existing conditions of the check dam, which were compared to previous as-built elevations and construction limits. Then, the sandbags were removed. As removed, the sandbags were observed to be in deteriorated condition. Therefore, the existing sandbags were relocated and staged at the FTC for storage and off-Site disposal and not used in the maintenance of the check dam.

The existing large diameter rip rap was leveled to establish a solid base to rebuild the check dam. A total of 170 new sandbags were placed within the limits of the original check dam. As the sandbags were placed, Coleman surveyed each layer to match the elevation of the original check dam. Upon reaching the original elevation of the check dam, reinforced straps were used to secure the top of the check dam and an as-built survey was completed (attached).

The maintenance work was conducted when the channel was dry. No mechanical equipment was used within the Ditch A limits between the stream banks ordinary high-water marks.

Photograph 2. Ditch A In-stream check dam after maintenance completion.



**CHECK DAM
FACING SOUTH
BEFORE CONSTRUCTION**



4063
606.70'

4064
606.78'

4060
606.22'

4068
605.96'

4071
606.74'

4056
606.86'

**CHECK DAM
FACING SOUTHEAST
AFTER CONSTRUCTION**



4122
606.30'

4123
606.12'

4124
606.24'

4077
604.95'
BOTTOM

4127
606.31'

4125
606.64'

4076
605.06'
BOTTOM

4126
606.63'

4072
605.66'
BOTTOM

Arcadis U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202
Tel 414 276 7742
Fax 414 276 7603
www.arcadis.com