State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

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

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 from 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.

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

The requester listed above: (select all that apply)

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

Environmental Consultant (if applicable)

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

Section 2. Property Information

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

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 fo

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: _____

☐ 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: Scott Wahl
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  Date Signed 3/30/2022

Title Senior Environmental Specialist

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

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.

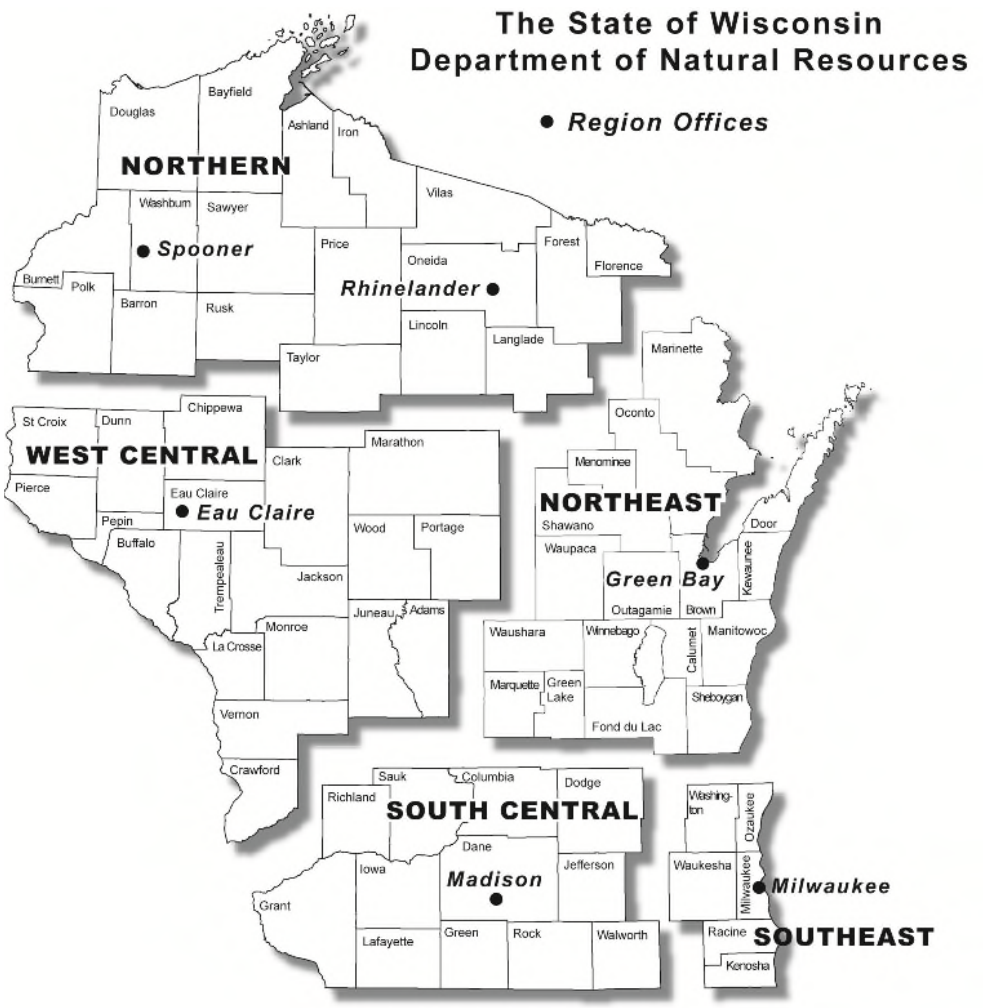
DNR NORTHERN REGION
Attn: RR Program Assistant
Department of Natural Resources
223 E Steinfest Rd Antigo, WI 54409

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? ◯ Yes ◯ 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 #6

Tyco Fire Technology Center
Ditch A Interim Action Treatment System
BRRTS# 02-38-580694
July 1, 2021 – December 31, 2021

March 2022

Semi-Annual Operation, Maintenance, and Optimization Progress Report #6

Tyco Fire Technology Center
Ditch A Interim Action Treatment System
BRRTS# 02-38-580694
July 1, 2021 – December 31, 2021

March 29, 2022

Prepared By:
Arcadis U.S., Inc.
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Milwaukee
Wisconsin 53202
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Prepared For:
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2700 Industrial Parkway South
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Executive Summary

Arcadis U.S., Inc. (Arcadis) has prepared this *Semi-Annual Operation, Maintenance and Optimization Progress Report #6* (Progress Report #6) 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, 2021 to December 31, 2021 reporting period. Progress Report #6 is submitted in accordance with s. NR 724.13(3), Wisconsin Administrative Code.

The Tyco Fire Technology Center (Tyco FTC; also known as the Ansul 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 Ch. Natural Resources 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 was 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.

A Wisconsin Pollutant Discharge Elimination System Permit Modification was submitted and approved in October 2021 authorizing the use of the Ditch A System to treat excavation dewatering from construction of the groundwater extraction treatment system (GETS) on a temporary basis. The excavation dewatering is containerized in frac tanks, processed through a series of filters, and transferred to the wet well for processing by the Ditch A System.

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 channel conditions in Ditch A. Over the reporting period, the Ditch A System operated a total of 63 days during the reporting period, including 61 days between July and September 2021 and 2 days of operation in December 2021 for treatment of the GETS dewatering groundwater while the channel for Ditch A was dry and frozen. During this reporting period approximately 8 million gallons of surface water was treated while removing PFOA and PFOS from the Ditch A influent at approximately 98.7% and 100% efficiency, respectively. The system removed approximately 0.04 pounds of PFOA and 0.02 pounds of PFOS over the reporting period, and approximately 0.72 pounds of PFOA and 0.39 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. The system was offline for portions of August, September, October, November, and December 2021 due to dry/frozen conditions in Ditch A. 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.

The Ditch A System operated per the Operation, Maintenance, and Long-Term Monitoring Plan (OM&M Plan) during the reporting period and no exceedances of the Wisconsin Pollutant Discharge Elimination System (WPDES) permit were observed. Per WDNR's request, calculation of PFOA and PFOS mass migrating downstream of the treatment system began in July 2021. Approximately 10.18 milligrams of PFOA migrated

downstream of the Ditch A System over the 6-month reporting period. PFOS was not detected above the laboratory method detection limit in any system effluent samples collected during the reporting period.

Two surface water samples were collected downstream of the Ditch A System during the reporting period corresponding to months in which natural stream flow was observed in Ditch A. Both downstream surface water samples were below the proposed surface water criteria for PFOA and PFOS. PFOS was detected in the September 2021 downstream surface water sample (0.99 J nanograms per liter), however this value was qualified as an estimate (J-flagged) since it was less than the reporting limit but greater than the method detection limit.

1 Introduction

Arcadis U.S., Inc. (Arcadis) has prepared this *Semi-Annual Operation, Maintenance and Optimization Progress Report #6* (Progress Report #6) 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 #6 summarizes system design and construction details; operations, maintenance, and monitoring activities; and an evaluation of system performance over the reporting period (July 1, 2021 through December 31, 2021).

2 Site Background

The boundary of the Tyco FTC (also known as the Ansul Fire Technology Center) (Site) is found 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.

An on-Site ditch (referred to as Ditch A for the purposes of this Progress Report #6) discharges to an unnamed tributary to the Little River. The Ditch A System is located south of the existing Tyco FTC 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 a 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 Ditch A System was also operated, as necessary, to treat construction dewatering groundwater in accordance with the Planned Changes submitted and approved on October 5, 2021 (**Appendix B**). 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 Contaminants of Concern

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.

As described in Section 3.4, temporary equipment to process PFAS-impacted water generated from activities related to the construction of Tyco's groundwater extraction and treatment system (GETS) was installed during the reporting period. Construction dewatering groundwater was filtered to 5-microns and transferred to the Ditch A System wet well. The direct burial isolation valve between the wet well and Ditch A was closed prior to transferring filtered dewatering groundwater.

Piping and instrumentation diagrams of the Ditch A System and temporary dewatering treatment system are included in **Appendix A** and **Appendix B**, respectively.

3.3 System Size and Remediation Method

The Ditch A 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, valve vault, and temporary dewatering processing system components located adjacent to Ditch A, 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 October 4, 2021, Tyco submitted a planned changes notification to WDNR via email describing the proposed use of the Ditch A System to treat PFAS-impacted excavation dewatering groundwater generated by construction activities for the GETS. The notification also included a description of the temporary system components that would be added adjacent to the Ditch A System wet well for handling and metering the loads of excavation dewatering delivered by tanker trucks.

On October 5, 2021, WDNR approved Tyco's planned changes regarding treatment of excavation dewatering with the Ditch A System (**Appendix B**).

On November 2, 2021, final process connections and interlock testing was completed for the integration of the temporary dewatering processing system. The temporary system includes two frac tanks for water storage and two containers containing pumps and bag filters. Filtered water from the temporary system is directed into the Ditch A System wet well and discharged to Ditch A following treatment by the Ditch A System. As shown in **Figure 2** and **Appendix B**, excavation dewatering groundwater generated by GETS construction activities is filtered by 50-micron bag filters as it is offloaded from tanker trucks into Frac 1. Water from Frac 1 is successively filtered by 25-micron and 5-micron bag filters as it is pumped to Frac 2. Filtered water from Frac 2 is pumped to the Ditch A System wet well then fully treated by the Ditch A System prior to discharge to Ditch A downstream of the check dam.

16,975 gallons and 28,025 gallons of dewatering groundwater were transferred to the Ditch A System wet well for treatment on December 20 and December 22, 2021, respectively. No natural stream flow was observed in Ditch A while treating the dewatering from the GETS construction activities.

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 63 days over the reporting period and discharged 7,967,270 gallons. The total system discharge volume includes 46,720 gallons of treated construction dewatering groundwater discharged on December 20, 2021 and December 22, 2021, as discussed in Section 3.4. System utilization over the reporting period, as calculated per WDNR Form 4400-194 daily, was 34%. Stream flow in Ditch A was intermittent during the reporting period for the months of August and September with dry channel conditions present for September through December 2021. The system operated for 61 days when surface water flow conditions were sufficient to support system operation. The system was operated for an additional two days (December 20, 2021 and December 22, 2021) to process water generated from activities related to construction of the GETS, although no natural flow was present in Ditch A during this time period. Therefore, the utilization rate accounting for days the system was operated and adequate stream flow conditions were present was 100% excluding operation in December and 103% including operation in December.

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 GAC vessel backwashes), 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 43,300 gpd. The average system flow rate, accounting for actual operating time, was 134,915 gpd. In general, 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 and WDNR, Arcadis, and Tyco are notified via an automatically generated email. Since the check dam is permeable, high-level events are generally triggered by heavy precipitation. Water levels recorded during the reporting period upstream of the check dam are presented in **Figure 3**.

The upstream water level reached the high level setpoint on July 5, 2021, however no alarm was generated by the system. Data from the level transmitter recorded by the supervisory control and data acquisition (SCADA) system indicated that the high level condition existed for 4 hours (19:00-23:00) but the water level did not exceed the height of the check dam. No signs of overtopping were observed during a visual inspection of the area conducted the following morning.

The Ditch A check dam high-level alarm triggered once during the reporting period on July 14, 2021; however, this was confirmed to be a false alarm. The area was inspected visually at the time of the alarm and no overtopping of the check dam was observed.

Ditch A was dry during the periods of August 23, 2021 through August 28, 2021 and September 5, 2021 through December 31.

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 July 1, 2021 to December 31, 2021 reporting periods were submitted to WDNR in monthly eDMRs.

pH is measured in the field (quarterly) by using a calibrated pH meter during each sampling event. 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 (United States Environmental Protection Agency [U.S. EPA] Method 537 Modified)
- Oil and Grease (U.S. EPA Method 1664)
- TSS (Standard Methods 2540D)
- BTEX (U.S. EPA Method 624)
- PAHs (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 C**.

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 0.04 pounds of PFOA and 0.02 pounds of PFOS over the reporting period. The system has removed approximately 0.72 pounds of PFOA and 0.39 pounds of PFOS since startup in January 2019. On average, the system removed PFOA and PFOS at 98.7% and 100% efficiency, respectively, from the Ditch A System influent over the reporting period, as shown in **Table 4.**

Tabulations of monthly and cumulative PFOA and PFOS mass migrating downstream began in July 2021 and are shown in **Table 3**. Calculations were performed per the Revised Appendix B of the Operation, Maintenance, and Long-Term Monitoring Plan (OM&M Plan) submitted for the Ditch A System on November 19, 2021. Approximately 10.18 milligrams of PFOA migrated downstream of the system during the reporting period. PFOS was not detected above the method detection limit in any system effluent samples collected during the reporting

period. PFOS was detected the September 2021 downstream surface water sample (0.99 J nanograms per liter [ng/L]), however this value was qualified as an estimate (J-flagged) since it was less than the reporting limit but greater than the method detection limit.

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 Revised Appendix B of the Ditch A System OM&M Plan submitted on November 19, 2021. The Ditch A system captured 100% of Ditch A stream flow during the reporting period.

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 nanograms per liter (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 (December 2021) 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, corresponding to a period with low observed water levels.

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 August 3, 2021 and September 2, 2021 at SW-40 (**Figure 6**). No natural flow was observed in Ditch A throughout October, November, and December 2021 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 proposed surface water criteria:

- PFOA: The proposed level of public health significance is 20 ng/L in waters classified as public water supplies under ch. NR 104, and 95 ng/L for other surface waters.
- PFOS: The proposed level of public health significance is 8 ng/L for all waters except those that cannot naturally support fish and do not have downstream waters that support fish.

No exceedances of any proposed surface water criteria were observed during the reporting period.

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 #6, as discussed in Sections 4.4, 5.1 and 5.2.

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. All bag filters are currently staged at Endpoint's facility pending proper disposal. Manifests documenting transport from the FTC to Endpoint's facility 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.

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, 360,000 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 63 days and treated approximately 8 million gallons of surface water while removing PFOA and PFOS from the Ditch A influent at approximately 98.7% and 100% efficiency, respectively. The system removed approximately 0.04 pounds of PFOA and 0.02 pounds of PFOS over the reporting period, and approximately 0.72 pounds of PFOA and 0.39 pounds of PFOS since startup in January 2019. There were no WPDES Permit exceedances.

Surface water flow in Ditch A was intermittent during the reporting period and no overtopping of the check dam was observed. The channel was dry for portions of August and September, and no surface water was observed during the months of October, November, and December 2021 due to dry/frozen conditions. 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

The Ditch A System operated per the Operation, Maintenance, and Long-Term Monitoring Plan (OM&M Plan) during the reporting period and no exceedances of the Wisconsin Pollutant Discharge Elimination System (WPDES) permit were observed. Per WDNR's request, calculation of PFOA and PFOS mass migrating downstream of the treatment system began in July 2021. Approximately 10.18 milligrams of PFOA migrated downstream of the Ditch A System over the 6-month reporting period. PFOS was not detected above the laboratory method detection limit in any system effluent samples collected during the reporting period.

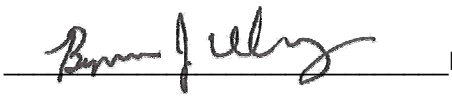
Two surface water samples were collected downstream of the Ditch A System during the reporting period corresponding to months in which natural stream flow was observed in Ditch A. Both downstream surface water samples were below the proposed public health significance thresholds for PFOA and PFOS. PFOS was detected the September 2021 downstream surface water sample (0.99 J nanograms per liter), however this value was qualified as an estimate (J-flagged) since it was less than the reporting limit but greater than the method detection limit.

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-21	3,856,180	31	31	744	31	100%	100%	124,393	124,393	715	96%	129,402	--
Aug-21	3,553,790	31	26	620	26	84%	100%	114,638	136,684	604	97%	141,327	--
Sep-21	510,580	30	4	92	4	13%	100%	17,019	127,645	91	99%	134,955	--
Oct-21	0	31	0	0	0	0%	0%	0	0	0	0%	0	System offline from 10/1/21 - 10/31/21 due to no flow in Ditch A
Nov-21	0	30	0	0	0	0%	0%	0	0	0	0%	0	System offline from 11/1/21 - 11/30/21 due to no flow in Ditch A
Dec-21	46,720	31	0	0	2	6%	NA	1,507	23,360	8	NA	143,754	System operated on 12/20/21 and 12/22/21 to treat construction dewatering water but no natural flow was present in Ditch A from 12/1/21 - 12/31/21.
Total:	**7,967,270**	**184**	**61**	**1,456**	**63**	**34%**	**103%**	**43,300**	**126,465**	**1,417**	**97%**	**134,915**	

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

Shading:

Yellow Highlight = The Ditch A System was operated to treat construction dewatering water during periods in which no natural flow was present in the ditch.

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
		Daily Max	Daily Max		Monthly Average		Monthly Average		Monthly Average		Monthly Average	Daily Min	Daily Max	Daily Max
Location	**Sample Date**													
V-900-A	7/1/2021	< 1.9 U	< 1.4 U	< 0.40		< 0.38		< 0.00049 U		< 0.00077 U		7.09		X
V-900-A	7/8/2021	< 1.9 U	< 1.4 U	< 0.40		< 0.38		< 0.00057 U		< 0.00089 U		7.06		X
V-900-A	7/15/2021	NS	NS	NS	0.0000	NS	0.0000	< 0.00048 U	0.0000	< 0.00076 U	0.0000	NS		X
V-900-A	7/22/2021	NS	NS	NS		NS		< 0.00047 U		< 0.00074 U		NS		X
V-900-A	7/29/2021	NS	NS	NS		NS		< 0.00046 U		< 0.00073 U		NS		X
V-900-A	8/3/2021	NS	NS	NS		NS		< 0.00050 U		< 0.00079 U		NS		X
V-900-A	8/9/2021	NS	NS	NS	NS	NS	NS	< 0.00047 UJ-	0.0000	< 0.00075 UJ-	0.0007	NS		X
V-900-A	8/18/2021	NS	NS	NS		NS		< 0.00048 U		0.0029		NS		X
V-900-A	8/27/2021	NS	NS	NS		NS		< 0.00047 U		< 0.00074 U		NS		X
V-900-A	9/2/2021	NS	NS	NS	NS	NS	NS	< 0.00048 U	0.0000	< 0.00076 U	0.0000	NS		X
V-900-A	12/20/2021	< 1.9 U	< 1.4 UBJ-	< 0.40	0.0000	< 0.38	0.0000	< 0.00052 UB	0.0000	0.0013 J	0.0013	7.09		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 = miligrams 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)
- = The associated numberical value is expected to have a negative or low bias
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 PFAS Mass Removal and Mass Migrating Downstream
Tyco Fire Products LP
Marinette, Wisconsin

	Ditch A Treatment System PFAS Mass Removal				PFAS Mass Migrating Downstream			
	Monthly		Cumulative		Monthly		Cumulative	
	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA
Month-Year	lbs	lbs	lbs	lbs	mg	mg	mg	mg
Jan-19	3.17E-04	6.83E-04	3.17E-04	6.83E-04	--	--	-	--
Feb-19	0.00E+00	0.00E+00	3.17E-04	6.83E-04	--	--	--	--
Mar-19	3.01E-03	4.41E-03	3.33E-03	5.10E-03	--	--	--	--
Apr-19	9.90E-03	2.20E-02	1.32E-02	2.70E-02	--	--	--	--
May-19	1.22E-02	3.27E-02	2.54E-02	5.98E-02	--	--	--	--
Jun-19	1.44E-02	3.39E-02	3.98E-02	9.37E-02	--	--	--	--
Jul-19	1.75E-02	3.18E-02	5.73E-02	1.25E-01	--	--	--	--
Aug-19	1.32E-02	1.89E-02	7.05E-02	1.44E-01	--	--	--	--
Sep-19	1.84E-02	2.85E-02	8.89E-02	1.73E-01	--	--	--	--
Oct-19	2.42E-02	4.22E-02	1.13E-01	2.15E-01	--	--	--	--
Nov-19	2.17E-02	4.74E-02	1.35E-01	2.62E-01	--	--	--	--
Dec-19	2.52E-02	4.94E-02	1.60E-01	3.12E-01	--	--	--	--
Jan-20	2.16E-02	4.17E-02	1.82E-01	3.53E-01	--	--	--	--
Feb-20	1.38E-02	3.27E-02	1.95E-01	3.86E-01	--	--	--	--
Mar-20	2.80E-02	5.18E-02	2.23E-01	4.38E-01	--	--	--	--
Apr-20	1.68E-02	3.27E-02	2.40E-01	4.71E-01	--	--	--	--
May-20	2.05E-02	3.59E-02	2.61E-01	5.07E-01	--	--	--	--
Jun-20	2.46E-02	4.24E-02	2.85E-01	5.49E-01	--	--	--	--
Jul-20	3.27E-02	5.61E-02	3.18E-01	6.05E-01	--	--	--	--
Aug-20	1.19E-02	2.19E-02	3.30E-01	6.27E-01	--	--	--	--
Sep-20	2.60E-03	3.06E-03	3.32E-01	6.30E-01	--	--	--	--
Oct-20	1.61E-03	1.46E-03	3.34E-01	6.32E-01	--	--	--	--
Nov-20	5.73E-03	7.66E-03	3.40E-01	6.39E-01	--	--	--	--
Dec-20	2.45E-03	3.31E-03	3.42E-01	6.43E-01	--	--	--	--
Jan-21	1.12E-04	9.39E-05	3.42E-01	6.43E-01	--	--	--	--
Feb-21	0.00E+00	0.00E+00	3.42E-01	6.43E-01	--	--	--	--
Mar-21	3.72E-03	4.20E-03	3.46E-01	6.47E-01	--	--	--	--
Apr-21	1.28E-02	2.19E-02	3.59E-01	6.69E-01	--	--	--	--
May-21	6.11E-03	1.08E-02	3.65E-01	6.80E-01	--	--	--	--
Jun-21	3.71E-04	5.22E-04	3.65E-01	6.80E-01	--	--	--	--

Table 3
Ditch A System PFAS Mass Removal and Mass Migrating Downstream
Tyco Fire Products LP
Marinette, Wisconsin

	Ditch A Treatment System PFAS Mass Removal				PFAS Mass Migrating Downstream			
	Monthly		Cumulative		Monthly		Cumulative	
	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA
Month-Year	lbs	lbs	lbs	lbs	mg	mg	mg	mg
Jul-21	1.70E-02	2.79E-02	3.82E-01	7.08E-01	0.00	0.00	0.00	0.00
Aug-21	6.98E-03	1.11E-02	3.89E-01	7.19E-01	0.00	9.95	0.00	9.95
Sep-21	3.49E-05	3.75E-05	3.89E-01	7.19E-01	0.00	0.00	0.00	9.95
Oct-21	0.00E+00	0.00E+00	3.89E-01	7.19E-01	0.00	0.00	0.00	9.95
Nov-21	0.00E+00	0.00E+00	3.89E-01	7.19E-01	0.00	0.00	0.00	9.95
Dec-21	7.80E-05	4.68E-03	3.89E-01	7.24E-01	0.00	0.23	0.00	10.18

Abbreviations:

lbs = Pounds

mg = milligrams

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctane sulfonic acid

-- = Not Quantified

Notes:

Tracking of PFAS mass migrating downstream began 7/1/2021.

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

Date	PFOS			PFOA		
	Influent (µg/L)	Effluent (µg/L)	Efficiency (%)	Influent (µg/L)	Effluent (µg/L)	Efficiency (%)
7/1/2021	0.25	< 0.00049 U	100.0	0.15	< 0.00077 U	100.0
7/8/2021	0.71 D	< 0.00057 U	100.0	0.87 D	< 0.00089 U	100.0
7/15/2021	1 D	< 0.00048 U	100.0	2.1 D	< 0.00076 U	100.0
7/22/2021	0.016	< 0.00047 U	100.0	0.022	< 0.00074 U	100.0
7/29/2021	0.51 D	< 0.00046 U	100.0	0.83 D	< 0.00073 U	100.0
		Average:	**100.0**		**Average:**	**100.0**
8/3/2021	0.11	< 0.00050 U	100.0	0.21	< 0.00079 U	100.0
8/9/2021	0.55 DJ-	< 0.00047 UJ-	100.0	1 DJ-	< 0.00075 UJ-	100.0
8/18/2021	0.013	< 0.00048 U	100.0	0.02	0.0029	85.5
8/27/2021	0.7 D	< 0.00047 U	100.0	0.52 D	< 0.00074 U	100.0
		Average:	**100.0**		**Average:**	**96.4**
9/2/2021	0.0082	< 0.00048 U	100.0	0.0088	< 0.00076 U	100.0
		Average:	**100.0**		**Average:**	**100.0**
12/20/2021(1)	0.20	< 0.00052 UB	100.0	12 D	0.0013 J	100.0
		Average:	**100.0**		**Average:**	**100.0**
		Overall Average:	**100.0**		**Overall Average:**	**98.7**

Notes:

- = The associated numerical value is expected to have a negative or low bias

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

B = Compound was found in blank and sample

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

µg/L = Micrograms per liter

NA = Not Available

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

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

(1) = Data collected on 12/20/21 represents treatment of construction dewatering water. No natural flow in Ditch A was observed.

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

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

Table 5
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	Untreated Water Volume
		gallons	gallons	gallons
Sunday, January 10, 2021	Saturday, January 16, 2021	0	Not Quantified	Not Quantified
Sunday, January 17, 2021	Saturday, January 23, 2021	640,290	Not Quantified	Not Quantified
Sunday, January 24, 2021	Saturday, January 30, 2021	0	Not Quantified	Not Quantified
Sunday, January 31, 2021	Saturday, February 6, 2021	0	Not Quantified	Not Quantified
Sunday, February 7, 2021	Saturday, February 13, 2021	0	Not Quantified	Not Quantified
Sunday, February 14, 2021	Saturday, February 20, 2021	0	Not Quantified	Not Quantified
Sunday, February 21, 2021	Saturday, February 27, 2021	0	Not Quantified	Not Quantified
Sunday, February 28, 2021	Saturday, March 6, 2021	0	Not Quantified	Not Quantified
Sunday, March 7, 2021	Saturday, March 13, 2021	458,650	Not Quantified	Not Quantified
Sunday, March 14, 2021	Saturday, March 20, 2021	957,470	Not Quantified	Not Quantified
Sunday, March 21, 2021	Saturday, March 27, 2021	996,610	Not Quantified	Not Quantified
Sunday, March 28, 2021	Saturday, April 3, 2021	896,360	Not Quantified	Not Quantified
Sunday, April 4, 2021	Saturday, April 10, 2021	989,920	Not Quantified	Not Quantified
Sunday, April 11, 2021	Saturday, April 17, 2021	968,470	Not Quantified	Not Quantified
Sunday, April 18, 2021	Saturday, April 24, 2021	980,120	Not Quantified	Not Quantified
Sunday, April 25, 2021	Saturday, May 1, 2021	892,050	Not Quantified	Not Quantified
Sunday, May 2, 2021	Saturday, May 8, 2021	760,720	Not Quantified	Not Quantified
Sunday, May 9, 2021	Saturday, May 15, 2021	750,480	Not Quantified	Not Quantified
Sunday, May 16, 2021	Saturday, May 22, 2021	895,230	Not Quantified	Not Quantified
Sunday, May 23, 2021	Saturday, May 29, 2021	976,040	Not Quantified	Not Quantified
Sunday, May 30, 2021	Saturday, June 5, 2021	945,780	Not Quantified	Not Quantified
Sunday, June 6, 2021	Saturday, June 12, 2021	515,150	Not Quantified	Not Quantified
Sunday, June 13, 2021	Saturday, June 19, 2021	0	Not Quantified	Not Quantified
Sunday, June 20, 2021	Saturday, June 26, 2021	0	Not Quantified	Not Quantified
Sunday, June 27, 2021	Saturday, July 3, 2021	470,400	470,400	0
Sunday, July 4, 2021	Saturday, July 10, 2021	923,960	923,960	0
Sunday, July 11, 2021	Saturday, July 17, 2021	849,050	849,050	0
Sunday, July 18, 2021	Saturday, July 24, 2021	862,210	862,210	0
Sunday, July 25, 2021	Saturday, July 31, 2021	806,590	806,590	0
Sunday, August 1, 2021	Saturday, August 7, 2021	1,002,360	1,002,360	0
Sunday, August 8, 2021	Saturday, August 14, 2021	965,060	965,060	0
Sunday, August 15, 2021	Saturday, August 21, 2021	906,250	906,250	0
Sunday, August 22, 2021	Saturday, August 28, 2021	256,440	256,440	0
Sunday, August 29, 2021	Saturday, September 4, 2021	934,260	934,260	0
Sunday, September 5, 2021	Saturday, September 11, 2021	0	0	0
Sunday, September 12, 2021	Saturday, September 18, 2021	0	0	0
Sunday, September 19, 2021	Saturday, September 25, 2021	0	0	0
Sunday, September 26, 2021	Saturday, October 2, 2021	0	0	0
Sunday, October 3, 2021	Saturday, October 9, 2021	0	0	0
Sunday, October 10, 2021	Saturday, October 16, 2021	0	0	0
Sunday, October 17, 2021	Saturday, October 23, 2021	0	0	0
Sunday, October 24, 2021	Saturday, October 30, 2021	0	0	0
Sunday, October 31, 2021	Saturday, November 6, 2021	0	0	0
Sunday, November 7, 2021	Saturday, November 13, 2021	0	0	0
Sunday, November 14, 2021	Saturday, November 20, 2021	0	0	0
Sunday, November 21, 2021	Saturday, November 27, 2021	0	0	0
Sunday, November 28, 2021	Saturday, December 4, 2021	0	0	0
Sunday, December 5, 2021	Saturday, December 11, 2021	0	0	0
Sunday, December 12, 2021	Saturday, December 18, 2021	0	0	0
Sunday, December 19, 2021	Saturday, December 25, 2021	46,720	0	0
Sunday, December 26, 2021	Saturday, January 1, 2022	0	0	0

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

Location	Proposed Level of Public Health Significance - Drinking Water Bodies[1][2]	Proposed Level of Public Health Significance - Other Water Bodies[1][2]	Proposed Level of Public Health Significance - All Waters with Exception[1][3]	SW-40			
Sample ID				SW-40 (8-3-21)	DUP-01-A (8-3-21)	SW-40 (9-2-21)	DUP-01-A (9-2-21)
Sample Date				8/3/2021	8/3/2021	9/2/2021	9/2/2021
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
Per- and Polyfluoroalkyl Substances							
10:2 FTS	--	--	--	0.84 J	0.74 J	0.72 J	<0.62 U
F-53B Minor	--	--	--	<0.31 U	<0.30 U	<0.27 U	<0.30 U
HFPO-DA	--	--	--	<1.5 U	<1.4 U	<1.3 U	<1.4 U
DONA	--	--	--	<0.39 U	<0.38 U	<0.34 U	<0.37 U
4:2 FTS	--	--	--	<0.23 U	<0.23 U	<0.20 U	<0.22 U
6:2 FTSA	--	--	--	<2.4 U	<2.4 U	<2.1 U	<2.3 U
8:2 FTSA	--	--	--	<0.45 U	<0.43 U	1.7	<0.43 U
F-53 Major	--	--	--	<0.23 U	<0.23 U	<0.20 U	<0.22 U
N-EtFOSA	--	--	--	<0.84 U	<0.82 U	<0.73 U	<0.80 U
N-EtFOSE	--	--	--	<0.82 U	<0.80 U	<0.72 U	<0.79 U
EtFOSAA	--	--	--	<1.3 U	<1.2 U	<1.1 U	<1.2 U
N-MeFOSA	--	--	--	<0.42 U	<0.40 U	<0.36 U	<0.40 U
N-MeFOSE	--	--	--	<1.4 U	<1.3 U	<1.2 U	<1.3 U
MeFOSAA	--	--	--	<1.2 U	<1.1 U	<1.0 U	<1.1 U
PFBS	--	--	--	<0.19 U	<0.19 U	<0.17 U	<0.19 U
PFBA	--	--	--	3.1 J	3.0 J	9.2	8.9
PFDS	--	--	--	<0.31 U	<0.30 U	<0.27 U	<0.30 U
PFDA	--	--	--	<0.30 U	<0.29 U	<0.26 U	<0.29 U
PFDOS	--	--	--	<0.94 U	<0.91 U	<0.82 U	<0.90 U
PFDoA	--	--	--	<0.53 U	<0.52 U	<0.46 U	<0.51 U
PFHpS	--	--	--	<0.18 U	<0.18 U	<0.16 U	<0.18 U
PFHpA	--	--	--	<0.24 U	<0.24 U	<0.21 U	<0.23 U
PFHxDA	--	--	--	<0.86 U	<0.84 U	<0.75 U	<0.82 U
PFHxS	--	--	--	<0.55 U	<0.54 U	<0.48 U	<0.53 U
PFHxA	--	--	--	<0.56 U	<0.55 U	<0.49 U	<0.54 U
PFNS	--	--	--	<0.36 U	<0.35 U	<0.31 U	<0.34 U
PFNA	--	--	--	<0.26 U	<0.25 U	<0.23 U	<0.25 U
PFODA	--	--	--	<0.91 U	<0.88 U	<0.79 U	<0.87 U
PFOSA	--	--	--	<0.95 U	<0.92 U	<0.82 U	<0.91 U
PFOS	--	--	8	<0.52 U	<0.51 U	0.99 J	<0.50 U
PFOA	20	95	--	<0.82 U	<0.80 U	<0.72 U	<0.79 U
PFPeSA	--	--	--	<0.29 U	<0.28 U	<0.25 U	<0.28 U
PFPeA	--	--	--	<0.48 U	<0.46 U	1.6 J	1.5 J
PFTeDA	--	--	--	<0.71 U	<0.69 U	<0.61 U	<0.68 U
PFTrDA	--	--	--	<1.3 U	<1.2 U	<1.1 U	<1.2 U
PFUdA	--	--	--	<1.1 U	<1.0 U	<0.93 U	<1.0 U

Notes on Page 2.

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

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) = WDNR proposed surface water quality criteria (proposed creation of NR 102.04 (1m) per WDNR proposal WY-23-19)

(2) = The PFOA proposed level of public health significance is 20 ng/L in waters classified as public water supplies under ch. NR 104, and 95 ng/L for other surface waters.

(3) = The PFOS proposed level of public health significance 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 (non-drinking water source)

Bold = Value exceeds proposed surface water quality criteria (drinking water source)

Italics = Value exceeds proposed surface water quality criteria (fish consumption)

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 numberical value is the approximate concentration of the analyte in the sample.

Analyte Abbreviations:

10:2 FTS	10:2 Fluorotelomer sulfonic acid
F-53B Minor	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
HFPO-DA	2,3,3,3-Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
DONA	4,8-Dioxa-3H-perfluorononanoic acid
4:2 FTS	4:2 Fluorotelomer sulfonate
6:2 FTSA	6:2 Fluorotelomer sulfonic acid
8:2 FTSA	8:2 Fluorotelomer sulfonic acid
F-53 Major	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid
N-EtFOSA	N-Ethyl perfluoroctane sulfonamide
N-EtFOSE	N-Ethyl perfluorooctane sulfonamide ethanol
EtFOSAA	N-Ethyl perfluorooctane sulfonamidoacetic acid
N-MeFOSA	N-Methyl perfluorooctane sulfonamide
N-MeFOSE	N-Methyl perfluorooctane sulfonamidoethanol
MeFOSAA	N-Methylperfluoroocatane sulfonamidoacetic acid
PFBS	Perfluorobutane sulfonic acid
PFBA	Perfluorobutanoic acid
PFDS	Perfluorodecane sulfonic acid
PFDA	Perfluorodecanoic acid
PFDOS	Perfluorododecane sulfonic acid
PFDoA	Perfluorododecanoic acid
PFHpS	Perfluoroheptane sulfonic acid
PFHpA	Perfluoroheptanoic acid
PFHxDA	Perfluorohexadecanoic acid
PFHxS	Perfluorohexane sulfonic acid
PFHxA	Perfluorohexanoic acid
PFNS	Perfluorononane sulfonic acid
PFNA	Perfluorononanoic acid
PFODA	Perfluorooctadecanoic acid
PFOSA	Perfluorooctane sulfonamide
PFOS	Perfluorooctane sulfonic acid
PFOA	Perfluorooctanoic acid
PFPeSA	Perfluoropentane sulfonic acid
PFPeA	Perfluoropentanoic acid
PFTeDA	Perfluorotetradecanoic acid
PFTrDA	Perfluorotridecanoic acid
PFUdA	Perfluoroundecanoic 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	PFOS	PFOA	
Month-Year	ng/L	ng/L	ng/L	ng/L	
Aug-21	343.3	437.5	< 0.52 U	<0.82 U	--
Sep-21	8.2	8.8	0.99 J	<0.79 U	--
Oct-21	NS	NS	NS	NS	No flow observed in Ditch A
Nov-21	NS	NS	NS	NS	No flow observed in Ditch A
Dec-21	NS	NS	NS	NS	No natural flow observed in Ditch A. System influent sample was collected on 12/20/21 per permit requirement due to use of Ditch A System to treat construction dewatering water.

Abbreviations:

ng/L = nanograms per liter

NS = Not Sampled

PFOA = Perfluorooctanoic acid

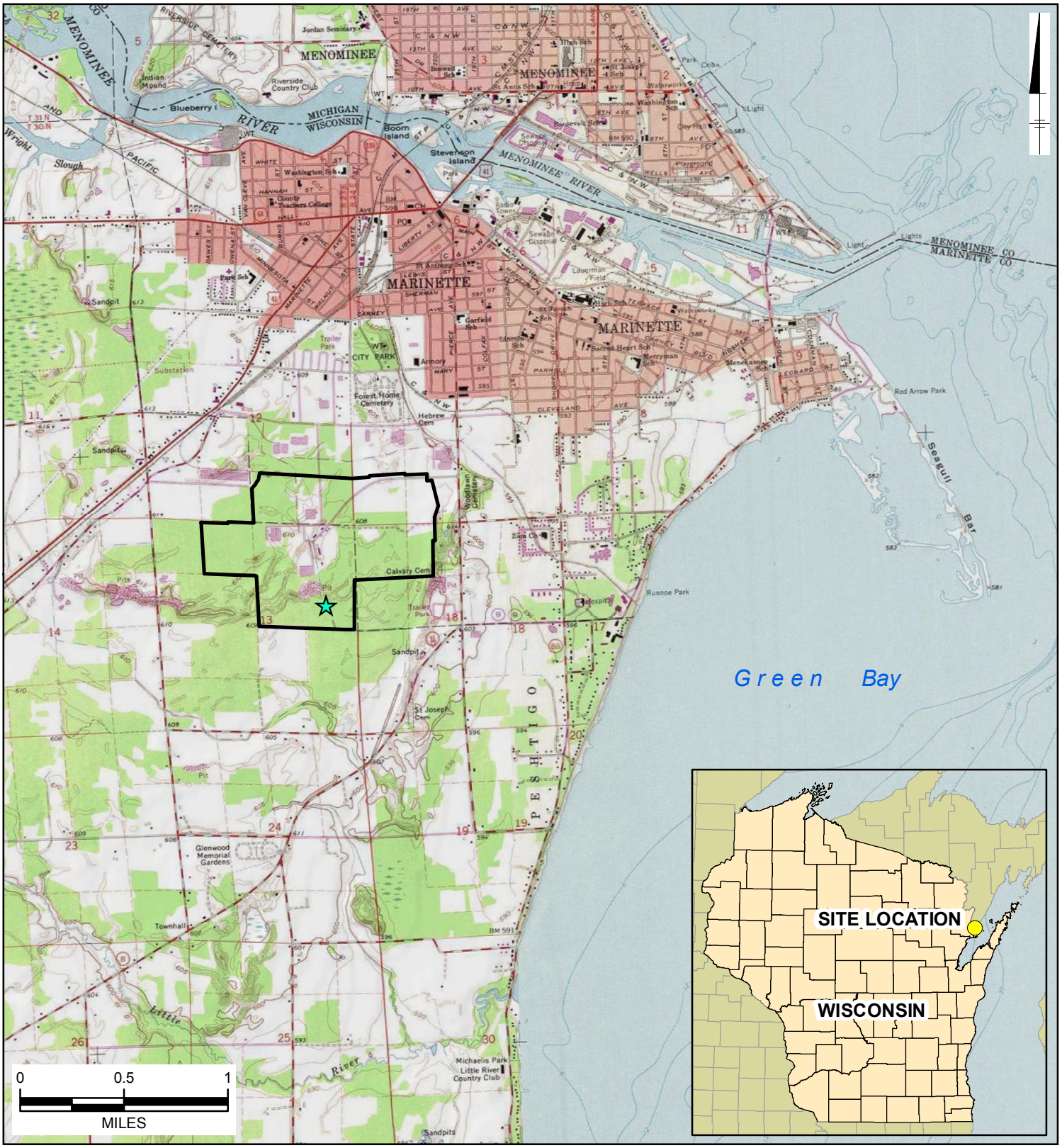
PFOS = Perfluorooctane sulfonic acid

Notes:

Monthly upstream values are calculated as the average of the weekly permit-required Ditch A System influent samples.

Downstream samples are collected monthly, when natural flow is observed in Ditch A, from SW-40.

Figures



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

ARCADIS

FIGURE
1

City: Minneapolis/Citrix Div/Group: IMDVC Created By: Last Saved By: akens
TYCO Marinette, WI
Z:\GISProjects_ENV\TYCO_Marinette_WI\MXD\2018-03\Work_Plan\Fig1_SiteLocation_DitchA.mxd 2/10/2020 1:11:34 PM

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

20' 0 20' 40'
1"=20'

ARCADIS

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

CONSULTANTS

NO.	DATE	ISSUED FOR	BY
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

SEALS

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

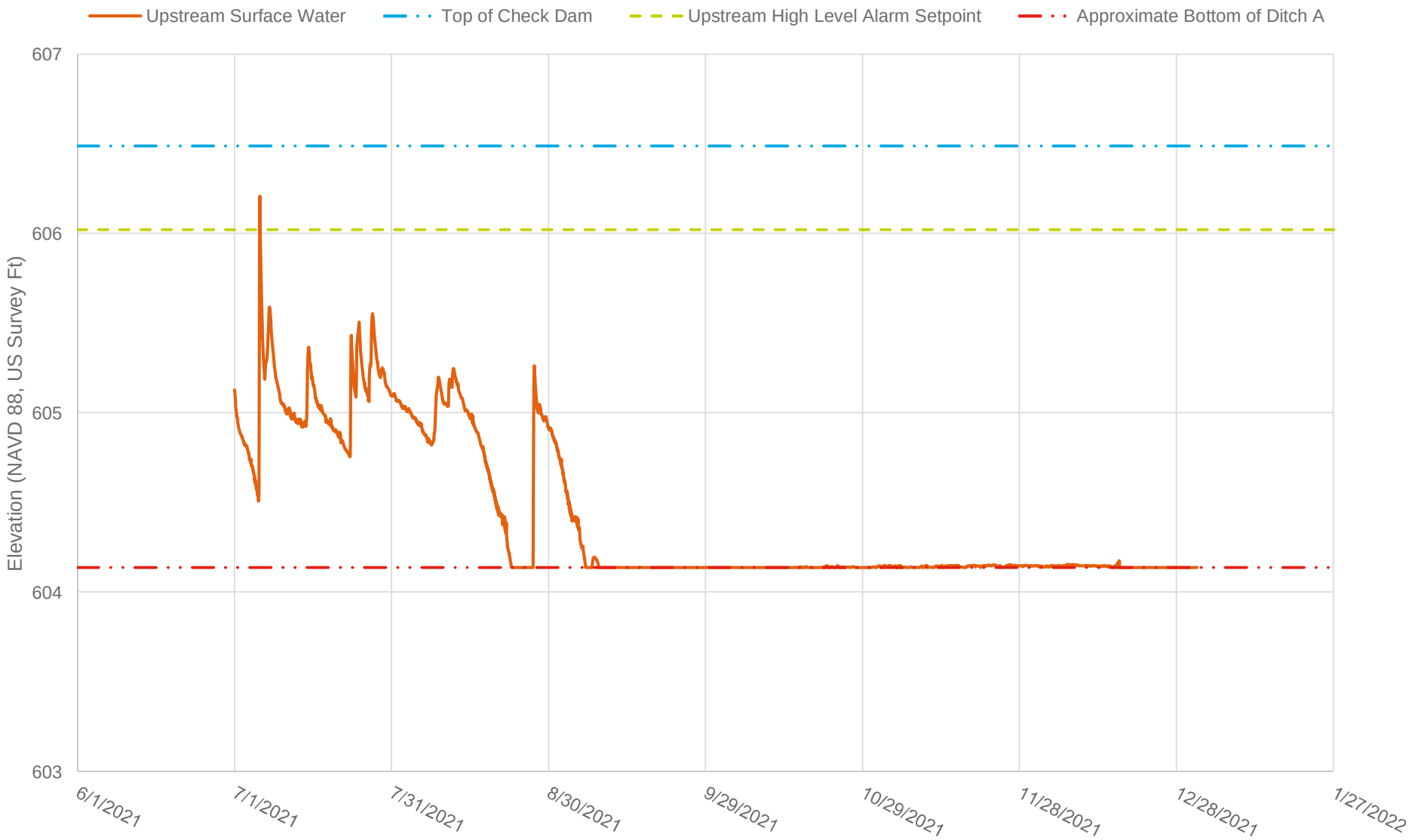
SHEET TITLE

DITCH A SITE PLAN

SCALE: 0 20 FEET

FIGURE 2

SHEET 1 OF 1



Abbreviations:
ft = Feet
NAVD = North American Vertical Datum

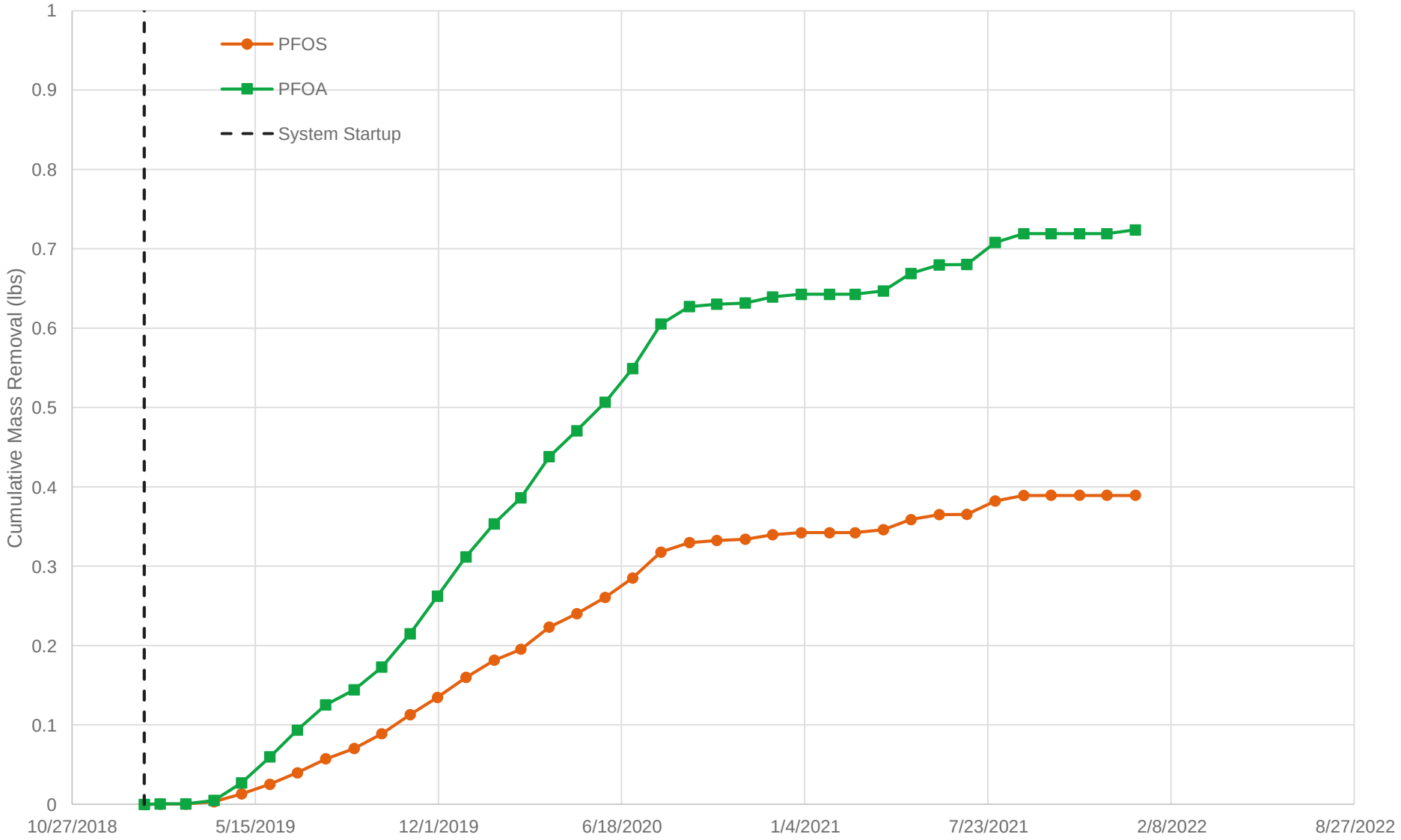
Notes:
1. Elevations based on survey conducted by Coleman Engineering on 10/8/19
2. The Ditch A bottom elevation is variable. An approximate value upstream of the check dam is shown for reference.

TYCO FIRE PRODUCTS LP
2700 INDUSTRIAL PARKWAY SOUTH
MARINETTE, WISCONSIN

DITCH A SYSTEM UPSTREAM SURFACE WATER ELEVATION (7/1/21 – 12/31/21)

ARCADIS

FIGURE
3



Abbreviations:
PFOA = Perfluorooctanesulfonic Acid
PFOS = Perfluorooctanesulfonic Acid
lbs = Pounds

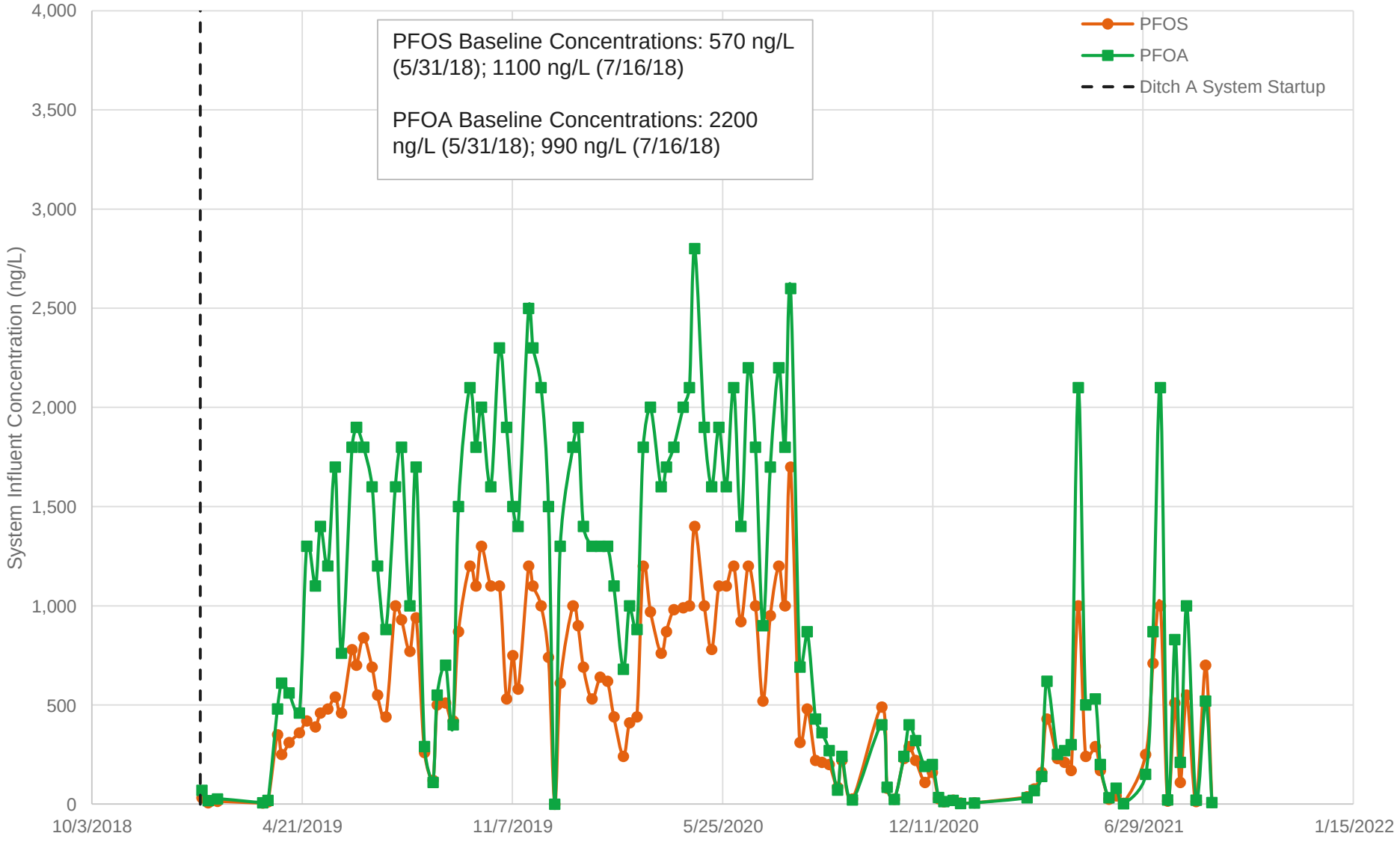
Note:
Data presented on a monthly basis

TYCO FIRE PRODUCTS LP
2700 INDUSTRIAL PARKWAY SOUTH
MARINETTE, WISCONSIN

DITCH A SYSTEM TREATMENT SYSTEM
CUMULATIVE PFAS MASS REMOVAL

ARCADIS

FIGURE
4



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

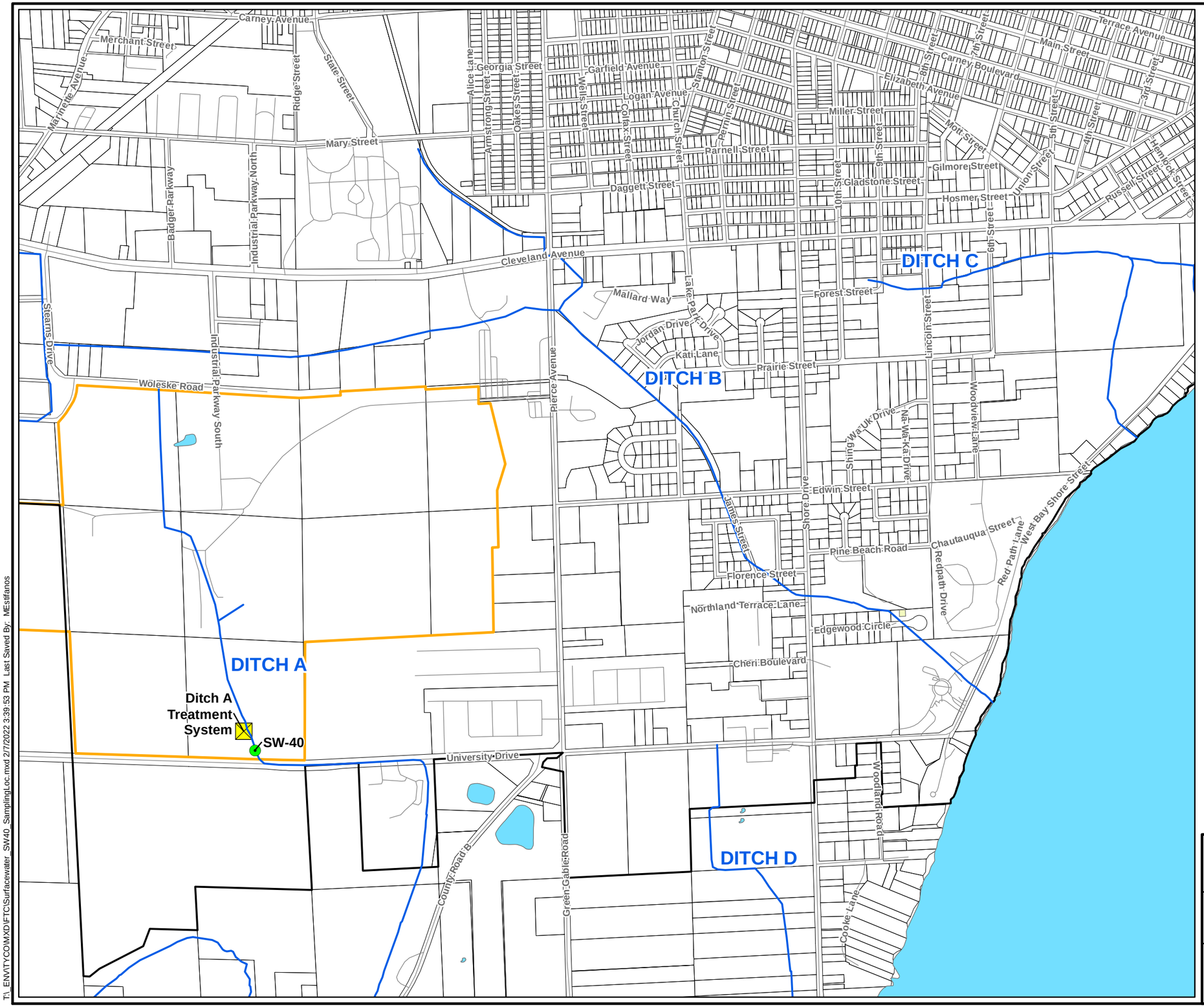
Note:
Baseline concentrations collected from sample location SW-27 on 5/31/18 and 7/16/18.

TYCO FIRE PRODUCTS LP
2700 INDUSTRIAL PARKWAY SOUTH
MARINETTE, WISCONSIN

DITCH A SYSTEM TREATMENT SYSTEM INFLUENT CONCENTRATIONS

ARCADIS

FIGURE
5



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.

0 1,040 2,080

GRAPHIC SCALE IN FEET

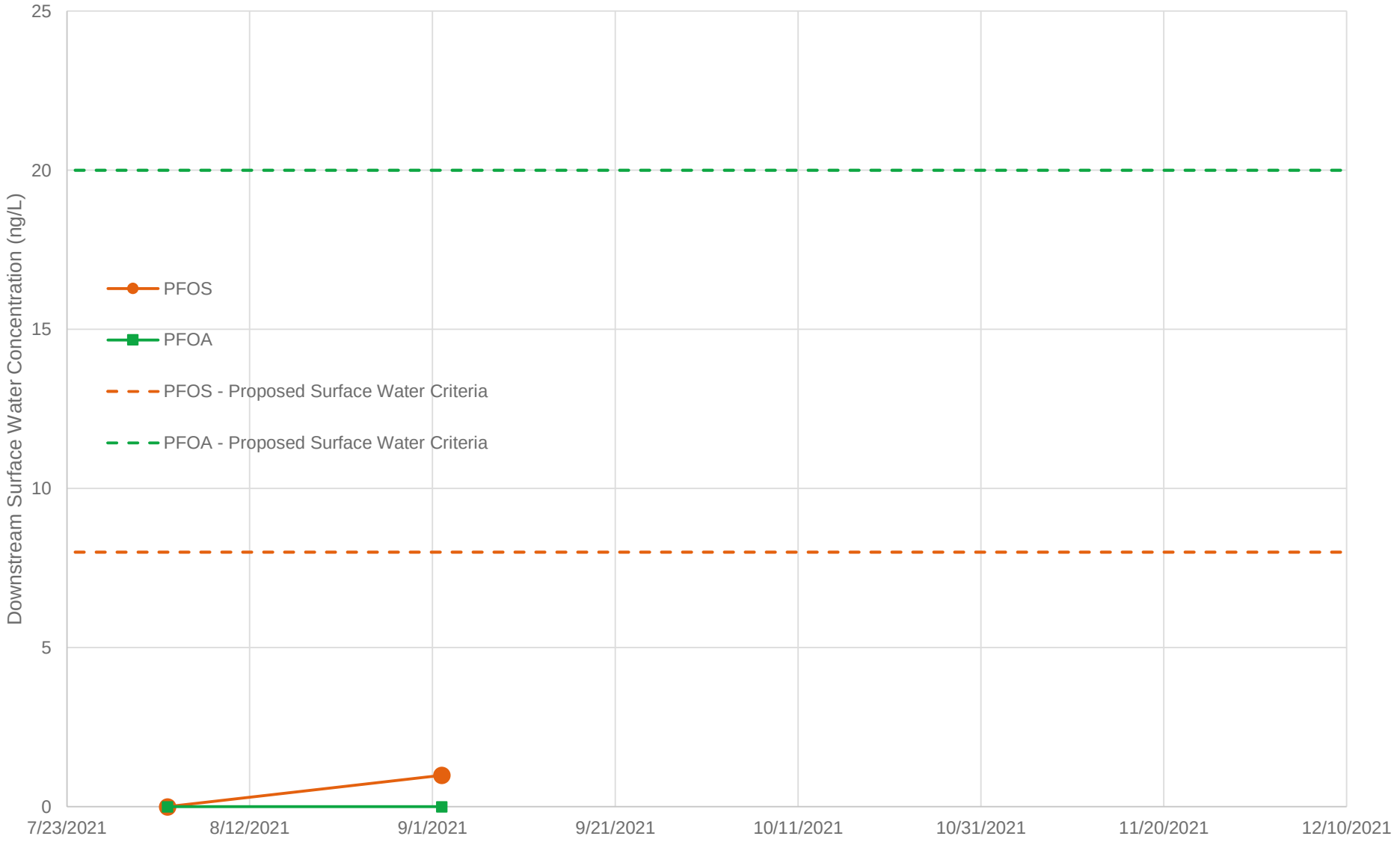
TYCO FIRE PRODUCTS LP
FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN

SURFACE WATER SAMPLE LOCATION SW-40

ARCADIS

FIGURE 6

T:_ENV\TYCO\MXD\FTC\Surfacewater_SW40_SamplingLoc.mxd 2/7/2022 3:39:53 PM Last Saved By: MEstifanos



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

Ditch Dry/Frozen (No Sample Collected):
10/2021, 11/2021, 12/2021

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. Proposed surface water criteria for PFOS based on waters except those that cannot naturally support fish and do not have downstream waters that support fish
5. Proposed surface water criteria for PFOA based on drinking water bodies.

TYCO FIRE PRODUCTS LP
2700 INDUSTRIAL PARKWAY SOUTH
MARINETTE, WISCONSIN

DITCH A DOWNSTREAM SURFACE WATER CONCENTRATIONS

ARCADIS

FIGURE
7

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

- 6" — SIZE
- S — MATERIAL
- 04 — LINE TYPE
- P — TYPE

TYPE:

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

MATERIAL:

BRZ - BRASS/BRONZE
CIR - CAST IRON
CST - CARBON STEEL
CPR - COPPER
CPVC- CHLORINATED POLYVINYL CHLORIDE
DIR - DUCTILE IRON
FRP - FIBERGLASS
GCS - GALVANIZED CARBON STEEL
HDPE - HIGH DENSITY POLYETHYLENE
LCS - LINED CARBON STEEL
PET - POLYETHYLENE
POP - POLYPROPYLENE
PVC - POLYVINYL CHLORIDE
RUB - RUBBER
S04 - 304 STAINLESS STEEL
S4L - 304L STAINLESS STEEL
S16 - 316 STAINLESS STEEL
S6L - 316L STAINLESS STEEL
TEF - TEFLON
VIT - VITON
TYG - TYGON

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:

1 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
uM 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
QAPP 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:
1. 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.
2. FOR ANALYSIS NOT IDENTIFIED BY A SPECIFIC LETTER INTHE TABLE, USE FIRST LETTER "A" NEAR THE INSTRUMENT SYMBOL, SPECIFY THAT NATURE OF THE ANALYSIS. EXAMPLE: pH
3. MEANING OF A "USER'S CHOICE" LETTER SHALL BE CONSISTENT THROUGHOUT A PROJECT, AND SHALL BE SPECIFIED IN THE DRAWING LEGEND.

GENERAL NOTES:
1. ALL ANALOG SET POINTS SHALL BE FIELD ADJUSTED BY OPERATOR AT HMI INTERFACE.
2. ALARMS THAT SHUT DOWN TREATMENT EQUIPMENT MUST BE CLEARED BY OPERATOR BEFORE BEING RESTARTED.
3. 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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www.presidiosystems.com

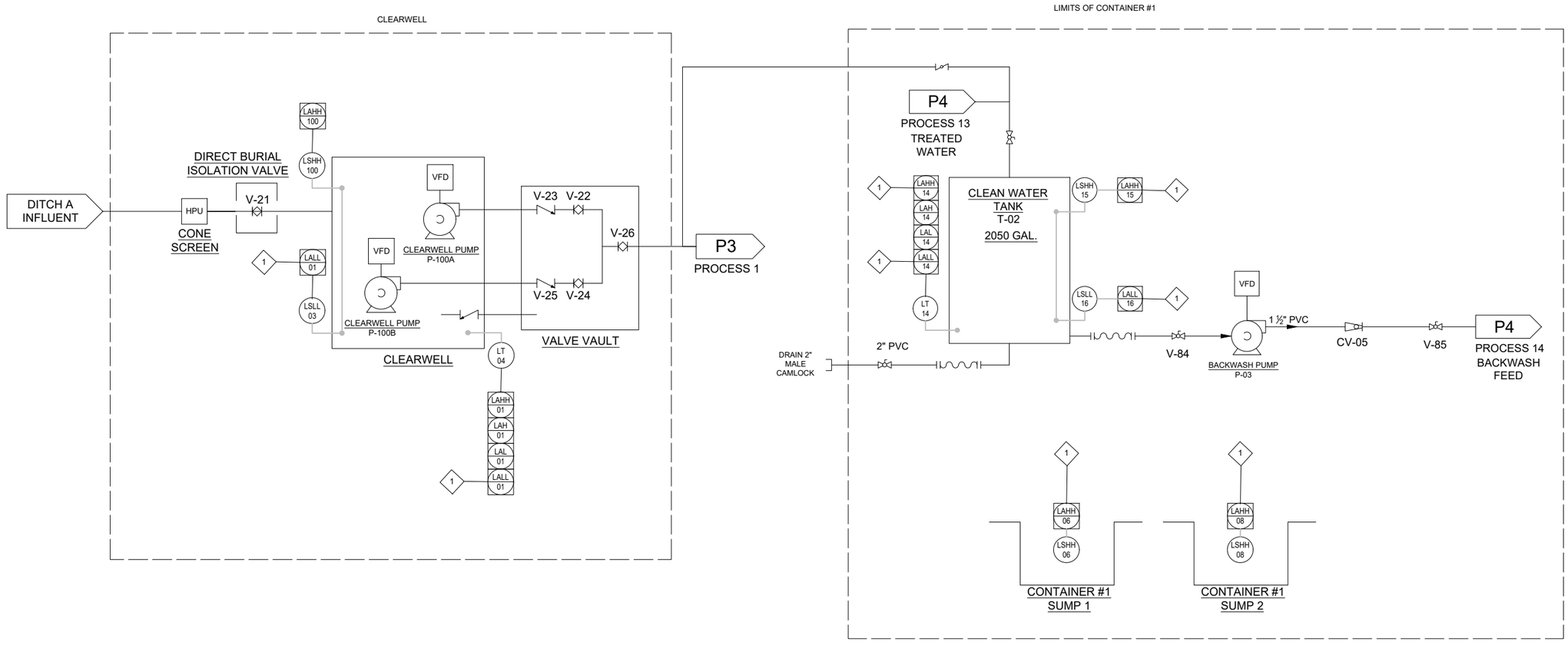
DITCH INTERIM ACTION-DITCH A
MARINETTE, WI

SHEET TITLE
TYCO DITCH-A P&ID LEGEND SHEET

APPROVED BY: MPS	CHECKED BY: MPS
DESIGNED BY: PAP	DRAWN BY: PAP
PROJECT NUMBER: Q14949	DRAWING NUMBER: P-01
	SHEET 1 OF 5

INTERLOCK SCHEDULE

1 SHUT DOWN SYSTEM



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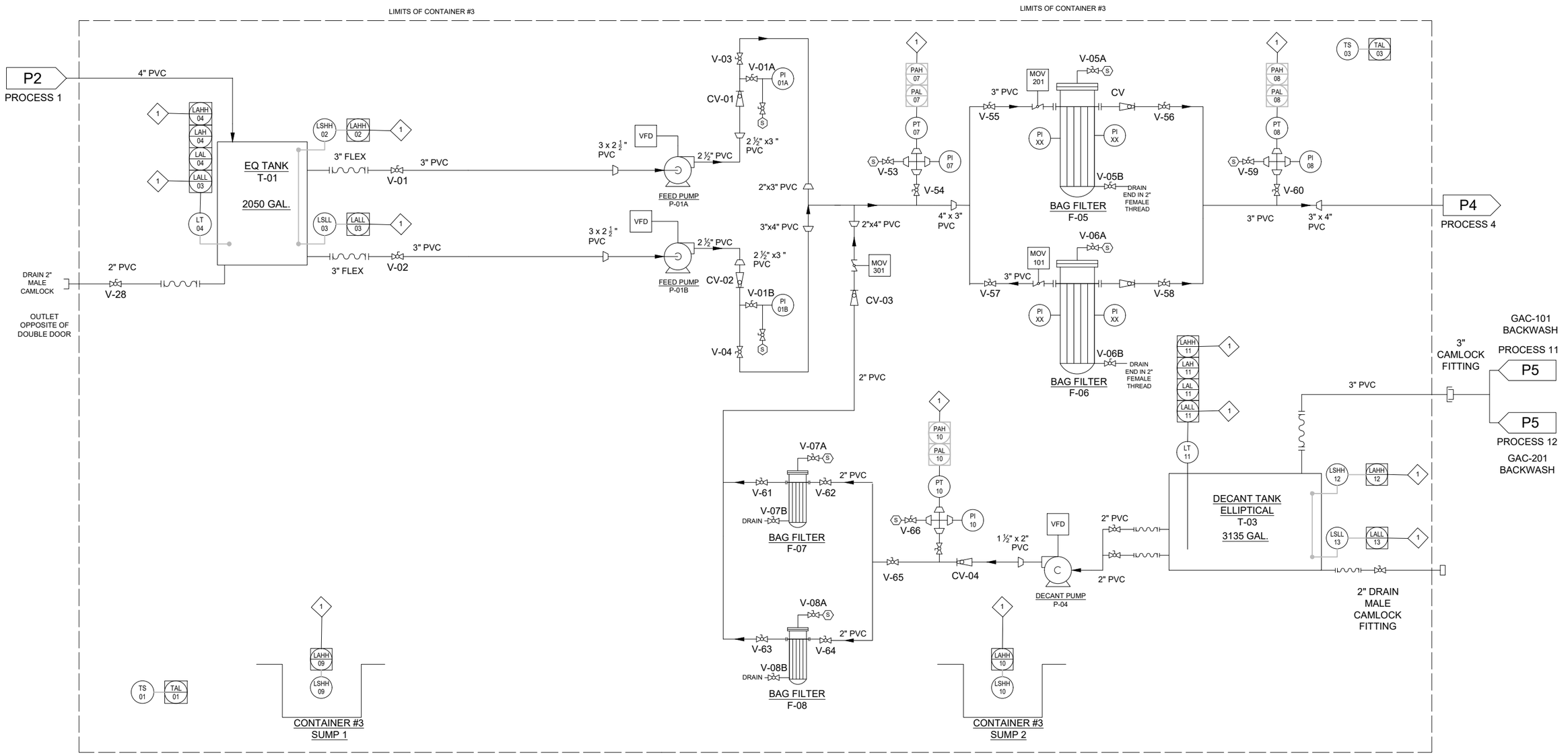
DITCH INTERIM ACTION-DITCH A
MARINETTE, WI

SHEET TITLE
TYCO DITCH-A SYSTEM P&ID SHEET 1

APPROVED BY	CHECKED BY
MPS	MPS
DESIGNED BY	DRAWN BY
PAP	PAP
PROJECT NUMBER	DRAWING NUMBER
Q14949	P-02
	SHEET 2 OF 5



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DITCH INTERIM ACTION-DITCH A
MARINETTE, WI

SHEET TITLE

TYCO DITCH-A SYSTEM P&ID SHEET 2

APPROVED BY	CHECKED BY
MPS	MPS
DESIGNED BY	DRAWN BY
PAP	PAP
PROJECT NUMBER	DRAWING NUMBER
Q14949	P-03

SHEET 3 OF 5

INTERLOCK SCHEDULE

1 SHUT DOWN SYSTEM

LIMITS OF CONTAINER #1

LIMITS OF CONTAINER #1

INTERLOCK SCHEDULE

1 SHUT DOWN SYSTEM

PROCESS 14 — P2 — P3 PROCESS 4 — 2" x 3" PVC — 4" x 3" PVC — GV-02 — GV-01

FIR 05 — FQI 05 — FIT 05 — FAH 05 — FAL 05

2" PVC — 3" PVC — ½" PVC

PI 01 — PT 01 — V-100A — DPAHH 300 — DPAH 300 — DPI 300 — PAH 01 — PAL 01

FIR 07 — FQI 07 — FIT 07 — FAH 07 — FAL 07

PI 04 — PT 04 — V-200A — PAL 04 — PAH 04

V-03A — V-09 — V-10 — V-03B DRAIN — BAG FILTER F-03

V-04A — V-11 — V-12 — V-04B DRAIN — BAG FILTER F-04

V-01A — V-05 — V-06 — V-01B DRAIN — BAG FILTER F-01

V-02A — V-07 — V-08 — V-02B DRAIN — BAG FILTER F-02

V-17 — P5 PROCESS 9

V-18 — V-16 — P5 PROCESS 7

V-13 — P5 PROCESS 8

V-14 — P5 PROCESS 10

PI 02 — PT 02 — V-100B — P3 PT-03 — PAL 02 — PAH 02

PI 05 — PT 05 — V-200B — P3 PT-06 — PAL 05 — PAH 05 — DPI 301 — DPAHH 301 — DPAH 301

PI 202A — CV-202 — V-47 — V-202E — V-45 — GRANULAR ACTIVATED CARBON GAC-202 — DRAIN V-202F — V-48 — PI 202B — V-46

PI 102A — CV-102 — V-35 — V-102E — V-33 — GRANULAR ACTIVATED CARBON GAC-102 — DRAIN V-102F — V-36 — PI 102B — V-34

PI 203A — CV-203 — V-51 — V-203E — V-49 — GRANULAR ACTIVATED CARBON GAC-203 — DRAIN V-203F — V-52 — PI 203B — V-50

PI 103A — CV-103 — V-39 — V-103E — V-37 — GRANULAR ACTIVATED CARBON GAC-103 — DRAIN V-103F — V-40 — PI 103B — V-38

PAH 06 — PAL 06 — PT 06 — V-200C — DPAHH 501 — DPAH 501 — DPI 501 — P2 PT-05

PI 03 — V-900 — V-100C — PAH 03 — PAL 03 — PT 03 — DPAHH 500 — DPAH 500 — DPI 500 — P2 PT-02

3" PVC — 4" PVC — V-19 — V-27 — DIRECT BURIAL ISOLATION VALVE — DITCH A DISCHARGE

V-20 — V-113 — P2 PROCESS 13

NOT FOR CONSTRUCTION

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DITCH INTERIM ACTION-DITCH A
MARINETTE, WI

SHEET TITLE

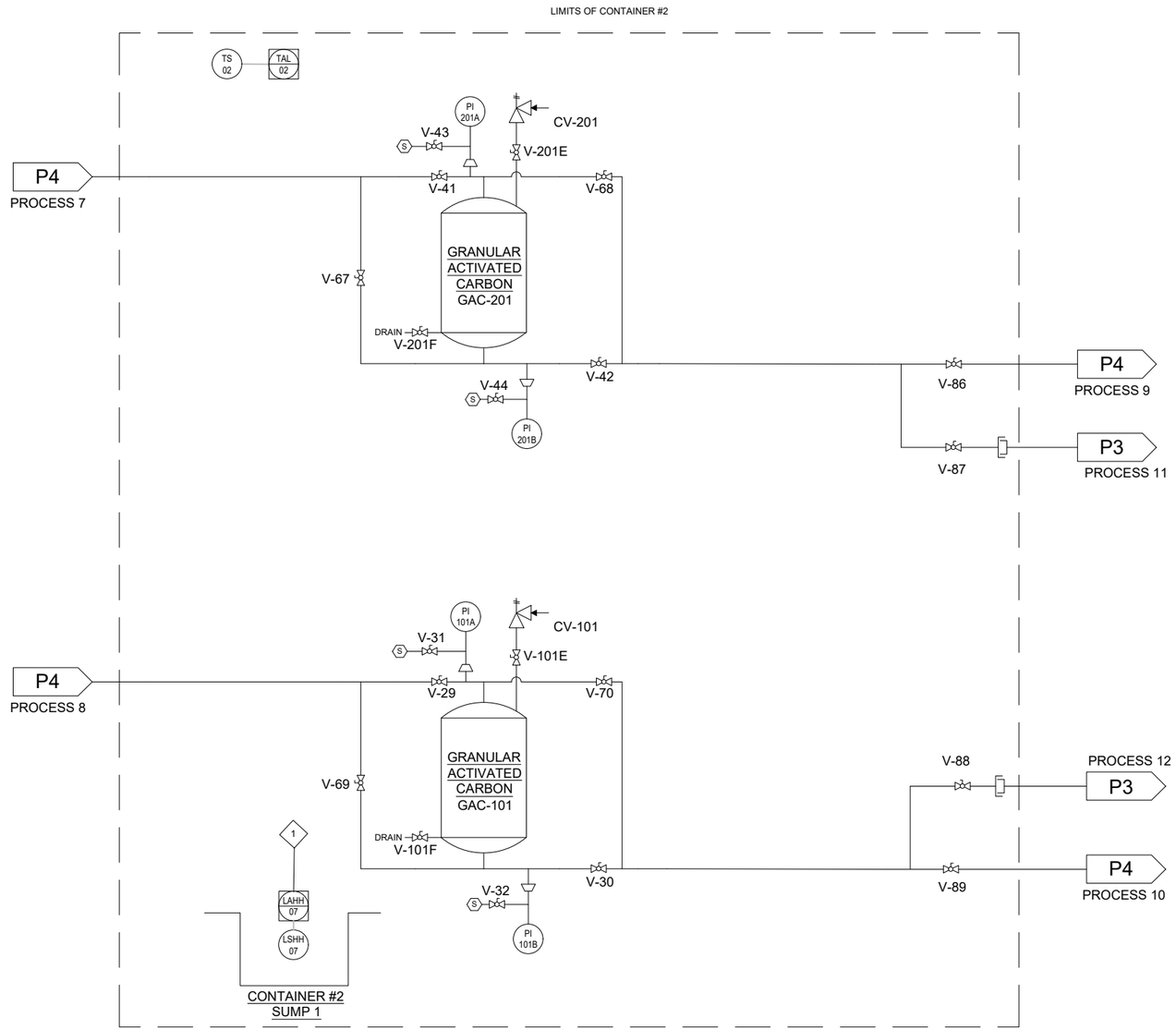
TYCO DITCH-A SYSTEM P&ID SHEET 3

APPROVED BY	CHECKED BY
MPS	MPS
DESIGNED BY	DRAWN BY
PAP	PAP
PROJECT NUMBER	DRAWING NUMBER
Q14949	P-04

SHEET 4 OF 5

INTERLOCK SCHEDULE

1 SHUT DOWN SYSTEM



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DITCH INTERIM ACTION-DITCH A
MARINETTE, WI

SHEET TITLE

TYCO DITCH-A SYSTEM P&ID SHEET 4

APPROVED BY	CHECKED BY
MPS	MPS
DESIGNED BY	DRAWN BY
PAP	PAP
PROJECT NUMBER	DRAWING NUMBER
Q14949	P-05

SHEET 5 OF 5

Appendix B

Temporary Dewatering Treatment System Piping and Instrumentation Diagram and WDNR Approval Letter

WDNR Approval - Dewatering Treatment Using Ditch A System

From: Willis, Nathaniel E - DNR <Nathaniel.Willis@wisconsin.gov>
Sent: Tuesday, October 5, 2021 1:31 PM
To: Verburg, Ben <Ben.Verburg@arcadis.com>
Cc: Knutson, Jason R - DNR <Jason.Knutson@wisconsin.gov>; Moen, Trevor J - DNR <Trevor.Moen@wisconsin.gov>; Peter, Alexis K - DNR <Alexis.Peter@wisconsin.gov>; Sellwood, Alyssa A - DNR <alyssa.sellwood@wisconsin.gov>; Jeffrey Danko <jeffrey.howard.danko@jci.com>; Scott D Wahl <scott.wahl@jci.com>; Potter, Scott <Scott.Potter@arcadis.com>; Darby, Joe <Joe.Darby@arcadis.com>; Bedard, Michael <Michael.Bedard@arcadis.com>; Jeff Tracy <JTracy@Geosyntec.com>; kcraig@geosyntec.com; Coleman, Matthew <Matthew.Coleman@arcadis.com>
Subject: RE: Notification of Planned Changes - WPDES Permit WI-0046566-07-0 Site ID (FIN): 64624 - Tyco Fire Products LP - Ditch A Interim Action (BRRTS Activity # 02-38-580694).

Hi Ben,

Thanks for the notification of these planned changes. We have reviewed the proposed actions and approve of them. It's worth noting that our approval is subject to change if the groundwater from the GETS dewatering activities results in permit exceedances for the Ditch A treatment system. Please continue to keep us in the loop if any issues arise going forward, and notify Alexis when Ditch A operations return to normal. Let me know if you have any questions.

Best,
Nate

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Nate Willis
Pronouns: he/him/his
Cell Phone: (608) 535-2369
nathaniel.willis@wisconsin.gov

From: Verburg, Ben <Ben.Verburg@arcadis.com>
Sent: Monday, October 4, 2021 11:17 PM
To: Willis, Nathaniel E - DNR <Nathaniel.Willis@wisconsin.gov>
Cc: Knutson, Jason R - DNR <Jason.Knutson@wisconsin.gov>; Moen, Trevor J - DNR <Trevor.Moen@wisconsin.gov>; Peter, Alexis K - DNR <Alexis.Peter@wisconsin.gov>; Sellwood, Alyssa A - DNR <alyssa.sellwood@wisconsin.gov>; Jeffrey Danko <jeffrey.howard.danko@jci.com>; Scott D Wahl <scott.wahl@jci.com>; Potter, Scott <Scott.Potter@arcadis.com>; Darby, Joe <Joe.Darby@arcadis.com>; Bedard, Michael <Michael.Bedard@arcadis.com>; Jeff Tracy <JTracy@Geosyntec.com>; kcraig@geosyntec.com; Coleman, Matthew <Matthew.Coleman@arcadis.com>
Subject: Notification of Planned Changes - WPDES Permit WI-0046566-07-0 Site ID (FIN): 64624 - Tyco Fire Products LP - Ditch A Interim Action (BRRTS Activity # 02-38-580694).

Mr. Willis-

Arcadis U.S., Inc. (Arcadis) on behalf of Tyco Fire Products LP (Tyco) has prepared this request for Wisconsin Department of Natural Resources (WDNR) approval of planned changes to the surface water treatment system at the Tyco Fire Technology Center – Ditch A Interim Action Site (the Ditch A System) located at 2700 Industrial Parkway South, Marinette, Wisconsin (Site), in accordance with Section 7.1.6 of Wisconsin Pollution Discharge Elimination System permit #WI-0046566-07-0 (the Permit).

The planned change is to use the Ditch A Treatment System to treat an estimated 1,000,000 gallons of groundwater that will be generated during shallow construction dewatering associated with the Groundwater Extraction and Treatment System (GETS) project construction. The groundwater is expected to have individual or combined concentrations of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) greater than 20 nanograms per liter (ng/L). Therefore, this groundwater will require treatment prior to discharge.

The permit related to the Ditch A Treatment System is identified as follows:

WPDES General Permit No. WI-0046566-07-0
Permittee Name: Tyco Fire Products LP (Attn: Mr. Eric Bretl)
Site Name: Tyco Fire Products LP - Ditch A Interim Action
Site Address: 2700 Industrial Parkway South, Marinette, Wisconsin 54143
Site ID (FIN): 64624

BACKGROUND

Tyco has begun construction of the GETS project at the Site (associated with Bureau of Remediation and Redevelopment Tracking System # 02-38-580694). The GETS project will include underground structures (e.g., extraction well vaults) that will require shallow construction dewatering. Dewatering activities are expected to be less than six feet below the ground surface (ft. bgs.)

Figure 1 is a Site plan view with the construction dewatering locations. The shallow groundwater contains per- and polyfluoroalkyl substances (PFAS) and potentially volatile organic compounds (VOCs) associated with a separate and unrelated open case at the Site. The groundwater generated during construction dewatering with concentrations of PFOA and PFOS greater than 20 ng/L will require treatment. Groundwater concentrations with PFOA and PFOS less than 20 ng/L will be directly discharged to Ditch B.

Tyco has evaluated several treatment options for the shallow groundwater. The options evaluated include mobilization of an on-Site treatment system, off-Site treatment and disposal, and treatment through the Ditch A System and discharge into Ditch A. Tyco is pursuing WDNR approval to use the Ditch A System for treatment of this groundwater through preparation and submittal of this Notification of Planned Changes.

SITE INVESTIGATION AND DATA COMPARISON

The groundwater was further investigated at the construction dewatering locations in summer and fall 2021. The site investigation included drilling 10 direct push technology (DPT) soil borings (BP-1, BP-2, BP-4, BP-5, BP-6, BP-9, BP-10, BP-11W, BP-12, and BP-13) and collection of shallow groundwater samples through a one-foot screen connected through drill rods. Prior to groundwater sample collection, the boring was drilled to a depth of 8 ft. bgs and the boring sheath was pulled up to expose the well screen to determine depth to groundwater. The screened interval was set to 5 – 6 ft. bgs at locations where the water table was shallower than 5 ft. bgs. At BP-10, the water table was identified at a depth of 6.5 ft. bgs and the sample was collected from 7 – 8 ft. bgs. The groundwater samples were analyzed for PFAS using

U.S. Environmental Protection Agency (USEPA) Method 537 (WDNR-recommended method 36-compound list) and VOCs USEPA Method 8260B (BP-1 and BP-2). The soil boring logs and analytical results will be provided in a future deliverable. The groundwater samples were validated in accordance with the Quality Assurance Project Plan (QAPP).

Figure 2 presents GETS groundwater sample results from proposed subsurface shallow vault locations. Tables 1 and 2 present the PFAS and VOC analytical results respectively. Low levels of PFAS compounds were observed in the shallow groundwater at expected concentrations based on historical Site investigation data. VOCs were below reporting limits. Table 3 is a summary of the Ditch A System PFOA and PFOS influent results and removal efficiency (source: Table 4, the Ditch A System Semi-Annual Operation, Maintenance, and Optimization Progress Report #5 (January 1 through June 30, 2021 reporting period)). As shown in these tables:

1) Maximum PFOA and PFOS concentrations reported in the GETS vault groundwater samples were 140 ng/L (BP-1; 5 – 6 ft. bgs) and 28 ng/L (BP-2; 5 – 6 ft. bgs), respectively.
2) Of the 16 Ditch A System influent samples collected, nine PFOA and 12 PFOS influent sample results were reported greater than the maximum observed PFOA and PFOS concentrations reported in the GETS vault groundwater samples.
3) The maximum reported influent concentrations to the Ditch A System were 2,100 ng/L PFOA and 1,000 ng/L PFOS, and the effluent concentrations were 23 ng/L PFOA and 2.5 ng/L which are below the weekly system average effluent concentration limits per month of 420 ng/L PFOA and 11 ng/L PFOS.
4) PFAS analytes PFNA, PFBA, PFBS, PFHxS were observed in a few groundwater samples below the WDHS Cycle 11 recommended groundwater standards.
5) These results demonstrate that the Ditch A treatment system is capable of adequately treating groundwater generated during construction; therefore, Tyco proposes to use the Ditch A System to treat water generated from GETS construction dewatering at locations BP-1, BP-2, BP-4, BP-11W, BP-12, and BP-13. These locations are noted on Figure 2.

The Ditch A System is a technically feasible option and is designed to treat concentrations of PFOA and PFOS in groundwater similar to or greater than those observed in the GETS vault groundwater samples that are representative of construction dewatering.

Operational

The operational hierarchy for the Ditch A System follows:

1) Maintain Ditch A interim action objective of Ditch A surface water treatment at design flowrate of 100 gallons per minute (gpm)
2) Ensure weather conditions do not impact Ditch A System operation (e.g., freezing conditions)
3) Treat groundwater from the GETS construction dewatering (through metered flow) into current Ditch A System
4) During Ditch A dry conditions, the Ditch A System would be used to treat GETS construction dewatering groundwater.

Arcadis does not anticipate deviations from the current Ditch A System operation to treat the groundwater. While the groundwater from the dewatering project is being treated at Ditch A, sampling and analysis for WPDES reporting will be competed according to the permit conditions.

Tyco will collect the groundwater in temporary poly holding tanks prior to transfer to tanker trucks at GETS construction dewatering locations. The water will be transferred to the Ditch A system and the water will be filtered to remove suspended solids down to 5 microns using bag filters. Filtered water will be pumped and metered into the Ditch A wet well where it will then get pumped through the Ditch A treatment system for treatment prior to discharge to Ditch A through the permitted outfall. Heated frac tanks will be used and the equipment spill contained using High Wall Spill Guards (cut sheet is attached).

Schedule

Dewatering activities will begin the week of October 4, 2021, and are expected to be complete by November 30, 2021, but no later than December 31, 2021. Work is anticipated to be completed in the following order: JV-1, JV-2, JV-8, JV-11, JV-6, JV-7, JV-12, JV-13, JV-9, JV-10, JV-3, JV-4, and finally JV-5. The sequence may be modified based on field conditions and work sequence determined by the contractor.

Closing

Tyco requests WDNR's approval of the Notification of Planned Changes to use the Ditch A System to treat approximately 1,000,000 gallons of groundwater with individual or combined concentrations of PFOA and PFOS greater than 20 ng/L that will be generated during shallow construction dewatering associated with the GETS project construction.

Please do not hesitate to contact me if there are any questions.

Ben

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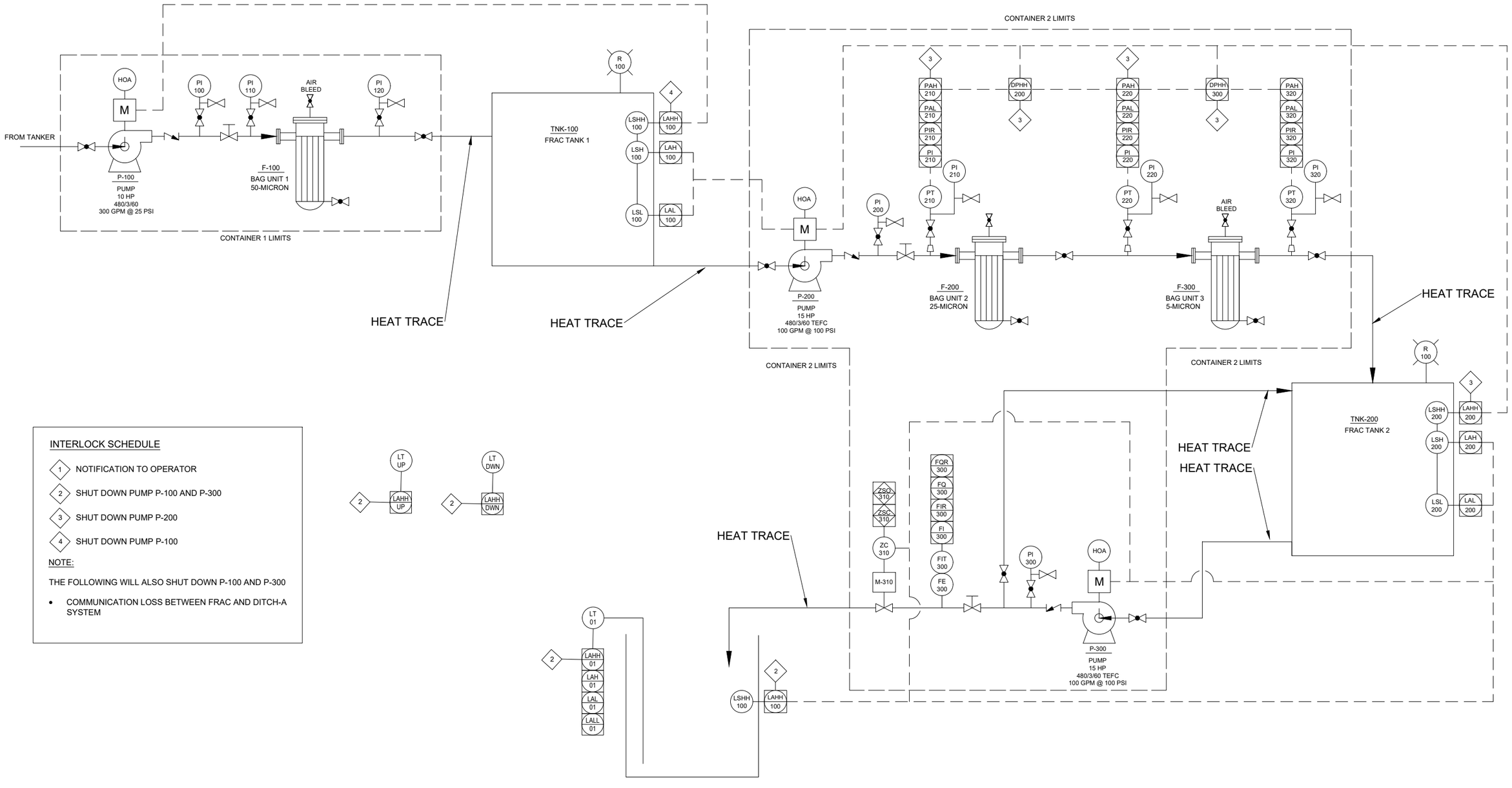
ARCADIS Design & Consultancy for natural and built assets



INTERLOCK SCHEDULE

1. NOTIFICATION TO OPERATOR
2. SHUT DOWN PUMP P-100 AND P-300
3. SHUT DOWN PUMP P-200
4. SHUT DOWN PUMP P-100

NOTE:

THE FOLLOWING WILL ALSO SHUT DOWN P-100 AND P-300

- COMMUNICATION LOSS BETWEEN FRAC AND DITCH-A SYSTEM

NOT FOR CONSTRUCTION

REV.	ISSUED DATE	DESCRIPTION	BY	CK'D
2	11/15/2021	ISSUED FOR CUSTOMER REVIEW	PAP	MPS
1	10/11/2021	ISSUED FOR CUSTOMER REVIEW	PAP	MPS
0	10/8/2021	ISSUED FOR CUSTOMER REVIEW	PAP	MPS

SEAL

Prepared for:

ARCADIS Design & Consultancy for natural and built assets

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DITCH INTERIM ACTION-DITCH A
MARINETTE, WI

SHEET TITLE

P&ID
DITCH-A
FRAC SYSTEM

APPROVED BY	CHECKED BY
MPS	MPS
DESIGNED BY	DRAWN BY
PAP	PAP
PROJECT NUMBER	DRAWING NUMBER
15282	P-01
	SHEET 1 OF 1

Appendix C

WPDES Laboratory Analytical Reports

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-75705-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
7/11/2021 8:06:42 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-75705-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Qualifiers

LCMS

Qualifier	Qualifier Description
C	See Case Narrative
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.
¤	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

Job ID: 320-75705-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-75705-1

Comments
No additional comments.

Receipt
The samples were received on 7/2/2021 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 1.2º C.

LCMS
Method 537 (modified): The concentration of 8:2 FTS associated with the following sample exceeded the instrument calibration range: 320-75705-1. This analyte has been qualified; however, the peak did not saturate the instrument detector. The sample was diluted within calibration range, and both sets of data are reported.

Method 537 (modified): The transition mass ratio for the indicated analyte was outside of 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. 320-75705-2

Method 537 (modified): Result for sample 320-75705-1 was 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 2X analysis is 92% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The transition mass ratio for the indicated analyte was outside of 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: 320-75705-1.

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 samples were yellow prior to extraction: 320-75705-1 and 320-75705-2. preparation batch 320-504120 PFC_IDA_WI Water

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

Client Sample ID: V-200-A
Date Collected: 07/01/21 11:05
Date Received: 07/02/21 09:30

Lab Sample ID: 320-75705-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**21**		4.5	2.2	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluoropentanoic acid (PFPeA)	**89**		1.8	0.44	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorohexanoic acid (PFHxA)	**59**		1.8	0.53	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluoroheptanoic acid (PFHpA)	**53**		1.8	0.23	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorooctanoic acid (PFOA)	**150**		1.8	0.77	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorononanoic acid (PFNA)	**30**		1.8	0.24	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorodecanoic acid (PFDA)	**28**		1.8	0.28	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluoroundecanoic acid (PFUnA)	**30**		1.8	1.0	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorododecanoic acid (PFDoA)	**2.3**		1.8	0.50	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorotetradecanoic acid (PFTeA)	<0.66		1.8	0.66	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.81		1.8	0.81	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.85		1.8	0.85	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorobutanesulfonic acid (PFBS)	**4.1**		1.8	0.18	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluoropentanesulfonic acid (PFPeS)	**0.43**	**J**	1.8	0.27	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorohexanesulfonic acid (PFHxS)	**19**		1.8	0.52	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.1**	**J**	1.8	0.17	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorooctanesulfonic acid (PFOS)	**250**		1.8	0.49	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorononanesulfonic acid (PFNS)	**0.56**	**J**	1.8	0.34	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorodecanesulfonic acid (PFDS)	<0.29		1.8	0.29	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorododecanesulfonic acid (PFDoS)	<0.88		1.8	0.88	ng/L		07/06/21 05:14	07/07/21 13:44	1
Perfluorooctanesulfonamide (FOSA)	**5.6**		1.8	0.89	ng/L		07/06/21 05:14	07/07/21 13:44	1
NEtFOSA	<0.79		1.8	0.79	ng/L		07/06/21 05:14	07/07/21 13:44	1
NMeFOSA	<0.39		1.8	0.39	ng/L		07/06/21 05:14	07/07/21 13:44	1
NMeFOSAA	<1.1		4.5	1.1	ng/L		07/06/21 05:14	07/07/21 13:44	1
NEtFOSAA	**5.2**		4.5	1.2	ng/L		07/06/21 05:14	07/07/21 13:44	1
NMeFOSE	<1.3		3.6	1.3	ng/L		07/06/21 05:14	07/07/21 13:44	1
NEtFOSE	<0.77		1.8	0.77	ng/L		07/06/21 05:14	07/07/21 13:44	1
4:2 FTS	**0.68**	**J**	1.8	0.22	ng/L		07/06/21 05:14	07/07/21 13:44	1
6:2 FTS	**130**		4.5	2.3	ng/L		07/06/21 05:14	07/07/21 13:44	1
8:2 FTS	**480**	**E**	1.8	0.42	ng/L		07/06/21 05:14	07/07/21 13:44	1
10:2 FTS	**53**		1.8	0.61	ng/L		07/06/21 05:14	07/07/21 13:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		07/06/21 05:14	07/07/21 13:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.6	1.4	ng/L		07/06/21 05:14	07/07/21 13:44	1
F-53B Major	<0.22		1.8	0.22	ng/L		07/06/21 05:14	07/07/21 13:44	1
F-53B Minor	<0.29		1.8	0.29	ng/L		07/06/21 05:14	07/07/21 13:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*94*		*25 - 150*	*07/06/21 05:14*	*07/07/21 13:44*	*1*
13C5 PFPeA	*65*		*25 - 150*	*07/06/21 05:14*	*07/07/21 13:44*	*1*

Client Sample ID: V-200-A
Lab Sample ID: 320-75705-1
Date Collected: 07/01/21 11:05
Matrix: Water
Date Received: 07/02/21 09:30

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C4 PFHpA	79		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C4 PFOA	87		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C5 PFNA	88		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C2 PFDA	96		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C2 PFUnA	92		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C2 PFDoA	86		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C2 PFTeDA	63		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C2 PFHxDA	46		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C3 PFBS	86		25 - 150	07/06/21 05:14	07/07/21 13:44	1
18O2 PFHxS	82		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C4 PFOS	84		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C8 FOSA	84		10 - 150	07/06/21 05:14	07/07/21 13:44	1
d3-NMeFOSAA	91		25 - 150	07/06/21 05:14	07/07/21 13:44	1
d5-NEtFOSAA	91		25 - 150	07/06/21 05:14	07/07/21 13:44	1
d-N-MeFOSA-M	79		10 - 150	07/06/21 05:14	07/07/21 13:44	1
d-N-EtFOSA-M	77		10 - 150	07/06/21 05:14	07/07/21 13:44	1
d7-N-MeFOSE-M	75		10 - 150	07/06/21 05:14	07/07/21 13:44	1
d9-N-EtFOSE-M	68		10 - 150	07/06/21 05:14	07/07/21 13:44	1
M2-4:2 FTS	134		25 - 150	07/06/21 05:14	07/07/21 13:44	1
M2-6:2 FTS	101		25 - 150	07/06/21 05:14	07/07/21 13:44	1
M2-8:2 FTS	98		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C3 HFPO-DA	84		25 - 150	07/06/21 05:14	07/07/21 13:44	1
13C2 10:2 FTS	101		25 - 150	07/06/21 05:14	07/07/21 13:44	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**21**		9.1	4.4	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluoropentanoic acid (PFPeA)	**88**		3.6	0.89	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorohexanoic acid (PFHxA)	**61**		3.6	1.1	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluoroheptanoic acid (PFHpA)	**52**		3.6	0.45	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorooctanoic acid (PFOA)	**150**		3.6	1.5	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorononanoic acid (PFNA)	**30**		3.6	0.49	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorodecanoic acid (PFDA)	**28**		3.6	0.56	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluoroundecanoic acid (PFUnA)	**28**		3.6	2.0	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorododecanoic acid (PFDoA)	**2.1**	**J**	3.6	1.0	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorotridecanoic acid (PFTriA)	<2.4		3.6	2.4	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorotetradecanoic acid (PFTeA)	<1.3		3.6	1.3	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.6		3.6	1.6	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluoro-n-octadecanoic acid (PFODA)	<1.7		3.6	1.7	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorobutanesulfonic acid (PFBS)	**4.0**		3.6	0.36	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluoropentanesulfonic acid (PFPeS)	**0.63**	**J C**	3.6	0.54	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorohexanesulfonic acid (PFHxS)	**18**		3.6	1.0	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluoroheptanesulfonic Acid (PFHpS)	**0.71**	**J**	3.6	0.34	ng/L		07/06/21 05:14	07/09/21 11:58	2

Client Sample ID: V-200-A
Date Collected: 07/01/21 11:05
Date Received: 07/02/21 09:30

Lab Sample ID: 320-75705-1
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**270**		3.6	0.98	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorononanesulfonic acid (PFNS)	<0.67		3.6	0.67	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorodecanesulfonic acid (PFDS)	<0.58		3.6	0.58	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorododecanesulfonic acid (PFDoS)	<1.8		3.6	1.8	ng/L		07/06/21 05:14	07/09/21 11:58	2
Perfluorooctanesulfonamide (FOSA)	**5.0**		3.6	1.8	ng/L		07/06/21 05:14	07/09/21 11:58	2
NEtFOSA	<1.6		3.6	1.6	ng/L		07/06/21 05:14	07/09/21 11:58	2
NMeFOSA	<0.78		3.6	0.78	ng/L		07/06/21 05:14	07/09/21 11:58	2
NMeFOSAA	<2.2		9.1	2.2	ng/L		07/06/21 05:14	07/09/21 11:58	2
NEtFOSAA	**5.1**	**J**	9.1	2.4	ng/L		07/06/21 05:14	07/09/21 11:58	2
NMeFOSE	<2.5		7.3	2.5	ng/L		07/06/21 05:14	07/09/21 11:58	2
NEtFOSE	<1.5		3.6	1.5	ng/L		07/06/21 05:14	07/09/21 11:58	2
4:2 FTS	<0.44		3.6	0.44	ng/L		07/06/21 05:14	07/09/21 11:58	2
6:2 FTS	**120**		9.1	4.5	ng/L		07/06/21 05:14	07/09/21 11:58	2
8:2 FTS	**430**		3.6	0.83	ng/L		07/06/21 05:14	07/09/21 11:58	2
10:2 FTS	**52**		3.6	1.2	ng/L		07/06/21 05:14	07/09/21 11:58	2
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.73		3.6	0.73	ng/L		07/06/21 05:14	07/09/21 11:58	2
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<2.7		7.3	2.7	ng/L		07/06/21 05:14	07/09/21 11:58	2
F-53B Major	<0.44		3.6	0.44	ng/L		07/06/21 05:14	07/09/21 11:58	2
F-53B Minor	<0.58		3.6	0.58	ng/L		07/06/21 05:14	07/09/21 11:58	2

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*91*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C5 PFPeA	*73*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C2 PFHxA	*85*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C4 PFHpA	*87*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C4 PFOA	*84*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C5 PFNA	*85*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C2 PFDA	*87*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C2 PFUnA	*85*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C2 PFDoA	*80*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C2 PFTeDA	*59*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C2 PFHxDA	*40*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C3 PFBS	*84*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
18O2 PFHxS	*82*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C4 PFOS	*74*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C8 FOSA	*84*		*10 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
d3-NMeFOSAA	*82*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
d5-NEtFOSAA	*88*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
d-N-MeFOSA-M	*68*		*10 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
d-N-EtFOSA-M	*69*		*10 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
d7-N-MeFOSE-M	*63*		*10 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
d9-N-EtFOSE-M	*68*		*10 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
M2-4:2 FTS	*88*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
M2-6:2 FTS	*89*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
M2-8:2 FTS	*86*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*
13C3 HFPO-DA	*83*		*25 - 150*	*07/06/21 05:14*	*07/09/21 11:58*	*2*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-75705-1

Client Sample ID: V-200-A
Date Collected: 07/01/21 11:05
Date Received: 07/02/21 09:30

Lab Sample ID: 320-75705-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 10:2 FTS	88		25 - 150	07/06/21 05:14	07/09/21 11:58	2

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-75705-1

Client Sample ID: V-900-A

Date Collected: 07/01/21 11:30
Date Received: 07/02/21 09:30

Lab Sample ID: 320-75705-2

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.4**	**J**	4.5	2.2	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluoropentanoic acid (PFPeA)	<0.44		1.8	0.44	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorohexanoic acid (PFHxA)	**0.56**	**J C**	1.8	0.52	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.8	0.23	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorooctanoic acid (PFOA)	<0.77		1.8	0.77	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluoroundecanoic acid (PFUnA)	<0.99		1.8	0.99	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorododecanoic acid (PFDoA)	<0.50		1.8	0.50	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorotetradecanoic acid (PFTeA)	<0.66		1.8	0.66	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.80		1.8	0.80	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.85		1.8	0.85	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorohexanesulfonic acid (PFHxS)	<0.51		1.8	0.51	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.17		1.8	0.17	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorooctanesulfonic acid (PFOS)	<0.49		1.8	0.49	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorodecanesulfonic acid (PFDS)	<0.29		1.8	0.29	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorododecanesulfonic acid (PFDoS)	<0.87		1.8	0.87	ng/L		07/06/21 05:14	07/07/21 13:53	1
Perfluorooctanesulfonamide (FOSA)	<0.88		1.8	0.88	ng/L		07/06/21 05:14	07/07/21 13:53	1
NEtFOSA	<0.78		1.8	0.78	ng/L		07/06/21 05:14	07/07/21 13:53	1
NMeFOSA	<0.39		1.8	0.39	ng/L		07/06/21 05:14	07/07/21 13:53	1
NMeFOSAA	<1.1		4.5	1.1	ng/L		07/06/21 05:14	07/07/21 13:53	1
NEtFOSAA	<1.2		4.5	1.2	ng/L		07/06/21 05:14	07/07/21 13:53	1
NMeFOSE	<1.3		3.6	1.3	ng/L		07/06/21 05:14	07/07/21 13:53	1
NEtFOSE	<0.77		1.8	0.77	ng/L		07/06/21 05:14	07/07/21 13:53	1
4:2 FTS	<0.22		1.8	0.22	ng/L		07/06/21 05:14	07/07/21 13:53	1
6:2 FTS	<2.3		4.5	2.3	ng/L		07/06/21 05:14	07/07/21 13:53	1
8:2 FTS	**1.2**	**J**	1.8	0.41	ng/L		07/06/21 05:14	07/07/21 13:53	1
10:2 FTS	**4.1**		1.8	0.60	ng/L		07/06/21 05:14	07/07/21 13:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		07/06/21 05:14	07/07/21 13:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.6	1.4	ng/L		07/06/21 05:14	07/07/21 13:53	1
F-53B Major	<0.22		1.8	0.22	ng/L		07/06/21 05:14	07/07/21 13:53	1
F-53B Minor	<0.29		1.8	0.29	ng/L		07/06/21 05:14	07/07/21 13:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*89*		*25 - 150*	*07/06/21 05:14*	*07/07/21 13:53*	*1*
13C5 PFPeA	*74*		*25 - 150*	*07/06/21 05:14*	*07/07/21 13:53*	*1*
13C2 PFHxA	*85*		*25 - 150*	*07/06/21 05:14*	*07/07/21 13:53*	*1*
13C4 PFHpA	*88*		*25 - 150*	*07/06/21 05:14*	*07/07/21 13:53*	*1*
13C4 PFOA	*85*		*25 - 150*	*07/06/21 05:14*	*07/07/21 13:53*	*1*
13C5 PFNA	*85*		*25 - 150*	*07/06/21 05:14*	*07/07/21 13:53*	*1*
13C2 PFDA	*90*		*25 - 150*	*07/06/21 05:14*	*07/07/21 13:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-75705-1

Client Sample ID: V-900-A
Date Collected: 07/01/21 11:30
Date Received: 07/02/21 09:30

Lab Sample ID: 320-75705-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	84		25 - 150	07/06/21 05:14	07/07/21 13:53	1
13C2 PFDoA	81		25 - 150	07/06/21 05:14	07/07/21 13:53	1
13C2 PFTeDA	58		25 - 150	07/06/21 05:14	07/07/21 13:53	1
13C2 PFHxDA	41		25 - 150	07/06/21 05:14	07/07/21 13:53	1
13C3 PFBS	81		25 - 150	07/06/21 05:14	07/07/21 13:53	1
18O2 PFHxS	81		25 - 150	07/06/21 05:14	07/07/21 13:53	1
13C4 PFOS	78		25 - 150	07/06/21 05:14	07/07/21 13:53	1
13C8 FOSA	83		10 - 150	07/06/21 05:14	07/07/21 13:53	1
d3-NMeFOSAA	79		25 - 150	07/06/21 05:14	07/07/21 13:53	1
d5-NEtFOSAA	92		25 - 150	07/06/21 05:14	07/07/21 13:53	1
d-N-MeFOSA-M	69		10 - 150	07/06/21 05:14	07/07/21 13:53	1
d-N-EtFOSA-M	66		10 - 150	07/06/21 05:14	07/07/21 13:53	1
d7-N-MeFOSE-M	65		10 - 150	07/06/21 05:14	07/07/21 13:53	1
d9-N-EtFOSE-M	73		10 - 150	07/06/21 05:14	07/07/21 13:53	1
M2-4:2 FTS	90		25 - 150	07/06/21 05:14	07/07/21 13:53	1
M2-6:2 FTS	89		25 - 150	07/06/21 05:14	07/07/21 13:53	1
M2-8:2 FTS	99		25 - 150	07/06/21 05:14	07/07/21 13:53	1
13C3 HFPO-DA	80		25 - 150	07/06/21 05:14	07/07/21 13:53	1
13C2 10:2 FTS	95		25 - 150	07/06/21 05:14	07/07/21 13:53	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-75705-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
320-75705-1	V-200-A	94	65	90	79	87	88	96	92
320-75705-1 - DL	V-200-A	91	73	85	87	84	85	87	85
320-75705-2	V-900-A	89	74	85	88	85	85	90	84
LCS 320-504120/2-A	Lab Control Sample	100	88	90	90	91	94	92	95
MB 320-504120/1-A	Method Blank	93	81	88	88	84	89	94	96

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	PFTDA	PFHxDA	C3PFBS	PFHxS	PFOS	PFOSA	d3NMFOS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(10-150)	(25-150)
320-75705-1	V-200-A	86	63	46	86	82	84	84	91
320-75705-1 - DL	V-200-A	80	59	40	84	82	74	84	82
320-75705-2	V-900-A	81	58	41	81	81	78	83	79
LCS 320-504120/2-A	Lab Control Sample	95	103	117	97	95	97	93	98
MB 320-504120/1-A	Method Blank	92	103	111	99	94	98	94	100

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		d5NEFOS	dMeFOSA	dEtFOSA	NMFM	NEFM	M242FTS	M262FTS	M282FTS
Lab Sample ID	Client Sample ID	(25-150)	(10-150)	(10-150)	(10-150)	(10-150)	(25-150)	(25-150)	(25-150)
320-75705-1	V-200-A	91	79	77	75	68	134	101	98
320-75705-1 - DL	V-200-A	88	68	69	63	68	88	89	86
320-75705-2	V-900-A	92	69	66	65	73	90	89	99
LCS 320-504120/2-A	Lab Control Sample	99	79	80	77	86	103	94	102
MB 320-504120/1-A	Method Blank	98	78	80	79	78	100	102	108

		Percent Isotope Dilution Recovery (Acceptance Limits)	
		HFPODA	M102FTS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)
320-75705-1	V-200-A	84	101
320-75705-1 - DL	V-200-A	83	88
320-75705-2	V-900-A	80	95
LCS 320-504120/2-A	Lab Control Sample	87	108
MB 320-504120/1-A	Method Blank	89	113

Surrogate Legend

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

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-75705-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-504120/1-A
Matrix: Water
Analysis Batch: 504765

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 504120

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		07/06/21 05:14	07/07/21 12:38	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		07/06/21 05:14	07/07/21 12:38	1
NEtFOSA	<0.87		2.0	0.87	ng/L		07/06/21 05:14	07/07/21 12:38	1
NMeFOSA	<0.43		2.0	0.43	ng/L		07/06/21 05:14	07/07/21 12:38	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		07/06/21 05:14	07/07/21 12:38	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		07/06/21 05:14	07/07/21 12:38	1
NMeFOSE	<1.4		4.0	1.4	ng/L		07/06/21 05:14	07/07/21 12:38	1
NEtFOSE	<0.85		2.0	0.85	ng/L		07/06/21 05:14	07/07/21 12:38	1
4:2 FTS	<0.24		2.0	0.24	ng/L		07/06/21 05:14	07/07/21 12:38	1
6:2 FTS	<2.5		5.0	2.5	ng/L		07/06/21 05:14	07/07/21 12:38	1
8:2 FTS	<0.46		2.0	0.46	ng/L		07/06/21 05:14	07/07/21 12:38	1
10:2 FTS	<0.67		2.0	0.67	ng/L		07/06/21 05:14	07/07/21 12:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		07/06/21 05:14	07/07/21 12:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		07/06/21 05:14	07/07/21 12:38	1
F-53B Major	<0.24		2.0	0.24	ng/L		07/06/21 05:14	07/07/21 12:38	1
F-53B Minor	<0.32		2.0	0.32	ng/L		07/06/21 05:14	07/07/21 12:38	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*93*		*25 - 150*	*07/06/21 05:14*	*07/07/21 12:38*	*1*
13C5 PFPeA	*81*		*25 - 150*	*07/06/21 05:14*	*07/07/21 12:38*	*1*
13C2 PFHxA	*88*		*25 - 150*	*07/06/21 05:14*	*07/07/21 12:38*	*1*
13C4 PFHpA	*88*		*25 - 150*	*07/06/21 05:14*	*07/07/21 12:38*	*1*
13C4 PFOA	*84*		*25 - 150*	*07/06/21 05:14*	*07/07/21 12:38*	*1*

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

Lab Sample ID: MB 320-504120/1-A
Matrix: Water
Analysis Batch: 504765

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 504120

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	89		25 - 150	07/06/21 05:14	07/07/21 12:38	1
13C2 PFDA	94		25 - 150	07/06/21 05:14	07/07/21 12:38	1
13C2 PFUnA	96		25 - 150	07/06/21 05:14	07/07/21 12:38	1
13C2 PFDoA	92		25 - 150	07/06/21 05:14	07/07/21 12:38	1
13C2 PFTeDA	103		25 - 150	07/06/21 05:14	07/07/21 12:38	1
13C2 PFHxDA	111		25 - 150	07/06/21 05:14	07/07/21 12:38	1
13C3 PFBS	99		25 - 150	07/06/21 05:14	07/07/21 12:38	1
18O2 PFHxS	94		25 - 150	07/06/21 05:14	07/07/21 12:38	1
13C4 PFOS	98		25 - 150	07/06/21 05:14	07/07/21 12:38	1
13C8 FOSA	94		10 - 150	07/06/21 05:14	07/07/21 12:38	1
d3-NMeFOSAA	100		25 - 150	07/06/21 05:14	07/07/21 12:38	1
d5-NEtFOSAA	98		25 - 150	07/06/21 05:14	07/07/21 12:38	1
d-N-MeFOSA-M	78		10 - 150	07/06/21 05:14	07/07/21 12:38	1
d-N-EtFOSA-M	80		10 - 150	07/06/21 05:14	07/07/21 12:38	1
d7-N-MeFOSE-M	79		10 - 150	07/06/21 05:14	07/07/21 12:38	1
d9-N-EtFOSE-M	78		10 - 150	07/06/21 05:14	07/07/21 12:38	1
M2-4:2 FTS	100		25 - 150	07/06/21 05:14	07/07/21 12:38	1
M2-6:2 FTS	102		25 - 150	07/06/21 05:14	07/07/21 12:38	1
M2-8:2 FTS	108		25 - 150	07/06/21 05:14	07/07/21 12:38	1
13C3 HFPO-DA	89		25 - 150	07/06/21 05:14	07/07/21 12:38	1
13C2 10:2 FTS	113		25 - 150	07/06/21 05:14	07/07/21 12:38	1

Lab Sample ID: LCS 320-504120/2-A
Matrix: Water
Analysis Batch: 504765

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 504120

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	37.6		ng/L		94	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	40.9		ng/L		102	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	41.9		ng/L		105	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	43.2		ng/L		108	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	43.5		ng/L		109	60 - 135
Perfluorononanoic acid (PFNA)	40.0	44.6		ng/L		111	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	44.6		ng/L		112	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	41.9		ng/L		105	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.9		ng/L		110	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	45.2		ng/L		113	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	46.2		ng/L		116	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.0		ng/L		105	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	43.4		ng/L		108	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	34.9		ng/L		99	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	34.3		ng/L		91	60 - 135

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

Lab Sample ID: LCS 320-504120/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 504765
Prep Batch: 504120

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	40.0		ng/L		110	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.6		ng/L		104	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	37.9		ng/L		102	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	40.9		ng/L		107	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	41.1		ng/L		107	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	42.1		ng/L		109	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.0		ng/L		105	60 - 135
NEtFOSA	40.0	45.0		ng/L		112	60 - 135
NMeFOSA	40.0	45.7		ng/L		114	60 - 135
NMeFOSAA	40.0	40.9		ng/L		102	60 - 135
NEtFOSAA	40.0	43.6		ng/L		109	60 - 135
NMeFOSE	40.0	46.4		ng/L		116	60 - 135
NEtFOSE	40.0	42.7		ng/L		107	60 - 135
4:2 FTS	37.4	40.4		ng/L		108	60 - 135
6:2 FTS	37.9	41.1		ng/L		108	60 - 135
8:2 FTS	38.3	44.7		ng/L		117	60 - 135
10:2 FTS	38.6	35.0		ng/L		91	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	38.4		ng/L		102	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	45.2		ng/L		113	60 - 135
F-53B Major	37.3	38.9		ng/L		104	60 - 135
F-53B Minor	37.7	40.2		ng/L		107	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*100*		*25 - 150*
13C5 PFPeA	*88*		*25 - 150*
13C2 PFHxA	*90*		*25 - 150*
13C4 PFHpA	*90*		*25 - 150*
13C4 PFOA	*91*		*25 - 150*
13C5 PFNA	*94*		*25 - 150*
13C2 PFDA	*92*		*25 - 150*
13C2 PFUnA	*95*		*25 - 150*
13C2 PFDoA	*95*		*25 - 150*
13C2 PFTeDA	*103*		*25 - 150*
13C2 PFHxDA	*117*		*25 - 150*
13C3 PFBS	*97*		*25 - 150*
18O2 PFHxS	*95*		*25 - 150*
13C4 PFOS	*97*		*25 - 150*
13C8 FOSA	*93*		*10 - 150*
d3-NMeFOSAA	*98*		*25 - 150*
d5-NEtFOSAA	*99*		*25 - 150*
d-N-MeFOSA-M	*79*		*10 - 150*
d-N-EtFOSA-M	*80*		*10 - 150*

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

Lab Sample ID: LCS 320-504120/2-A
Matrix: Water
Analysis Batch: 504765

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 504120

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
d7-N-MeFOSE-M	77		10 - 150
d9-N-EtFOSE-M	86		10 - 150
M2-4:2 FTS	103		25 - 150
M2-6:2 FTS	94		25 - 150
M2-8:2 FTS	102		25 - 150
13C3 HFPO-DA	87		25 - 150
13C2 10:2 FTS	108		25 - 150

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-75705-1
Project/Site: Marinette, WI 30015296.00014 WPDES

LCMS

Prep Batch: 504120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75705-1 - DL	V-200-A	Total/NA	Water	3535	
320-75705-1	V-200-A	Total/NA	Water	3535	
320-75705-2	V-900-A	Total/NA	Water	3535	
MB 320-504120/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-504120/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 504765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75705-1	V-200-A	Total/NA	Water	537 (modified)	504120
320-75705-2	V-900-A	Total/NA	Water	537 (modified)	504120
MB 320-504120/1-A	Method Blank	Total/NA	Water	537 (modified)	504120
LCS 320-504120/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	504120

Analysis Batch: 505231

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75705-1 - DL	V-200-A	Total/NA	Water	537 (modified)	504120

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-75705-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-75705-1
Date Collected: 07/01/21 11:05
Matrix: Water
Date Received: 07/02/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.8 mL	10.0 mL	504120	07/06/21 05:14	HK	TAL SAC
Total/NA	Analysis	537 (modified)		1			504765	07/07/21 13:44	K1S	TAL SAC
Total/NA	Prep	3535	DL		275.8 mL	10.0 mL	504120	07/06/21 05:14	HK	TAL SAC
Total/NA	Analysis	537 (modified)	DL	2			505231	07/09/21 11:58	JY1	TAL SAC

Client Sample ID: V-900-A
Lab Sample ID: 320-75705-2
Date Collected: 07/01/21 11:30
Matrix: Water
Date Received: 07/02/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			277.5 mL	10.0 mL	504120	07/06/21 05:14	HK	TAL SAC
Total/NA	Analysis	537 (modified)		1			504765	07/07/21 13:53	K1S	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-75705-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-21

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-75705-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-75705-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-75705-1	V-200-A	Water	07/01/21 11:05	07/02/21 09:30	
320-75705-2	V-900-A	Water	07/01/21 11:30	07/02/21 09:30	

Ref: S500-87041 Date: 24Jun21 SHIPPING: 0.00
Dep: Wgt: 10.00 LBS SPECIAL: 0.00
HANDLING: 0.00
DV: 0.00 TOTAL: 0.00

Svcs: PRIORITY OVERNIGHT Master 6049 4009 1491
TRCK: 6049 4009 1491

Eurofins Test[illegible]rica, Sacramento
880 Riverside Par[illegible]

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

eurofins Environment Testing TestAmerica

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

Re[illegible]

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Ramirez	Date: 7-1-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time			For Lab Use Only:
Phone	☑ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
FAX	TAT if different from Below ____			Lab Sampling:
Project Name: Marinette, WI	☐ 2 weeks			Lab Project Number
Site: Marinette, WI	☑ 1 week			50015522
P O # 30015296.00014 (WPDES)	☐ 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)	Sample Specific Notes:
V-200-A	7-1-21	11:05	G	W	2	N	N	X	System Influent
V-900-A	↓	11:30	G	W	2	N	N	X	System Effluent

320-75705 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.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1472482		Cooler Temp. (°C): Obs'd: 1.2	Corr'd: 1.2	Therm ID No.: L-05
Relinquished by: Jacob Ramirez	Company: Barley Excavating	Date/Time: 7-1-21 / 12:15	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: ETASAC	Date/Time: 7-2-21 / 09:30
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

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Sacramento Sample Receiving Notes

320-75705 Field Sheet

Tracking # : 5049 4009 1491

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-05 Corr. Factor: (+ / -) N/A °C

Ice ____ Wet ✓ Gel ____ Other ____

Cooler Custody Seal: 1442482

Cooler ID: ✓

Temp Observed: 1.2 °C Corrected: 1.2 °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: MC Date: 7-2-21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☐ ✓	☐	☐
Samples compromised/tampered with?	☐	☐ ✓	☐
Sample containers have legible labels?	☐ ✓	☐	☐
Sample custody seal?	☐	☐	☐ ✓
Containers are not broken or leaking?	☐ ✓	☐	☐
Sample date/times are provided?	☐ ✓	☐	☐
Appropriate containers are used?	☐ ✓	☐	☐
Sample bottles are completely filled?	☐ ✓	☐	☐
Sample preservatives verified?	☐	☐	☐ ✓
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: DR Date: 7/2/21

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: DR Date: 7/2/21

Custody Seal
DATE
SIGNATURE
7-1-21
eurofins
Environment Testing
TestAmerica
1442482
FedEx
TRK# 5049 4009 1491
0221
FRI - 02 JUL AA
PRIORITY OVERNIGHT
95605
CA-US
SMF
NH BLUA
FedEx
Express
WEST SACRAMENTO CA 956051500
880 RIVERSIDE PARKWAY
EUROFINS TESTAMERICA SACRAMENTO
MENOMINEE, MI 49858
1824 10TH AVE
BARLEY EXCAVATING INC
JOE BARLEY
ORIGIN ID:PHDA (906) 863-9373
UNITED STATES US
CAD: 0562085/CAFE3504
ACTWGT: 10.00 LB MAN
SHIP DATE: 24JUN21
eurofins
Environment Testing
TestAmerica
1442482

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc. Job Number: 320-75705-1

Login Number: 75705 **List Source: Eurofins TestAmerica, Sacramento**
List Number: 1
Creator: Horner, Nathaniel A

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	1442482
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	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-75999-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
7/15/2021 10:24:11 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-75999-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
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.
¤	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

Job ID: 320-75999-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-75999-1

Comments
No additional comments.

Receipt
The samples were received on 7/9/2021 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 3.2º C.

LCMS
Method 537 (modified): The concentration of several analytes associated with the following samples exceeded the instrument calibration range: 320-75999-1. 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 320-75999-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte 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 20X analysis is 123% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples: 320-75999-1. 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 320-505484. 320-505484 Method: 3535 PFC-W

Method 3535: The following samples were yellow prior to extraction: 320-75999-1 and 320-75999-2. 320-505484 Method: 3535 PFC-W

Method 3535: The following samples were light yellow after extraction/final volume: 320-75999-1. 320-505484 Method: 3535 PFC-W

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

Client Sample ID: V-200-A
Date Collected: 07/08/21 10:55
Date Received: 07/09/21 09:45

Lab Sample ID: 320-75999-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**200**		4.8	2.3	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluoropentanoic acid (PFPeA)	**840**	**E**	1.9	0.47	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorohexanoic acid (PFHxA)	**550**	**E**	1.9	0.56	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluoroheptanoic acid (PFHpA)	**460**	**E**	1.9	0.24	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorooctanoic acid (PFOA)	**890**	**E**	1.9	0.82	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorononanoic acid (PFNA)	**150**		1.9	0.26	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorodecanoic acid (PFDA)	**89**		1.9	0.30	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluoroundecanoic acid (PFUnA)	**58**		1.9	1.1	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorododecanoic acid (PFDoA)	**3.8**		1.9	0.53	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorotridecanoic acid (PFTriA)	<1.3		1.9	1.3	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorotetradecanoic acid (PFTeA)	<0.71		1.9	0.71	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.86		1.9	0.86	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.91		1.9	0.91	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorobutanesulfonic acid (PFBS)	**11**		1.9	0.19	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluoropentanesulfonic acid (PFPeS)	**5.3**		1.9	0.29	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorohexanesulfonic acid (PFHxS)	**160**		1.9	0.55	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	**6.8**		1.9	0.18	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorooctanesulfonic acid (PFOS)	**750**	**E**	1.9	0.52	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorononanesulfonic acid (PFNS)	**2.1**		1.9	0.36	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorodecanesulfonic acid (PFDS)	<0.31		1.9	0.31	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorododecanesulfonic acid (PFDoS)	<0.94		1.9	0.94	ng/L		07/10/21 05:34	07/11/21 14:48	1
Perfluorooctanesulfonamide (FOSA)	**17**		1.9	0.95	ng/L		07/10/21 05:34	07/11/21 14:48	1
NEtFOSA	<0.84		1.9	0.84	ng/L		07/10/21 05:34	07/11/21 14:48	1
NMeFOSA	<0.42		1.9	0.42	ng/L		07/10/21 05:34	07/11/21 14:48	1
NMeFOSAA	<1.2		4.8	1.2	ng/L		07/10/21 05:34	07/11/21 14:48	1
NEtFOSAA	**13**		4.8	1.3	ng/L		07/10/21 05:34	07/11/21 14:48	1
NMeFOSE	<1.4		3.9	1.4	ng/L		07/10/21 05:34	07/11/21 14:48	1
NEtFOSE	<0.82		1.9	0.82	ng/L		07/10/21 05:34	07/11/21 14:48	1
4:2 FTS	**7.7**		1.9	0.23	ng/L		07/10/21 05:34	07/11/21 14:48	1
6:2 FTS	**1600**	**E**	4.8	2.4	ng/L		07/10/21 05:34	07/11/21 14:48	1
8:2 FTS	**1300**	**E**	1.9	0.45	ng/L		07/10/21 05:34	07/11/21 14:48	1
10:2 FTS	**120**		1.9	0.65	ng/L		07/10/21 05:34	07/11/21 14:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.39		1.9	0.39	ng/L		07/10/21 05:34	07/11/21 14:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		3.9	1.5	ng/L		07/10/21 05:34	07/11/21 14:48	1
F-53B Major	<0.23		1.9	0.23	ng/L		07/10/21 05:34	07/11/21 14:48	1
F-53B Minor	<0.31		1.9	0.31	ng/L		07/10/21 05:34	07/11/21 14:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*77*		*25 - 150*	*07/10/21 05:34*	*07/11/21 14:48*	*1*
13C5 PFPeA	*82*		*25 - 150*	*07/10/21 05:34*	*07/11/21 14:48*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-75999-1

Client Sample ID: V-200-A

Date Collected: 07/08/21 10:55
Date Received: 07/09/21 09:45

Lab Sample ID: 320-75999-1

Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C4 PFHpA	91		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C4 PFOA	85		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C5 PFNA	93		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C2 PFDA	80		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C2 PFUnA	89		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C2 PFDoA	89		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C2 PFTeDA	71		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C2 PFHxDA	50		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C3 PFBS	105		25 - 150	07/10/21 05:34	07/11/21 14:48	1
18O2 PFHxS	86		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C4 PFOS	82		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C8 FOSA	87		10 - 150	07/10/21 05:34	07/11/21 14:48	1
d3-NMeFOSAA	84		25 - 150	07/10/21 05:34	07/11/21 14:48	1
d5-NEtFOSAA	98		25 - 150	07/10/21 05:34	07/11/21 14:48	1
d-N-MeFOSA-M	77		10 - 150	07/10/21 05:34	07/11/21 14:48	1
d-N-EtFOSA-M	77		10 - 150	07/10/21 05:34	07/11/21 14:48	1
d7-N-MeFOSE-M	78		10 - 150	07/10/21 05:34	07/11/21 14:48	1
d9-N-EtFOSE-M	64		10 - 150	07/10/21 05:34	07/11/21 14:48	1
M2-4:2 FTS	241	*	25 - 150	07/10/21 05:34	07/11/21 14:48	1
M2-6:2 FTS	122		25 - 150	07/10/21 05:34	07/11/21 14:48	1
M2-8:2 FTS	118		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C3 HFPO-DA	95		25 - 150	07/10/21 05:34	07/11/21 14:48	1
13C2 10:2 FTS	108		25 - 150	07/10/21 05:34	07/11/21 14:48	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**210**		97	46	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluoropentanoic acid (PFPeA)	**830**		39	9.5	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorohexanoic acid (PFHxA)	**580**		39	11	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluoroheptanoic acid (PFHpA)	**510**		39	4.8	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorooctanoic acid (PFOA)	**870**		39	16	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorononanoic acid (PFNA)	**160**		39	5.2	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorodecanoic acid (PFDA)	**79**		39	6.0	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluoroundecanoic acid (PFUnA)	**64**		39	21	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorododecanoic acid (PFDoA)	<11		39	11	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorotridecanoic acid (PFTriA)	<25		39	25	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorotetradecanoic acid (PFTeA)	<14		39	14	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluoro-n-hexadecanoic acid (PFHxDA)	<17		39	17	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluoro-n-octadecanoic acid (PFODA)	<18		39	18	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorobutanesulfonic acid (PFBS)	**11**	**J**	39	3.9	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluoropentanesulfonic acid (PFPeS)	<5.8		39	5.8	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorohexanesulfonic acid (PFHxS)	**200**		39	11	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluoroheptanesulfonic Acid (PFHpS)	**5.7**	**J**	39	3.7	ng/L		07/10/21 05:34	07/12/21 11:36	20

Client Sample ID: V-200-A
Lab Sample ID: 320-75999-1
Date Collected: 07/08/21 10:55
Matrix: Water
Date Received: 07/09/21 09:45

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**710**		39	10	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorononanesulfonic acid (PFNS)	<7.2		39	7.2	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorodecanesulfonic acid (PFDS)	<6.2		39	6.2	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorododecanesulfonic acid (PFDoS)	<19		39	19	ng/L		07/10/21 05:34	07/12/21 11:36	20
Perfluorooctanesulfonamide (FOSA)	**19**	**J**	39	19	ng/L		07/10/21 05:34	07/12/21 11:36	20
NEtFOSA	<17		39	17	ng/L		07/10/21 05:34	07/12/21 11:36	20
NMeFOSA	<8.3		39	8.3	ng/L		07/10/21 05:34	07/12/21 11:36	20
NMeFOSAA	<23		97	23	ng/L		07/10/21 05:34	07/12/21 11:36	20
NEtFOSAA	<25		97	25	ng/L		07/10/21 05:34	07/12/21 11:36	20
NMeFOSE	<27		77	27	ng/L		07/10/21 05:34	07/12/21 11:36	20
NEtFOSE	<16		39	16	ng/L		07/10/21 05:34	07/12/21 11:36	20
4:2 FTS	**7.7**	**J**	39	4.6	ng/L		07/10/21 05:34	07/12/21 11:36	20
6:2 FTS	**1600**		97	48	ng/L		07/10/21 05:34	07/12/21 11:36	20
8:2 FTS	**1500**		39	8.9	ng/L		07/10/21 05:34	07/12/21 11:36	20
10:2 FTS	**160**		39	13	ng/L		07/10/21 05:34	07/12/21 11:36	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<7.7		39	7.7	ng/L		07/10/21 05:34	07/12/21 11:36	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<29		77	29	ng/L		07/10/21 05:34	07/12/21 11:36	20
F-53B Major	<4.6		39	4.6	ng/L		07/10/21 05:34	07/12/21 11:36	20
F-53B Minor	<6.2		39	6.2	ng/L		07/10/21 05:34	07/12/21 11:36	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*83*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C5 PFPeA	*84*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C2 PFHxA	*84*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C4 PFHpA	*81*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C4 PFOA	*88*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C5 PFNA	*84*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C2 PFDA	*86*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C2 PFUnA	*77*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C2 PFDoA	*91*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C2 PFTeDA	*61*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C2 PFHxDA	*36*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C3 PFBS	*84*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
18O2 PFHxS	*64*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C4 PFOS	*85*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C8 FOSA	*73*		*10 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
d3-NMeFOSAA	*77*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
d5-NEtFOSAA	*98*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
d-N-MeFOSA-M	*74*		*10 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
d-N-EtFOSA-M	*62*		*10 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
d7-N-MeFOSE-M	*66*		*10 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
d9-N-EtFOSE-M	*69*		*10 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
M2-4:2 FTS	*114*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
M2-6:2 FTS	*120*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
M2-8:2 FTS	*114*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*
13C3 HFPO-DA	*92*		*25 - 150*	*07/10/21 05:34*	*07/12/21 11:36*	*20*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-75999-1

Client Sample ID: V-200-A
Date Collected: 07/08/21 10:55
Date Received: 07/09/21 09:45

Lab Sample ID: 320-75999-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 10:2 FTS	78		25 - 150	07/10/21 05:34	07/12/21 11:36	20

Client Sample ID: V-900-A
Date Collected: 07/08/21 11:20
Date Received: 07/09/21 09:45

Lab Sample ID: 320-75999-2
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.7**		5.3	2.5	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluoropentanoic acid (PFPeA)	**5.4**		2.1	0.52	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorohexanoic acid (PFHxA)	**1.2**	**J**	2.1	0.61	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluoroheptanoic acid (PFHpA)	<0.26		2.1	0.26	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorooctanoic acid (PFOA)	<0.89		2.1	0.89	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorononanoic acid (PFNA)	<0.28		2.1	0.28	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorodecanoic acid (PFDA)	<0.33		2.1	0.33	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluoroundecanoic acid (PFUnA)	<1.2		2.1	1.2	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorododecanoic acid (PFDoA)	<0.58		2.1	0.58	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorotridecanoic acid (PFTriA)	<1.4		2.1	1.4	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorotetradecanoic acid (PFTeA)	<0.77		2.1	0.77	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.94		2.1	0.94	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.99		2.1	0.99	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorobutanesulfonic acid (PFBS)	<0.21		2.1	0.21	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluoropentanesulfonic acid (PFPeS)	<0.32		2.1	0.32	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorohexanesulfonic acid (PFHxS)	<0.60		2.1	0.60	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.20		2.1	0.20	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorooctanesulfonic acid (PFOS)	<0.57		2.1	0.57	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorononanesulfonic acid (PFNS)	<0.39		2.1	0.39	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorodecanesulfonic acid (PFDS)	<0.34		2.1	0.34	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorododecanesulfonic acid (PFDoS)	<1.0		2.1	1.0	ng/L		07/10/21 05:34	07/11/21 14:57	1
Perfluorooctanesulfonamide (FOSA)	<1.0		2.1	1.0	ng/L		07/10/21 05:34	07/11/21 14:57	1
NEtFOSA	<0.92		2.1	0.92	ng/L		07/10/21 05:34	07/11/21 14:57	1
NMeFOSA	<0.45		2.1	0.45	ng/L		07/10/21 05:34	07/11/21 14:57	1
NMeFOSAA	<1.3		5.3	1.3	ng/L		07/10/21 05:34	07/11/21 14:57	1
NEtFOSAA	<1.4		5.3	1.4	ng/L		07/10/21 05:34	07/11/21 14:57	1
NMeFOSE	<1.5		4.2	1.5	ng/L		07/10/21 05:34	07/11/21 14:57	1
NEtFOSE	<0.89		2.1	0.89	ng/L		07/10/21 05:34	07/11/21 14:57	1
4:2 FTS	<0.25		2.1	0.25	ng/L		07/10/21 05:34	07/11/21 14:57	1
6:2 FTS	<2.6		5.3	2.6	ng/L		07/10/21 05:34	07/11/21 14:57	1
8:2 FTS	**1.4**	**J**	2.1	0.48	ng/L		07/10/21 05:34	07/11/21 14:57	1
10:2 FTS	**3.8**		2.1	0.70	ng/L		07/10/21 05:34	07/11/21 14:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.42		2.1	0.42	ng/L		07/10/21 05:34	07/11/21 14:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.6		4.2	1.6	ng/L		07/10/21 05:34	07/11/21 14:57	1
F-53B Major	<0.25		2.1	0.25	ng/L		07/10/21 05:34	07/11/21 14:57	1
F-53B Minor	<0.34		2.1	0.34	ng/L		07/10/21 05:34	07/11/21 14:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*86*		*25 - 150*	*07/10/21 05:34*	*07/11/21 14:57*	*1*
13C5 PFPeA	*89*		*25 - 150*	*07/10/21 05:34*	*07/11/21 14:57*	*1*
13C2 PFHxA	*81*		*25 - 150*	*07/10/21 05:34*	*07/11/21 14:57*	*1*
13C4 PFHpA	*92*		*25 - 150*	*07/10/21 05:34*	*07/11/21 14:57*	*1*
13C4 PFOA	*92*		*25 - 150*	*07/10/21 05:34*	*07/11/21 14:57*	*1*
13C5 PFNA	*83*		*25 - 150*	*07/10/21 05:34*	*07/11/21 14:57*	*1*
13C2 PFDA	*81*		*25 - 150*	*07/10/21 05:34*	*07/11/21 14:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-75999-1

Client Sample ID: V-900-A
Date Collected: 07/08/21 11:20
Date Received: 07/09/21 09:45

Lab Sample ID: 320-75999-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	80		25 - 150	07/10/21 05:34	07/11/21 14:57	1
13C2 PFDoA	83		25 - 150	07/10/21 05:34	07/11/21 14:57	1
13C2 PFTeDA	61		25 - 150	07/10/21 05:34	07/11/21 14:57	1
13C2 PFHxDA	45		25 - 150	07/10/21 05:34	07/11/21 14:57	1
13C3 PFBS	91		25 - 150	07/10/21 05:34	07/11/21 14:57	1
18O2 PFHxS	83		25 - 150	07/10/21 05:34	07/11/21 14:57	1
13C4 PFOS	75		25 - 150	07/10/21 05:34	07/11/21 14:57	1
13C8 FOSA	80		10 - 150	07/10/21 05:34	07/11/21 14:57	1
d3-NMeFOSAA	79		25 - 150	07/10/21 05:34	07/11/21 14:57	1
d5-NEtFOSAA	92		25 - 150	07/10/21 05:34	07/11/21 14:57	1
d-N-MeFOSA-M	72		10 - 150	07/10/21 05:34	07/11/21 14:57	1
d-N-EtFOSA-M	65		10 - 150	07/10/21 05:34	07/11/21 14:57	1
d7-N-MeFOSE-M	66		10 - 150	07/10/21 05:34	07/11/21 14:57	1
d9-N-EtFOSE-M	62		10 - 150	07/10/21 05:34	07/11/21 14:57	1
M2-4:2 FTS	104		25 - 150	07/10/21 05:34	07/11/21 14:57	1
M2-6:2 FTS	100		25 - 150	07/10/21 05:34	07/11/21 14:57	1
M2-8:2 FTS	122		25 - 150	07/10/21 05:34	07/11/21 14:57	1
13C3 HFPO-DA	88		25 - 150	07/10/21 05:34	07/11/21 14:57	1
13C2 10:2 FTS	100		25 - 150	07/10/21 05:34	07/11/21 14:57	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-75999-1

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)
320-75999-1	V-200-A	77	82	84	91	85	93	80	89
320-75999-1 - DL	V-200-A	83	84	84	81	88	84	86	77
320-75999-2	V-900-A	86	89	81	92	92	83	81	80
LCS 320-505484/2-A	Lab Control Sample	92	93	85	96	92	85	87	81
LCSD 320-505484/3-A	Lab Control Sample Dup	100	97	91	99	102	99	99	88
MB 320-505484/1-A	Method Blank	91	93	87	89	94	90	92	83

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
320-75999-1	V-200-A	89	71	50	105	86	82	87	84
320-75999-1 - DL	V-200-A	91	61	36	84	64	85	73	77
320-75999-2	V-900-A	83	61	45	91	83	75	80	79
LCS 320-505484/2-A	Lab Control Sample	84	89	96	95	88	89	85	84
LCSD 320-505484/3-A	Lab Control Sample Dup	95	97	98	105	94	102	91	94
MB 320-505484/1-A	Method Blank	84	92	82	103	92	81	88	82

		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)
320-75999-1	V-200-A	98	77	77	78	64	241 *	122	118
320-75999-1 - DL	V-200-A	98	74	62	66	69	114	120	114
320-75999-2	V-900-A	92	72	65	66	62	104	100	122
LCS 320-505484/2-A	Lab Control Sample	102	78	78	74	69	104	102	96
LCSD 320-505484/3-A	Lab Control Sample Dup	99	78	82	92	74	113	113	111
MB 320-505484/1-A	Method Blank	92	77	79	80	69	107	103	102

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
320-75999-1	V-200-A	95	108
320-75999-1 - DL	V-200-A	92	78
320-75999-2	V-900-A	88	100
LCS 320-505484/2-A	Lab Control Sample	86	104
LCSD 320-505484/3-A	Lab Control Sample Dup	95	115
MB 320-505484/1-A	Method Blank	87	113

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxDA = 13C2 PFHxDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-75999-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-505484/1-A
Matrix: Water
Analysis Batch: 505610

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 505484

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		07/10/21 05:34	07/11/21 12:39	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		07/10/21 05:34	07/11/21 12:39	1
NEtFOSA	<0.87		2.0	0.87	ng/L		07/10/21 05:34	07/11/21 12:39	1
NMeFOSA	<0.43		2.0	0.43	ng/L		07/10/21 05:34	07/11/21 12:39	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		07/10/21 05:34	07/11/21 12:39	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		07/10/21 05:34	07/11/21 12:39	1
NMeFOSE	<1.4		4.0	1.4	ng/L		07/10/21 05:34	07/11/21 12:39	1
NEtFOSE	<0.85		2.0	0.85	ng/L		07/10/21 05:34	07/11/21 12:39	1
4:2 FTS	<0.24		2.0	0.24	ng/L		07/10/21 05:34	07/11/21 12:39	1
6:2 FTS	<2.5		5.0	2.5	ng/L		07/10/21 05:34	07/11/21 12:39	1
8:2 FTS	<0.46		2.0	0.46	ng/L		07/10/21 05:34	07/11/21 12:39	1
10:2 FTS	<0.67		2.0	0.67	ng/L		07/10/21 05:34	07/11/21 12:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		07/10/21 05:34	07/11/21 12:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		07/10/21 05:34	07/11/21 12:39	1
F-53B Major	<0.24		2.0	0.24	ng/L		07/10/21 05:34	07/11/21 12:39	1
F-53B Minor	<0.32		2.0	0.32	ng/L		07/10/21 05:34	07/11/21 12:39	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*91*		*25 - 150*	*07/10/21 05:34*	*07/11/21 12:39*	*1*
13C5 PFPeA	*93*		*25 - 150*	*07/10/21 05:34*	*07/11/21 12:39*	*1*
13C2 PFHxA	*87*		*25 - 150*	*07/10/21 05:34*	*07/11/21 12:39*	*1*
13C4 PFHpA	*89*		*25 - 150*	*07/10/21 05:34*	*07/11/21 12:39*	*1*
13C4 PFOA	*94*		*25 - 150*	*07/10/21 05:34*	*07/11/21 12:39*	*1*

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

Lab Sample ID: MB 320-505484/1-A
Matrix: Water
Analysis Batch: 505610

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 505484

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	90		25 - 150	07/10/21 05:34	07/11/21 12:39	1
13C2 PFDA	92		25 - 150	07/10/21 05:34	07/11/21 12:39	1
13C2 PFUnA	83		25 - 150	07/10/21 05:34	07/11/21 12:39	1
13C2 PFDoA	84		25 - 150	07/10/21 05:34	07/11/21 12:39	1
13C2 PFTeDA	92		25 - 150	07/10/21 05:34	07/11/21 12:39	1
13C2 PFHxDA	82		25 - 150	07/10/21 05:34	07/11/21 12:39	1
13C3 PFBS	103		25 - 150	07/10/21 05:34	07/11/21 12:39	1
18O2 PFHxS	92		25 - 150	07/10/21 05:34	07/11/21 12:39	1
13C4 PFOS	81		25 - 150	07/10/21 05:34	07/11/21 12:39	1
13C8 FOSA	88		10 - 150	07/10/21 05:34	07/11/21 12:39	1
d3-NMeFOSAA	82		25 - 150	07/10/21 05:34	07/11/21 12:39	1
d5-NEtFOSAA	92		25 - 150	07/10/21 05:34	07/11/21 12:39	1
d-N-MeFOSA-M	77		10 - 150	07/10/21 05:34	07/11/21 12:39	1
d-N-EtFOSA-M	79		10 - 150	07/10/21 05:34	07/11/21 12:39	1
d7-N-MeFOSE-M	80		10 - 150	07/10/21 05:34	07/11/21 12:39	1
d9-N-EtFOSE-M	69		10 - 150	07/10/21 05:34	07/11/21 12:39	1
M2-4:2 FTS	107		25 - 150	07/10/21 05:34	07/11/21 12:39	1
M2-6:2 FTS	103		25 - 150	07/10/21 05:34	07/11/21 12:39	1
M2-8:2 FTS	102		25 - 150	07/10/21 05:34	07/11/21 12:39	1
13C3 HFPO-DA	87		25 - 150	07/10/21 05:34	07/11/21 12:39	1
13C2 10:2 FTS	113		25 - 150	07/10/21 05:34	07/11/21 12:39	1

Lab Sample ID: LCS 320-505484/2-A
Matrix: Water
Analysis Batch: 505610

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 505484

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.3		ng/L		106	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	43.5		ng/L		109	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	45.2		ng/L		113	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	41.6		ng/L		104	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	39.7		ng/L		99	60 - 135
Perfluorononanoic acid (PFNA)	40.0	43.2		ng/L		108	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	41.6		ng/L		104	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	45.1		ng/L		113	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	42.2		ng/L		106	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	43.2		ng/L		108	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	37.9		ng/L		95	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	39.6		ng/L		99	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	37.4		ng/L		93	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	32.4		ng/L		92	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	37.0		ng/L		99	60 - 135

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

Lab Sample ID: LCS 320-505484/2-A
Matrix: Water
Analysis Batch: 505610

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 505484

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.5		ng/L		106	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.7		ng/L		112	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	39.3		ng/L		106	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	37.7		ng/L		98	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	39.1		ng/L		101	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	37.2		ng/L		96	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	41.1		ng/L		103	60 - 135
NEtFOSA	40.0	40.1		ng/L		100	60 - 135
NMeFOSA	40.0	42.9		ng/L		107	60 - 135
NMeFOSAA	40.0	40.3		ng/L		101	60 - 135
NEtFOSAA	40.0	37.6		ng/L		94	60 - 135
NMeFOSE	40.0	42.2		ng/L		106	60 - 135
NEtFOSE	40.0	48.4		ng/L		121	60 - 135
4:2 FTS	37.4	39.7		ng/L		106	60 - 135
6:2 FTS	37.9	42.0		ng/L		111	60 - 135
8:2 FTS	38.3	40.6		ng/L		106	60 - 135
10:2 FTS	38.6	41.2		ng/L		107	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.5		ng/L		110	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	46.6		ng/L		117	60 - 135
F-53B Major	37.3	41.5		ng/L		111	60 - 135
F-53B Minor	37.7	37.0		ng/L		98	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*92*		*25 - 150*
13C5 PFPeA	*93*		*25 - 150*
13C2 PFHxA	*85*		*25 - 150*
13C4 PFHpA	*96*		*25 - 150*
13C4 PFOA	*92*		*25 - 150*
13C5 PFNA	*85*		*25 - 150*
13C2 PFDA	*87*		*25 - 150*
13C2 PFUnA	*81*		*25 - 150*
13C2 PFDoA	*84*		*25 - 150*
13C2 PFTeDA	*89*		*25 - 150*
13C2 PFHxDA	*96*		*25 - 150*
13C3 PFBS	*95*		*25 - 150*
18O2 PFHxS	*88*		*25 - 150*
13C4 PFOS	*89*		*25 - 150*
13C8 FOSA	*85*		*10 - 150*
d3-NMeFOSAA	*84*		*25 - 150*
d5-NEtFOSAA	*102*		*25 - 150*
d-N-MeFOSA-M	*78*		*10 - 150*
d-N-EtFOSA-M	*78*		*10 - 150*

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

Lab Sample ID: LCS 320-505484/2-A
Matrix: Water
Analysis Batch: 505610

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 505484

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*74*		*10 - 150*
d9-N-EtFOSE-M	*69*		*10 - 150*
M2-4:2 FTS	*104*		*25 - 150*
M2-6:2 FTS	*102*		*25 - 150*
M2-8:2 FTS	*96*		*25 - 150*
13C3 HFPO-DA	*86*		*25 - 150*
13C2 10:2 FTS	*104*		*25 - 150*

Lab Sample ID: LCSD 320-505484/3-A
Matrix: Water
Analysis Batch: 505610

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 505484

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	42.2		ng/L		105	60 - 135	0	30
Perfluoropentanoic acid (PFPeA)			40.0	40.1		ng/L		100	60 - 135	8	30
Perfluorohexanoic acid (PFHxA)			40.0	44.8		ng/L		112	60 - 135	1	30
Perfluoroheptanoic acid (PFHpA)			40.0	38.5		ng/L		96	60 - 135	8	30
Perfluorooctanoic acid (PFOA)			40.0	38.5		ng/L		96	60 - 135	3	30
Perfluorononanoic acid (PFNA)			40.0	42.6		ng/L		107	60 - 135	1	30
Perfluorodecanoic acid (PFDA)			40.0	41.7		ng/L		104	60 - 135	0	30
Perfluoroundecanoic acid (PFUnA)			40.0	41.2		ng/L		103	60 - 135	9	30
Perfluorododecanoic acid (PFDoA)			40.0	43.4		ng/L		109	60 - 135	3	30
Perfluorotridecanoic acid (PFTriA)			40.0	42.1		ng/L		105	60 - 135	3	30
Perfluorotetradecanoic acid (PFTeA)			40.0	42.9		ng/L		107	60 - 135	12	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	40.8		ng/L		102	60 - 135	3	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	39.0		ng/L		97	60 - 135	4	30
Perfluorobutanesulfonic acid (PFBS)			35.4	30.8		ng/L		87	60 - 135	5	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	36.3		ng/L		97	60 - 135	2	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	37.8		ng/L		104	60 - 135	2	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	37.4		ng/L		98	60 - 135	13	30
Perfluorooctanesulfonic acid (PFOS)			37.1	35.6		ng/L		96	60 - 135	10	30
Perfluorononanesulfonic acid (PFNS)			38.4	36.8		ng/L		96	60 - 135	2	30
Perfluorodecanesulfonic acid (PFDS)			38.6	35.6		ng/L		92	60 - 135	9	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	34.1		ng/L		88	60 - 135	9	30
Perfluorooctanesulfonamide (FOSA)			40.0	41.9		ng/L		105	60 - 135	2	30
NEtFOSA			40.0	41.3		ng/L		103	60 - 135	3	30
NMeFOSA			40.0	45.0		ng/L		113	60 - 135	5	30
NMeFOSAA			40.0	40.3		ng/L		101	60 - 135	0	30

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

Lab Sample ID: LCSD 320-505484/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 505610
Prep Batch: 505484

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	41.0		ng/L		103	60 - 135	9	30
NMeFOSE			40.0	38.0		ng/L		95	60 - 135	11	30
NEtFOSE			40.0	48.2		ng/L		120	60 - 135	0	30
4:2 FTS			37.4	37.8		ng/L		101	60 - 135	5	30
6:2 FTS			37.9	41.8		ng/L		110	60 - 135	1	30
8:2 FTS			38.3	42.6		ng/L		111	60 - 135	5	30
10:2 FTS			38.6	38.4		ng/L		99	60 - 135	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	39.0		ng/L		103	60 - 135	6	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	39.7		ng/L		99	60 - 135	16	30
F-53B Major			37.3	39.1		ng/L		105	60 - 135	6	30
F-53B Minor			37.7	35.4		ng/L		94	60 - 135	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*100*		*25 - 150*
13C5 PFPeA	*97*		*25 - 150*
13C2 PFHxA	*91*		*25 - 150*
13C4 PFHpA	*99*		*25 - 150*
13C4 PFOA	*102*		*25 - 150*
13C5 PFNA	*99*		*25 - 150*
13C2 PFDA	*99*		*25 - 150*
13C2 PFUnA	*88*		*25 - 150*
13C2 PFDoA	*95*		*25 - 150*
13C2 PFTeDA	*97*		*25 - 150*
13C2 PFHxDA	*98*		*25 - 150*
13C3 PFBS	*105*		*25 - 150*
18O2 PFHxS	*94*		*25 - 150*
13C4 PFOS	*102*		*25 - 150*
13C8 FOSA	*91*		*10 - 150*
d3-NMeFOSAA	*94*		*25 - 150*
d5-NEtFOSAA	*99*		*25 - 150*
d-N-MeFOSA-M	*78*		*10 - 150*
d-N-EtFOSA-M	*82*		*10 - 150*
d7-N-MeFOSE-M	*92*		*10 - 150*
d9-N-EtFOSE-M	*74*		*10 - 150*
M2-4:2 FTS	*113*		*25 - 150*
M2-6:2 FTS	*113*		*25 - 150*
M2-8:2 FTS	*111*		*25 - 150*
13C3 HFPO-DA	*95*		*25 - 150*
13C2 10:2 FTS	*115*		*25 - 150*

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-75999-1
Project/Site: Marinette, WI 30015296.00014 WPDES

LCMS

Prep Batch: 505484

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75999-1 - DL	V-200-A	Total/NA	Water	3535	
320-75999-1	V-200-A	Total/NA	Water	3535	
320-75999-2	V-900-A	Total/NA	Water	3535	
MB 320-505484/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-505484/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-505484/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 505610

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75999-1	V-200-A	Total/NA	Water	537 (modified)	505484
320-75999-2	V-900-A	Total/NA	Water	537 (modified)	505484
MB 320-505484/1-A	Method Blank	Total/NA	Water	537 (modified)	505484
LCS 320-505484/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	505484
LCSD 320-505484/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	505484

Analysis Batch: 505764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-75999-1 - DL	V-200-A	Total/NA	Water	537 (modified)	505484

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-75999-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-75999-1
Date Collected: 07/08/21 10:55
Matrix: Water
Date Received: 07/09/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.3 mL	10.0 mL	505484	07/10/21 05:34	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1			505610	07/11/21 14:48	D1R	TAL SAC
Total/NA	Prep	3535	DL		258.3 mL	10.0 mL	505484	07/10/21 05:34	EG	TAL SAC
Total/NA	Analysis	537 (modified)	DL	20			505764	07/12/21 11:36	JRB	TAL SAC

Client Sample ID: V-900-A
Lab Sample ID: 320-75999-2
Date Collected: 07/08/21 11:20
Matrix: Water
Date Received: 07/09/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			237.7 mL	10.0 mL	505484	07/10/21 05:34	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1			505610	07/11/21 14:57	D1R	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-75999-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-21

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-75999-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-75999-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-75999-1	V-200-A	Water	07/08/21 10:55	07/09/21 09:45	
320-75999-2	V-900-A	Water	07/08/21 11:20	07/09/21 09:45	

Eurofins TestAmerica, Sacramento
880 Riverside Park

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Dep:
Wgt: 10.00 LBS
DV:
0.00 TOTAL:
SPECIAL: 0.00
HANDLING: 0.00

Svcs: PRIORITY OVERNIGHT Master 5049 4009 1491
TRCK: 5049 4009 1517

eurofins
Environment Testing
TestAmerica

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

Regu

Client Contact	Project M:	Sampler: Jacob Ramingo	Date: 7-8-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time			For Lab Use Only:
Phone	☑ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
FAX	TAT if different from Below			Lab Sampling:
Project Name: Marinette, WI	☐ 2 weeks			Lab Project Number
Site: Marinette, WI	☑ 1 week			50015522
P O # 30015296.00014 (WPDES)	☐ 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)	Sample Specific Notes:
V-200-A	7-8-21	10:55	G	W	2	N	N	X	System Influent
V-900-A	↓	11:20	G	W	2	N	N	X	System Effluent

320-75999 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.
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No | Custody Seal No.: 1442487 | Cooler Temp. (°C): Obs'd: 3.2 Corr'd: 3.2 | Therm ID No.: 2-04

Relinquished by: Jacob Ramingo	Company: Barley Excavating	Date/Time: 7-8-21 / 11:30	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: ETASAC	Date/Time: 07-09-21 / 09:45
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

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Sacramento Sample Receiving Notes

320-75999 Field Sheet

Job: _____

Tracking # : 5049 4009 1517

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-04 Corr. Factor: (+ / -) N/A °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1442487

Cooler ID: —

Temp Observed: 3.2 °C Corrected: 3.2 °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: NC Date: 7-9-21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
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: 7/9/21

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: 7/9/21


ORIGIN ID:PHDA (909) 863-9373
SHIP DATE: 24JUN21
EUROFINS TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY
WEST SACRAMENTO CA 956051500
FedEx
5049 4009 1517
FRI - 09 JUL AA
PRIORITY OVERNIGHT
NH BLUA
95605
CA-US
SMF
eurofins
Environment Testing
TestAmerica
1442487
Custody Seal
SIGNATURE
DATE

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc. Job Number: 320-75999-1

Login Number: 75999 **List Source: Eurofins TestAmerica, Sacramento**
List Number: 1
Creator: Oropeza, Salvador

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	1442487
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	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-76330-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
7/22/2021 10:08:35 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-76330-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
C	See Case Narrative
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.
¤	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

Job ID: 320-76330-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-76330-1

Comments
No additional comments.

Receipt
The samples were received on 7/16/2021 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 0.8º C.

LCMS
Method 537 (modified): The concentration of several analytes associated with the following samples exceeded the instrument calibration range: 320-76330-1. 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): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: 320-76330-1. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Internal standard (ISTD) response for the following sample was outside control limits: 320-76330-1. The sample was analyzed at a dilution and the ISTD response was within control limits. The ISTD is not used to quantitate the target analytes. Both sets of data are reported.

Method 537 (modified): Results for sample 320-76330-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte 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 10X analysis is 116% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The transition mass ratio for the indicated analyte was outside of 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. 320-76330-1

Method 537 (modified): The “I” qualifier means the transition mass ratio for Perfluoroundecanoic acid (PFUnA) was outside of 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. The percent difference of PFUnA was within control limits. Therefore there is no impact on the data. CCVL 320-508713/2

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 320-507884 and 320-507884. 3535 PFC Aqueous 320-507884 and 320-507884

Method 3535: The following samples were beige prior to extraction: 320-76330-1 and 320-76330-2 3535 PFC Aqueous 320-507884 and 320-507884

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

Client Sample ID: V-200-A
Date Collected: 07/15/21 11:35
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76330-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**180**		4.6	2.2	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluoropentanoic acid (PFPeA)	**870**	**E**	1.9	0.45	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorohexanoic acid (PFHxA)	**550**	**E**	1.9	0.54	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluoroheptanoic acid (PFHpA)	**520**	**E**	1.9	0.23	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorooctanoic acid (PFOA)	**1800**	**E**	1.9	0.79	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorononanoic acid (PFNA)	**200**		1.9	0.25	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorodecanoic acid (PFDA)	**96**		1.9	0.29	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluoroundecanoic acid (PFUnA)	**80**		1.9	1.0	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorododecanoic acid (PFDoA)	**5.7**		1.9	0.51	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorotridecanoic acid (PFTriA)	**1.9**		1.9	1.2	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorotetradecanoic acid (PFTeA)	<0.68		1.9	0.68	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.82		1.9	0.82	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.87		1.9	0.87	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorobutanesulfonic acid (PFBS)	**24**		1.9	0.19	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluoropentanesulfonic acid (PFPeS)	**4.3**		1.9	0.28	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorohexanesulfonic acid (PFHxS)	**130**		1.9	0.53	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	**6.1**		1.9	0.18	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorooctanesulfonic acid (PFOS)	**960**	**E**	1.9	0.50	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorononanesulfonic acid (PFNS)	**2.0**		1.9	0.34	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorododecanesulfonic acid (PFDoS)	<0.90		1.9	0.90	ng/L		07/18/21 18:36	07/20/21 15:20	1
Perfluorooctanesulfonamide (FOSA)	**29**		1.9	0.91	ng/L		07/18/21 18:36	07/20/21 15:20	1
NEtFOSA	<0.80		1.9	0.80	ng/L		07/18/21 18:36	07/20/21 15:20	1
NMeFOSA	<0.40		1.9	0.40	ng/L		07/18/21 18:36	07/20/21 15:20	1
NMeFOSAA	<1.1		4.6	1.1	ng/L		07/18/21 18:36	07/20/21 15:20	1
NEtFOSAA	**15**		4.6	1.2	ng/L		07/18/21 18:36	07/20/21 15:20	1
NMeFOSE	<1.3		3.7	1.3	ng/L		07/18/21 18:36	07/20/21 15:20	1
NEtFOSE	<0.79		1.9	0.79	ng/L		07/18/21 18:36	07/20/21 15:20	1
4:2 FTS	**8.0**		1.9	0.22	ng/L		07/18/21 18:36	07/20/21 15:20	1
6:2 FTS	**1300**	**E**	4.6	2.3	ng/L		07/18/21 18:36	07/20/21 15:20	1
8:2 FTS	**1700**	**E**	1.9	0.43	ng/L		07/18/21 18:36	07/20/21 15:20	1
10:2 FTS	**160**		1.9	0.62	ng/L		07/18/21 18:36	07/20/21 15:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.37		1.9	0.37	ng/L		07/18/21 18:36	07/20/21 15:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.7	1.4	ng/L		07/18/21 18:36	07/20/21 15:20	1
F-53B Major	<0.22		1.9	0.22	ng/L		07/18/21 18:36	07/20/21 15:20	1
F-53B Minor	<0.30		1.9	0.30	ng/L		07/18/21 18:36	07/20/21 15:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*77*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:20*	*1*
13C5 PFPeA	*35*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:20*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76330-1

Client Sample ID: V-200-A

Date Collected: 07/15/21 11:35
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76330-1

Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	109		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C4 PFHpA	61		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C4 PFOA	85		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C5 PFNA	74		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C2 PFDA	115		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C2 PFUnA	130		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C2 PFDoA	112		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C2 PFTeDA	85		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C2 PFHxDA	94		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C3 PFBS	78		25 - 150	07/18/21 18:36	07/20/21 15:20	1
18O2 PFHxS	89		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C4 PFOS	105		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C8 FOSA	101		10 - 150	07/18/21 18:36	07/20/21 15:20	1
d3-NMeFOSAA	88		25 - 150	07/18/21 18:36	07/20/21 15:20	1
d5-NEtFOSAA	96		25 - 150	07/18/21 18:36	07/20/21 15:20	1
d-N-MeFOSA-M	98		10 - 150	07/18/21 18:36	07/20/21 15:20	1
d-N-EtFOSA-M	96		10 - 150	07/18/21 18:36	07/20/21 15:20	1
d7-N-MeFOSE-M	75		10 - 150	07/18/21 18:36	07/20/21 15:20	1
d9-N-EtFOSE-M	78		10 - 150	07/18/21 18:36	07/20/21 15:20	1
M2-4:2 FTS	158	*	25 - 150	07/18/21 18:36	07/20/21 15:20	1
M2-6:2 FTS	106		25 - 150	07/18/21 18:36	07/20/21 15:20	1
M2-8:2 FTS	175	*	25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C3 HFPO-DA	86		25 - 150	07/18/21 18:36	07/20/21 15:20	1
13C2 10:2 FTS	147		25 - 150	07/18/21 18:36	07/20/21 15:20	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**190**		46	22	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluoropentanoic acid (PFPeA)	**820**		19	4.5	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorohexanoic acid (PFHxA)	**570**		19	5.4	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluoroheptanoic acid (PFHpA)	**530**		19	2.3	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorooctanoic acid (PFOA)	**2100**		19	7.9	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorononanoic acid (PFNA)	**210**		19	2.5	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorodecanoic acid (PFDA)	**97**		19	2.9	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluoroundecanoic acid (PFUnA)	**82**		19	10	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorododecanoic acid (PFDoA)	<5.1		19	5.1	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorotridecanoic acid (PFTriA)	<12		19	12	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorotetradecanoic acid (PFTeA)	<6.8		19	6.8	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<8.2		19	8.2	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluoro-n-octadecanoic acid (PFODA)	<8.7		19	8.7	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorobutanesulfonic acid (PFBS)	**20**		19	1.9	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluoropentanesulfonic acid (PFPeS)	**4.2**	**J**	19	2.8	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorohexanesulfonic acid (PFHxS)	**130**		19	5.3	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluoroheptanesulfonic Acid (PFHpS)	**6.9**	**J C**	19	1.8	ng/L		07/18/21 18:36	07/21/21 17:15	10

Client Sample ID: V-200-A
Date Collected: 07/15/21 11:35
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76330-1
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**1000**		19	5.0	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorononanesulfonic acid (PFNS)	<3.4		19	3.4	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorodecanesulfonic acid (PFDS)	<3.0		19	3.0	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorododecanesulfonic acid (PFDoS)	<9.0		19	9.0	ng/L		07/18/21 18:36	07/21/21 17:15	10
Perfluorooctanesulfonamide (FOSA)	**25**		19	9.1	ng/L		07/18/21 18:36	07/21/21 17:15	10
NEtFOSA	<8.0		19	8.0	ng/L		07/18/21 18:36	07/21/21 17:15	10
NMeFOSA	<4.0		19	4.0	ng/L		07/18/21 18:36	07/21/21 17:15	10
NMeFOSAA	<11		46	11	ng/L		07/18/21 18:36	07/21/21 17:15	10
NEtFOSAA	<12		46	12	ng/L		07/18/21 18:36	07/21/21 17:15	10
NMeFOSE	<13		37	13	ng/L		07/18/21 18:36	07/21/21 17:15	10
NEtFOSE	<7.9		19	7.9	ng/L		07/18/21 18:36	07/21/21 17:15	10
4:2 FTS	**5.6**	**J**	19	2.2	ng/L		07/18/21 18:36	07/21/21 17:15	10
6:2 FTS	**1500**		46	23	ng/L		07/18/21 18:36	07/21/21 17:15	10
8:2 FTS	**1800**		19	4.3	ng/L		07/18/21 18:36	07/21/21 17:15	10
10:2 FTS	**160**		19	6.2	ng/L		07/18/21 18:36	07/21/21 17:15	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.7		19	3.7	ng/L		07/18/21 18:36	07/21/21 17:15	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<14		37	14	ng/L		07/18/21 18:36	07/21/21 17:15	10
F-53B Major	<2.2		19	2.2	ng/L		07/18/21 18:36	07/21/21 17:15	10
F-53B Minor	<3.0		19	3.0	ng/L		07/18/21 18:36	07/21/21 17:15	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*84*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C5 PFPeA	*68*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C2 PFHxA	*88*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C4 PFHpA	*75*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C4 PFOA	*79*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C5 PFNA	*83*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C2 PFDA	*95*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C2 PFUnA	*89*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C2 PFDoA	*88*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C2 PFTeDA	*56*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C2 PFHxDA	*45*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C3 PFBS	*80*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
18O2 PFHxS	*80*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C4 PFOS	*88*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C8 FOSA	*83*		*10 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
d3-NMeFOSAA	*78*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
d5-NEtFOSAA	*93*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
d-N-MeFOSA-M	*58*		*10 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
d-N-EtFOSA-M	*60*		*10 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
d7-N-MeFOSE-M	*52*		*10 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
d9-N-EtFOSE-M	*58*		*10 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
M2-4:2 FTS	*88*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
M2-6:2 FTS	*86*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
M2-8:2 FTS	*125*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*
13C3 HFPO-DA	*69*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:15*	*10*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76330-1

Client Sample ID: V-200-A
Date Collected: 07/15/21 11:35
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76330-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 10:2 FTS	95		25 - 150	07/18/21 18:36	07/21/21 17:15	10

Client Sample ID: V-900-A
Date Collected: 07/15/21 12:00
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76330-2
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**21**		4.4	2.1	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluoropentanoic acid (PFPeA)	**9.3**		1.8	0.44	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorohexanoic acid (PFHxA)	**1.2**	**J**	1.8	0.52	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.8	0.22	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorooctanoic acid (PFOA)	<0.76		1.8	0.76	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluoroundecanoic acid (PFUnA)	<0.98		1.8	0.98	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorotetradecanoic acid (PFTeA)	<0.65		1.8	0.65	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.79		1.8	0.79	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.84		1.8	0.84	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorohexanesulfonic acid (PFHxS)	<0.51		1.8	0.51	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.17		1.8	0.17	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorooctanesulfonic acid (PFOS)	<0.48		1.8	0.48	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorododecanesulfonic acid (PFDoS)	<0.86		1.8	0.86	ng/L		07/18/21 18:36	07/20/21 15:30	1
Perfluorooctanesulfonamide (FOSA)	<0.87		1.8	0.87	ng/L		07/18/21 18:36	07/20/21 15:30	1
NEtFOSA	<0.77		1.8	0.77	ng/L		07/18/21 18:36	07/20/21 15:30	1
NMeFOSA	<0.38		1.8	0.38	ng/L		07/18/21 18:36	07/20/21 15:30	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		07/18/21 18:36	07/20/21 15:30	1
NEtFOSAA	<1.2		4.4	1.2	ng/L		07/18/21 18:36	07/20/21 15:30	1
NMeFOSE	<1.2		3.6	1.2	ng/L		07/18/21 18:36	07/20/21 15:30	1
NEtFOSE	<0.76		1.8	0.76	ng/L		07/18/21 18:36	07/20/21 15:30	1
4:2 FTS	<0.21		1.8	0.21	ng/L		07/18/21 18:36	07/20/21 15:30	1
6:2 FTS	<2.2		4.4	2.2	ng/L		07/18/21 18:36	07/20/21 15:30	1
8:2 FTS	**1.5**	**J**	1.8	0.41	ng/L		07/18/21 18:36	07/20/21 15:30	1
10:2 FTS	**5.7**		1.8	0.60	ng/L		07/18/21 18:36	07/20/21 15:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		07/18/21 18:36	07/20/21 15:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.6	1.3	ng/L		07/18/21 18:36	07/20/21 15:30	1
F-53B Major	<0.21		1.8	0.21	ng/L		07/18/21 18:36	07/20/21 15:30	1
F-53B Minor	<0.28		1.8	0.28	ng/L		07/18/21 18:36	07/20/21 15:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:30*	*1*
13C5 PFPeA	*64*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:30*	*1*
13C2 PFHxA	*95*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:30*	*1*
13C4 PFHpA	*81*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:30*	*1*
13C4 PFOA	*93*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:30*	*1*
13C5 PFNA	*81*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:30*	*1*
13C2 PFDA	*98*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:30*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76330-1

Client Sample ID: V-900-A
Date Collected: 07/15/21 12:00
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76330-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	93		25 - 150	07/18/21 18:36	07/20/21 15:30	1
13C2 PFDoA	90		25 - 150	07/18/21 18:36	07/20/21 15:30	1
13C2 PFTeDA	69		25 - 150	07/18/21 18:36	07/20/21 15:30	1
13C2 PFHxDA	70		25 - 150	07/18/21 18:36	07/20/21 15:30	1
13C3 PFBS	80		25 - 150	07/18/21 18:36	07/20/21 15:30	1
18O2 PFHxS	86		25 - 150	07/18/21 18:36	07/20/21 15:30	1
13C4 PFOS	100		25 - 150	07/18/21 18:36	07/20/21 15:30	1
13C8 FOSA	90		10 - 150	07/18/21 18:36	07/20/21 15:30	1
d3-NMeFOSAA	68		25 - 150	07/18/21 18:36	07/20/21 15:30	1
d5-NEtFOSAA	84		25 - 150	07/18/21 18:36	07/20/21 15:30	1
d-N-MeFOSA-M	74		10 - 150	07/18/21 18:36	07/20/21 15:30	1
d-N-EtFOSA-M	74		10 - 150	07/18/21 18:36	07/20/21 15:30	1
d7-N-MeFOSE-M	58		10 - 150	07/18/21 18:36	07/20/21 15:30	1
d9-N-EtFOSE-M	70		10 - 150	07/18/21 18:36	07/20/21 15:30	1
M2-4:2 FTS	69		25 - 150	07/18/21 18:36	07/20/21 15:30	1
M2-6:2 FTS	76		25 - 150	07/18/21 18:36	07/20/21 15:30	1
M2-8:2 FTS	122		25 - 150	07/18/21 18:36	07/20/21 15:30	1
13C3 HFPO-DA	85		25 - 150	07/18/21 18:36	07/20/21 15:30	1
13C2 10:2 FTS	100		25 - 150	07/18/21 18:36	07/20/21 15:30	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76330-1

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)
320-76330-1	V-200-A	77	35	109	61	85	74	115	130
320-76330-1 - DL	V-200-A	84	68	88	75	79	83	95	89
320-76330-2	V-900-A	85	64	95	81	93	81	98	93
LCS 320-507884/2-A	Lab Control Sample	87	76	96	88	90	88	97	94
LCSD 320-507884/3-A	Lab Control Sample Dup	89	81	93	90	88	88	94	98
MB 320-507884/1-A	Method Blank	92	86	97	89	91	85	100	103

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
320-76330-1	V-200-A	112	85	94	78	89	105	101	88
320-76330-1 - DL	V-200-A	88	56	45	80	80	88	83	78
320-76330-2	V-900-A	90	69	70	80	86	100	90	68
LCS 320-507884/2-A	Lab Control Sample	94	83	93	84	92	96	85	74
LCSD 320-507884/3-A	Lab Control Sample Dup	100	93	96	85	94	105	89	80
MB 320-507884/1-A	Method Blank	98	82	88	79	90	100	88	77

		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)
320-76330-1	V-200-A	96	98	96	75	78	158 *	106	175 *
320-76330-1 - DL	V-200-A	93	58	60	52	58	88	86	125
320-76330-2	V-900-A	84	74	74	58	70	69	76	122
LCS 320-507884/2-A	Lab Control Sample	81	70	73	68	72	60	80	106
LCSD 320-507884/3-A	Lab Control Sample Dup	89	75	75	71	84	71	79	107
MB 320-507884/1-A	Method Blank	91	70	75	73	79	66	91	107

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
320-76330-1	V-200-A	86	147
320-76330-1 - DL	V-200-A	69	95
320-76330-2	V-900-A	85	100
LCS 320-507884/2-A	Lab Control Sample	85	111
LCSD 320-507884/3-A	Lab Control Sample Dup	83	120
MB 320-507884/1-A	Method Blank	95	114

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxDA = 13C2 PFHxDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76330-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-507884/1-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 507884

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		07/18/21 18:36	07/20/21 12:13	1
NEtFOSA	<0.87		2.0	0.87	ng/L		07/18/21 18:36	07/20/21 12:13	1
NMeFOSA	<0.43		2.0	0.43	ng/L		07/18/21 18:36	07/20/21 12:13	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		07/18/21 18:36	07/20/21 12:13	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		07/18/21 18:36	07/20/21 12:13	1
NMeFOSE	<1.4		4.0	1.4	ng/L		07/18/21 18:36	07/20/21 12:13	1
NEtFOSE	<0.85		2.0	0.85	ng/L		07/18/21 18:36	07/20/21 12:13	1
4:2 FTS	<0.24		2.0	0.24	ng/L		07/18/21 18:36	07/20/21 12:13	1
6:2 FTS	<2.5		5.0	2.5	ng/L		07/18/21 18:36	07/20/21 12:13	1
8:2 FTS	<0.46		2.0	0.46	ng/L		07/18/21 18:36	07/20/21 12:13	1
10:2 FTS	<0.67		2.0	0.67	ng/L		07/18/21 18:36	07/20/21 12:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		07/18/21 18:36	07/20/21 12:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		07/18/21 18:36	07/20/21 12:13	1
F-53B Major	<0.24		2.0	0.24	ng/L		07/18/21 18:36	07/20/21 12:13	1
F-53B Minor	<0.32		2.0	0.32	ng/L		07/18/21 18:36	07/20/21 12:13	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*92*		*25 - 150*	*07/18/21 18:36*	*07/20/21 12:13*	*1*
13C5 PFPeA	*86*		*25 - 150*	*07/18/21 18:36*	*07/20/21 12:13*	*1*
13C2 PFHxA	*97*		*25 - 150*	*07/18/21 18:36*	*07/20/21 12:13*	*1*
13C4 PFHpA	*89*		*25 - 150*	*07/18/21 18:36*	*07/20/21 12:13*	*1*
13C4 PFOA	*91*		*25 - 150*	*07/18/21 18:36*	*07/20/21 12:13*	*1*

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

Lab Sample ID: MB 320-507884/1-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 507884

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	85		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 PFDA	100		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 PFUnA	103		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 PFDoA	98		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 PFTeDA	82		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 PFHxDA	88		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C3 PFBS	79		25 - 150	07/18/21 18:36	07/20/21 12:13	1
18O2 PFHxS	90		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C4 PFOS	100		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C8 FOSA	88		10 - 150	07/18/21 18:36	07/20/21 12:13	1
d3-NMeFOSAA	77		25 - 150	07/18/21 18:36	07/20/21 12:13	1
d5-NEtFOSAA	91		25 - 150	07/18/21 18:36	07/20/21 12:13	1
d-N-MeFOSA-M	70		10 - 150	07/18/21 18:36	07/20/21 12:13	1
d-N-EtFOSA-M	75		10 - 150	07/18/21 18:36	07/20/21 12:13	1
d7-N-MeFOSE-M	73		10 - 150	07/18/21 18:36	07/20/21 12:13	1
d9-N-EtFOSE-M	79		10 - 150	07/18/21 18:36	07/20/21 12:13	1
M2-4:2 FTS	66		25 - 150	07/18/21 18:36	07/20/21 12:13	1
M2-6:2 FTS	91		25 - 150	07/18/21 18:36	07/20/21 12:13	1
M2-8:2 FTS	107		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C3 HFPO-DA	95		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 10:2 FTS	114		25 - 150	07/18/21 18:36	07/20/21 12:13	1

Lab Sample ID: LCS 320-507884/2-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 507884

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	39.4		ng/L		98	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	44.2		ng/L		110	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	39.8		ng/L		100	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	38.9		ng/L		97	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	42.4		ng/L		106	60 - 135
Perfluorononanoic acid (PFNA)	40.0	43.1		ng/L		108	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	37.2		ng/L		93	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	45.9		ng/L		115	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	38.6		ng/L		96	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	40.4		ng/L		101	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	40.3		ng/L		101	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.6		ng/L		107	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	36.7		ng/L		92	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	39.0		ng/L		110	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.7		ng/L		106	60 - 135

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

Lab Sample ID: LCS 320-507884/2-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 507884

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.2		ng/L		97	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	37.4		ng/L		98	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	39.2		ng/L		106	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	40.1		ng/L		104	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	37.3		ng/L		97	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	38.8		ng/L		100	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.1		ng/L		105	60 - 135
NEtFOSA	40.0	42.6		ng/L		107	60 - 135
NMeFOSA	40.0	44.4		ng/L		111	60 - 135
NMeFOSAA	40.0	52.3		ng/L		131	60 - 135
NEtFOSAA	40.0	43.5		ng/L		109	60 - 135
NMeFOSE	40.0	44.0		ng/L		110	60 - 135
NEtFOSE	40.0	43.4		ng/L		108	60 - 135
4:2 FTS	37.4	46.0		ng/L		123	60 - 135
6:2 FTS	37.9	37.8		ng/L		100	60 - 135
8:2 FTS	38.3	34.8		ng/L		91	60 - 135
10:2 FTS	38.6	38.3		ng/L		99	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	36.1		ng/L		96	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.8		ng/L		99	60 - 135
F-53B Major	37.3	39.3		ng/L		105	60 - 135
F-53B Minor	37.7	39.6		ng/L		105	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*87*		*25 - 150*
13C5 PFPeA	*76*		*25 - 150*
13C2 PFHxA	*96*		*25 - 150*
13C4 PFHpA	*88*		*25 - 150*
13C4 PFOA	*90*		*25 - 150*
13C5 PFNA	*88*		*25 - 150*
13C2 PFDA	*97*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
13C2 PFDoA	*94*		*25 - 150*
13C2 PFTeDA	*83*		*25 - 150*
13C2 PFHxDA	*93*		*25 - 150*
13C3 PFBS	*84*		*25 - 150*
18O2 PFHxS	*92*		*25 - 150*
13C4 PFOS	*96*		*25 - 150*
13C8 FOSA	*85*		*10 - 150*
d3-NMeFOSAA	*74*		*25 - 150*
d5-NEtFOSAA	*81*		*25 - 150*
d-N-MeFOSA-M	*70*		*10 - 150*
d-N-EtFOSA-M	*73*		*10 - 150*

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

Lab Sample ID: LCS 320-507884/2-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 507884

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*68*		*10 - 150*
d9-N-EtFOSE-M	*72*		*10 - 150*
M2-4:2 FTS	*60*		*25 - 150*
M2-6:2 FTS	*80*		*25 - 150*
M2-8:2 FTS	*106*		*25 - 150*
13C3 HFPO-DA	*85*		*25 - 150*
13C2 10:2 FTS	*111*		*25 - 150*

Lab Sample ID: LCSD 320-507884/3-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 507884

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	40.1		ng/L		100	60 - 135	2	30
Perfluoropentanoic acid (PFPeA)			40.0	43.0		ng/L		107	60 - 135	3	30
Perfluorohexanoic acid (PFHxA)			40.0	39.9		ng/L		100	60 - 135	0	30
Perfluoroheptanoic acid (PFHpA)			40.0	40.9		ng/L		102	60 - 135	5	30
Perfluorooctanoic acid (PFOA)			40.0	41.7		ng/L		104	60 - 135	2	30
Perfluorononanoic acid (PFNA)			40.0	44.3		ng/L		111	60 - 135	3	30
Perfluorodecanoic acid (PFDA)			40.0	40.6		ng/L		101	60 - 135	9	30
Perfluoroundecanoic acid (PFUnA)			40.0	44.4		ng/L		111	60 - 135	3	30
Perfluorododecanoic acid (PFDoA)			40.0	41.2		ng/L		103	60 - 135	6	30
Perfluorotridecanoic acid (PFTriA)			40.0	40.2		ng/L		101	60 - 135	0	30
Perfluorotetradecanoic acid (PFTeA)			40.0	39.0		ng/L		97	60 - 135	3	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	45.8		ng/L		114	60 - 135	7	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	33.8		ng/L		84	60 - 135	8	30
Perfluorobutanesulfonic acid (PFBS)			35.4	39.4		ng/L		111	60 - 135	1	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	38.6		ng/L		103	60 - 135	3	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	36.2		ng/L		100	60 - 135	3	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	38.6		ng/L		101	60 - 135	3	30
Perfluorooctanesulfonic acid (PFOS)			37.1	36.8		ng/L		99	60 - 135	6	30
Perfluorononanesulfonic acid (PFNS)			38.4	39.3		ng/L		102	60 - 135	2	30
Perfluorodecanesulfonic acid (PFDS)			38.6	37.9		ng/L		98	60 - 135	1	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	39.6		ng/L		102	60 - 135	2	30
Perfluorooctanesulfonamide (FOSA)			40.0	39.4		ng/L		99	60 - 135	7	30
NEtFOSA			40.0	43.8		ng/L		109	60 - 135	3	30
NMeFOSA			40.0	42.8		ng/L		107	60 - 135	4	30
NMeFOSAA			40.0	48.5		ng/L		121	60 - 135	8	30

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

Lab Sample ID: LCSD 320-507884/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 508204
Prep Batch: 507884

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	41.0		ng/L		102	60 - 135	6	30
NMeFOSE			40.0	43.5		ng/L		109	60 - 135	1	30
NEtFOSE			40.0	40.3		ng/L		101	60 - 135	7	30
4:2 FTS			37.4	41.7		ng/L		112	60 - 135	10	30
6:2 FTS			37.9	37.2		ng/L		98	60 - 135	2	30
8:2 FTS			38.3	40.7		ng/L		106	60 - 135	15	30
10:2 FTS			38.6	39.5		ng/L		103	60 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	36.6		ng/L		97	60 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	43.7		ng/L		109	60 - 135	9	30
F-53B Major			37.3	35.8		ng/L		96	60 - 135	9	30
F-53B Minor			37.7	40.8		ng/L		108	60 - 135	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*89*		*25 - 150*
13C5 PFPeA	*81*		*25 - 150*
13C2 PFHxA	*93*		*25 - 150*
13C4 PFHpA	*90*		*25 - 150*
13C4 PFOA	*88*		*25 - 150*
13C5 PFNA	*88*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*98*		*25 - 150*
13C2 PFDoA	*100*		*25 - 150*
13C2 PFTeDA	*93*		*25 - 150*
13C2 PFHxDA	*96*		*25 - 150*
13C3 PFBS	*85*		*25 - 150*
18O2 PFHxS	*94*		*25 - 150*
13C4 PFOS	*105*		*25 - 150*
13C8 FOSA	*89*		*10 - 150*
d3-NMeFOSAA	*80*		*25 - 150*
d5-NEtFOSAA	*89*		*25 - 150*
d-N-MeFOSA-M	*75*		*10 - 150*
d-N-EtFOSA-M	*75*		*10 - 150*
d7-N-MeFOSE-M	*71*		*10 - 150*
d9-N-EtFOSE-M	*84*		*10 - 150*
M2-4:2 FTS	*71*		*25 - 150*
M2-6:2 FTS	*79*		*25 - 150*
M2-8:2 FTS	*107*		*25 - 150*
13C3 HFPO-DA	*83*		*25 - 150*
13C2 10:2 FTS	*120*		*25 - 150*

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76330-1
Project/Site: Marinette, WI 30015296.00014 WPDES

LCMS

Prep Batch: 507884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-76330-1 - DL	V-200-A	Total/NA	Water	3535	
320-76330-1	V-200-A	Total/NA	Water	3535	
320-76330-2	V-900-A	Total/NA	Water	3535	
MB 320-507884/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-507884/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-507884/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 508204

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-76330-1	V-200-A	Total/NA	Water	537 (modified)	507884
320-76330-2	V-900-A	Total/NA	Water	537 (modified)	507884
MB 320-507884/1-A	Method Blank	Total/NA	Water	537 (modified)	507884
LCS 320-507884/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	507884
LCSD 320-507884/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	507884

Analysis Batch: 509000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-76330-1 - DL	V-200-A	Total/NA	Water	537 (modified)	507884

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-76330-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-76330-1
Date Collected: 07/15/21 11:35
Matrix: Water
Date Received: 07/16/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.2 mL	10.0 mL	507884	07/18/21 18:36	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			508204	07/20/21 15:20	K1S	TAL SAC
Total/NA	Prep	3535	DL		270.2 mL	10.0 mL	507884	07/18/21 18:36	VP	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			509000	07/21/21 17:15	S1M	TAL SAC

Client Sample ID: V-900-A
Lab Sample ID: 320-76330-2
Date Collected: 07/15/21 12:00
Matrix: Water
Date Received: 07/16/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.2 mL	10.0 mL	507884	07/18/21 18:36	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			508204	07/20/21 15:30	K1S	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76330-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-21

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76330-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76330-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-76330-1	V-200-A	Water	07/15/21 11:35	07/16/21 09:30
320-76330-2	V-900-A	Water	07/15/21 12:00	07/16/21 09:30

Eurofins TestAmerica, Sacramento
880 Riverside Parkway

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Ref:
Dep:

Date: 25Oct18
Wgt: 25.00 LBS

DV: 0.00

SHIPPING: 0.00
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 0.00

eurofins
Environment Testing
TestAmerica

Svcs: PRIORITY OVERNIGHT Master 7125 4939 0644
TRCK: 7125 4939 0666

Regulatory Pr

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Ramminger	Date: 7-15-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	**Analysis Turnaround Time**			**For Lab Use Only:**
Phone	☑ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
FAX	TAT if different from Below _____			Lab Sampling:
Project Name: Marinette, WI	☐ 2 weeks			**Lab Project Number**
Site: Marinette, WI	☑ 1 week			50015522
P O # 30015296.00014 (WPDES)	☐ 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)	Sample Specific Notes:
V-200-A	7-15-21	11:35	G	W	2	N	N	X	System Influent
V-900-A	↓	12:00	G	W	2	N	N	X	System Effluent

320-76330 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.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1442490		Cooler Temp. (°C): Obs'd: 0.8	Corr'd: 0.8	Therm ID No.: 2-01	
Relinquished by: Jacob Ramminger	Company: Barley Excavating	Date/Time: 7-15-21 / 12:45	Received by: Fed Ex	Company:	Date/Time:	
Relinquished by:	Company:	Date/Time:	Received by: Green Org	Company: ETASAC	Date/Time: 7/16/21 9:30	
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:	

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

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Sacramento Sample Receiving Notes

320-76330 Field Sheet

Job: _____

Tracking # : 7125-4939-0666

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-01 Corr. Factor: (+ / -) - °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1442490

Cooler ID: -

Temp Observed: 0.8 °C Corrected: 0.8 °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: EO Date: 7/16/21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	✓	☐	☐
Samples compromised/tampered with?	☐	✓	☐
Sample containers have legible labels?	✓	☐	☐
Sample custody seal?	☐	☐	✓
Containers are not broken or leaking?	✓	☐	☐
Sample date/times are provided?	✓	☐	☐
Appropriate containers are used?	✓	☐	☐
Sample bottles are completely filled?	✓	☐	☐
Sample preservatives verified?	☐	☐	✓
Samples w/o discrepancies?	✓	☐	☐
Zero headspace?*	☐	☐	✓
Alkalinity has no headspace?	☐	☐	✓
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	✓
Multiphasic samples are not present?	✓	☐	✓ CV 7/16/21

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

Initials: CV Date: 7/16/21

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: EO Date: 7/16/21

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ORIGIN ID:RRLA (262) 202-5955
LISA RUTKOWSKI
ARCADIS
126 NORTH JEFFERSON STREET

MILWAUKEE, WI 53202
UNITED STATES US

SHIP DATE: 25OCT18
ACTWGT: 25.00 LB MAN
CAD: 525155/CAFE3211

TO

TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY

WEST SACRAMENTO CA 95605-1500
(916) 373-5600
INV:
PO:
REF:
DEPT:

RMA:

FedEx Express

FedEx
TRK# 0221 7125 4939 0666

FRI - 16 JUL AA
PRIORITY OVERNIGHT

NH BLUA

95605
CA-US
SMF

3604346 15Jul2021 GRBA 56DG2/0265/1B23

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1442490

Custody Seal

DATE

SIGNATURE

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1442490

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc. Job Number: 320-76330-1

Login Number: 76330 **List Source: Eurofins TestAmerica, Sacramento**
List Number: 1
Creator: Oropeza, Salvador

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	1442490
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	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-76331-1
Client Project/Site: Marinette, WI 30015296.00014 GAC
Revision: 1

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

Attn: Lisa Rutkowski

Sandra Fredrick

Authorized for release by:
7/23/2021 2:58:46 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-76331-1
Project/Site: Marinette, WI 30015296.00014 GAC

Qualifiers

LCMS

Qualifier	Qualifier Description
E	Result exceeded calibration range.
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.
¤	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

Job ID: 320-76331-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-76331-1

Comments
No additional comments.

Receipt
The samples were received on 7/16/2021 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 0.8º C.

Receipt Exceptions
Sample 4 ID updated to match COC.

LCMS
Method 537 (modified): The initial calibration blank (ICB) associated with initial calibration in analytical batch 320-506184 has a concentration of 0.0338 ng/mL for Perfluorooctadecanoic acid (PFODa), which is greater than 1/2 the reporting limit. The continuing calibration blanks and the associated sample are non-detect for this analyte. Data quality is not impacted by this anomaly. ICB 320-506184/9

Method 537 (modified): The concentration of Perfluorooctanoic acid (PFOA) associated with the following samples exceeded the instrument calibration range: 320-76331-1. 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 320-76331-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte 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 91% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The “I” qualifier means the transition mass ratio for Perfluoroundecanoic acid (PFUnA) was outside of 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. The percent difference of PFUnA was within control limits. Therefore there is no impact on the data.
CCVL 320-508713/2

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 320-507884. 3535 PFC Aqueous 320-507884

Method 3535: The following samples were beige prior to extraction: 320-76331-1, 320-76331-2, 320-76331-3 and 320-76331-4 3535 PFC Aqueous 320-507884

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

Client Sample ID: V-32-A

Date Collected: 07/15/21 12:20
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76331-1

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**100**		4.7	2.2	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluoropentanoic acid (PFPeA)	**320**		1.9	0.46	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorohexanoic acid (PFHxA)	**210**		1.9	0.54	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluoroheptanoic acid (PFHpA)	**160**		1.9	0.23	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorooctanoic acid (PFOA)	**480**	**E**	1.9	0.80	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorononanoic acid (PFNA)	**46**		1.9	0.25	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorodecanoic acid (PFDA)	**14**		1.9	0.29	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluoroundecanoic acid (PFUnA)	**9.6**		1.9	1.0	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9	0.51	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorotridecanoic acid (PFTriA)	<1.9		1.9	1.2	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorotetradecanoic acid (PFTeA)	<1.9		1.9	0.68	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.9		1.9	0.83	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.9		1.9	0.88	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorobutanesulfonic acid (PFBS)	**6.3**		1.9	0.19	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluoropentanesulfonic acid (PFPeS)	**0.97**	**J**	1.9	0.28	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorohexanesulfonic acid (PFHxS)	**26**		1.9	0.53	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.1**	**J**	1.9	0.18	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorooctanesulfonic acid (PFOS)	**140**		1.9	0.51	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorononanesulfonic acid (PFNS)	<1.9		1.9	0.35	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorodecanesulfonic acid (PFDS)	<1.9		1.9	0.30	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorododecanesulfonic acid (PFDoS)	<1.9		1.9	0.91	ng/L		07/18/21 18:36	07/20/21 15:39	1
Perfluorooctanesulfonamide (FOSA)	**1.6**	**J**	1.9	0.92	ng/L		07/18/21 18:36	07/20/21 15:39	1
NEtFOSA	<1.9		1.9	0.81	ng/L		07/18/21 18:36	07/20/21 15:39	1
NMeFOSA	<1.9		1.9	0.40	ng/L		07/18/21 18:36	07/20/21 15:39	1
NMeFOSAA	<4.7		4.7	1.1	ng/L		07/18/21 18:36	07/20/21 15:39	1
NEtFOSAA	**1.5**	**J**	4.7	1.2	ng/L		07/18/21 18:36	07/20/21 15:39	1
NMeFOSE	<3.7		3.7	1.3	ng/L		07/18/21 18:36	07/20/21 15:39	1
NEtFOSE	<1.9		1.9	0.80	ng/L		07/18/21 18:36	07/20/21 15:39	1
4:2 FTS	**2.0**		1.9	0.22	ng/L		07/18/21 18:36	07/20/21 15:39	1
6:2 FTS	**340**		4.7	2.3	ng/L		07/18/21 18:36	07/20/21 15:39	1
8:2 FTS	**290**		1.9	0.43	ng/L		07/18/21 18:36	07/20/21 15:39	1
10:2 FTS	**25**		1.9	0.63	ng/L		07/18/21 18:36	07/20/21 15:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9	0.37	ng/L		07/18/21 18:36	07/20/21 15:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.7		3.7	1.4	ng/L		07/18/21 18:36	07/20/21 15:39	1
F-53B Major	<1.9		1.9	0.22	ng/L		07/18/21 18:36	07/20/21 15:39	1
F-53B Minor	<1.9		1.9	0.30	ng/L		07/18/21 18:36	07/20/21 15:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*74*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:39*	*1*
13C5 PFPeA	*45*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:39*	*1*
13C2 PFHxA	*97*		*25 - 150*	*07/18/21 18:36*	*07/20/21 15:39*	*1*

Client Sample ID: V-32-A

Date Collected: 07/15/21 12:20
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76331-1

Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	66		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C4 PFOA	89		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C5 PFNA	79		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C2 PFDA	114		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C2 PFUnA	108		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C2 PFDoA	99		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C2 PFTeDA	88		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C2 PFHxDA	94		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C3 PFBS	76		25 - 150	07/18/21 18:36	07/20/21 15:39	1
18O2 PFHxS	92		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C4 PFOS	107		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C8 FOSA	98		10 - 150	07/18/21 18:36	07/20/21 15:39	1
d3-NMeFOSAA	81		25 - 150	07/18/21 18:36	07/20/21 15:39	1
d5-NEtFOSAA	95		25 - 150	07/18/21 18:36	07/20/21 15:39	1
d-N-MeFOSA-M	81		10 - 150	07/18/21 18:36	07/20/21 15:39	1
d-N-EtFOSA-M	87		10 - 150	07/18/21 18:36	07/20/21 15:39	1
d7-N-MeFOSE-M	64		10 - 150	07/18/21 18:36	07/20/21 15:39	1
d9-N-EtFOSE-M	72		10 - 150	07/18/21 18:36	07/20/21 15:39	1
M2-4:2 FTS	95		25 - 150	07/18/21 18:36	07/20/21 15:39	1
M2-6:2 FTS	83		25 - 150	07/18/21 18:36	07/20/21 15:39	1
M2-8:2 FTS	148		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C3 HFPO-DA	86		25 - 150	07/18/21 18:36	07/20/21 15:39	1
13C2 10:2 FTS	140		25 - 150	07/18/21 18:36	07/20/21 15:39	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**100**		23	11	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluoropentanoic acid (PFPeA)	**350**		9.4	2.3	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorohexanoic acid (PFHxA)	**220**		9.4	2.7	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluoroheptanoic acid (PFHpA)	**140**		9.4	1.2	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorooctanoic acid (PFOA)	**490**		9.4	4.0	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorononanoic acid (PFNA)	**43**		9.4	1.3	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorodecanoic acid (PFDA)	**13**		9.4	1.5	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluoroundecanoic acid (PFUnA)	**9.5**		9.4	5.1	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorododecanoic acid (PFDoA)	<9.4		9.4	2.6	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorotridecanoic acid (PFTriA)	<9.4		9.4	6.1	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorotetradecanoic acid (PFTeA)	<9.4		9.4	3.4	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluoro-n-hexadecanoic acid (PFHxDA)	<9.4		9.4	4.2	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluoro-n-octadecanoic acid (PFODA)	<9.4		9.4	4.4	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorobutanesulfonic acid (PFBS)	**6.0**	**J**	9.4	0.94	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluoropentanesulfonic acid (PFPeS)	<9.4		9.4	1.4	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorohexanesulfonic acid (PFHxS)	**26**		9.4	2.7	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluoroheptanesulfonic Acid (PFHpS)	<9.4		9.4	0.89	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorooctanesulfonic acid (PFOS)	**140**		9.4	2.5	ng/L		07/18/21 18:36	07/21/21 17:24	5

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 GAC

Job ID: 320-76331-1

Client Sample ID: V-32-A
Date Collected: 07/15/21 12:20
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76331-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanesulfonic acid (PFNS)	<9.4		9.4	1.7	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorodecanesulfonic acid (PFDS)	<9.4		9.4	1.5	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorododecanesulfonic acid (PFDoS)	<9.4		9.4	4.5	ng/L		07/18/21 18:36	07/21/21 17:24	5
Perfluorooctanesulfonamide (FOSA)	<9.4		9.4	4.6	ng/L		07/18/21 18:36	07/21/21 17:24	5
NEtFOSA	<9.4		9.4	4.1	ng/L		07/18/21 18:36	07/21/21 17:24	5
NMeFOSA	<9.4		9.4	2.0	ng/L		07/18/21 18:36	07/21/21 17:24	5
NMeFOSAA	<23		23	5.6	ng/L		07/18/21 18:36	07/21/21 17:24	5
NEtFOSAA	<23		23	6.1	ng/L		07/18/21 18:36	07/21/21 17:24	5
NMeFOSE	<19		19	6.6	ng/L		07/18/21 18:36	07/21/21 17:24	5
NEtFOSE	<9.4		9.4	4.0	ng/L		07/18/21 18:36	07/21/21 17:24	5
4:2 FTS	**1.9**	**J**	9.4	1.1	ng/L		07/18/21 18:36	07/21/21 17:24	5
6:2 FTS	**360**		23	12	ng/L		07/18/21 18:36	07/21/21 17:24	5
8:2 FTS	**320**		9.4	2.2	ng/L		07/18/21 18:36	07/21/21 17:24	5
10:2 FTS	**23**		9.4	3.1	ng/L		07/18/21 18:36	07/21/21 17:24	5
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<9.4		9.4	1.9	ng/L		07/18/21 18:36	07/21/21 17:24	5
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<19		19	7.0	ng/L		07/18/21 18:36	07/21/21 17:24	5
F-53B Major	<9.4		9.4	1.1	ng/L		07/18/21 18:36	07/21/21 17:24	5
F-53B Minor	<9.4		9.4	1.5	ng/L		07/18/21 18:36	07/21/21 17:24	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C5 PFPeA	*65*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C2 PFHxA	*85*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C4 PFHpA	*77*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C4 PFOA	*84*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C5 PFNA	*82*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C2 PFDA	*100*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C2 PFUnA	*89*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C2 PFDoA	*86*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C2 PFTeDA	*60*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C2 PFHxDA	*61*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C3 PFBS	*76*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
18O2 PFHxS	*84*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C4 PFOS	*95*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C8 FOSA	*84*		*10 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
d3-NMeFOSAA	*77*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
d5-NEtFOSAA	*88*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
d-N-MeFOSA-M	*63*		*10 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
d-N-EtFOSA-M	*62*		*10 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
d7-N-MeFOSE-M	*66*		*10 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
d9-N-EtFOSE-M	*81*		*10 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
M2-4:2 FTS	*66*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
M2-6:2 FTS	*72*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
M2-8:2 FTS	*92*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C3 HFPO-DA	*87*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*
13C2 10:2 FTS	*105*		*25 - 150*	*07/18/21 18:36*	*07/21/21 17:24*	*5*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 GAC

Job ID: 320-76331-1

Client Sample ID: V-36-A
Date Collected: 07/15/21 12:25
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76331-2
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**65**		4.4	2.1	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluoropentanoic acid (PFPeA)	**110**		1.8	0.43	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorohexanoic acid (PFHxA)	**32**		1.8	0.51	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluoroheptanoic acid (PFHpA)	**9.8**		1.8	0.22	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorooctanoic acid (PFOA)	**16**		1.8	0.75	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorononanoic acid (PFNA)	**0.85**	**J**	1.8	0.24	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.27	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	0.97	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.48	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.1	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.64	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.78	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.82	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorobutanesulfonic acid (PFBS)	**0.46**	**J**	1.8	0.18	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.26	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorohexanesulfonic acid (PFHxS)	**0.87**	**J**	1.8	0.50	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.8		1.8	0.17	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorooctanesulfonic acid (PFOS)	**2.4**		1.8	0.47	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.32	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.28	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.85	ng/L		07/18/21 18:36	07/20/21 16:17	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.86	ng/L		07/18/21 18:36	07/20/21 16:17	1
NEtFOSA	<1.8		1.8	0.76	ng/L		07/18/21 18:36	07/20/21 16:17	1
NMeFOSA	<1.8		1.8	0.38	ng/L		07/18/21 18:36	07/20/21 16:17	1
NMeFOSAA	<4.4		4.4	1.1	ng/L		07/18/21 18:36	07/20/21 16:17	1
NEtFOSAA	<4.4		4.4	1.1	ng/L		07/18/21 18:36	07/20/21 16:17	1
NMeFOSE	<3.5		3.5	1.2	ng/L		07/18/21 18:36	07/20/21 16:17	1
NEtFOSE	<1.8		1.8	0.75	ng/L		07/18/21 18:36	07/20/21 16:17	1
4:2 FTS	<1.8		1.8	0.21	ng/L		07/18/21 18:36	07/20/21 16:17	1
6:2 FTS	**9.2**		4.4	2.2	ng/L		07/18/21 18:36	07/20/21 16:17	1
8:2 FTS	**6.9**		1.8	0.40	ng/L		07/18/21 18:36	07/20/21 16:17	1
10:2 FTS	**14**		1.8	0.59	ng/L		07/18/21 18:36	07/20/21 16:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.35	ng/L		07/18/21 18:36	07/20/21 16:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.5		3.5	1.3	ng/L		07/18/21 18:36	07/20/21 16:17	1
F-53B Major	<1.8		1.8	0.21	ng/L		07/18/21 18:36	07/20/21 16:17	1
F-53B Minor	<1.8		1.8	0.28	ng/L		07/18/21 18:36	07/20/21 16:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*84*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:17*	*1*
13C5 PFPeA	*66*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:17*	*1*
13C2 PFHxA	*93*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:17*	*1*
13C4 PFHpA	*78*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:17*	*1*
13C4 PFOA	*90*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:17*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 GAC

Job ID: 320-76331-1

Client Sample ID: V-36-A
Date Collected: 07/15/21 12:25
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76331-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	85		25 - 150	07/18/21 18:36	07/20/21 16:17	1
13C2 PFDA	103		25 - 150	07/18/21 18:36	07/20/21 16:17	1
13C2 PFUnA	92		25 - 150	07/18/21 18:36	07/20/21 16:17	1
13C2 PFDoA	90		25 - 150	07/18/21 18:36	07/20/21 16:17	1
13C2 PFTeDA	69		25 - 150	07/18/21 18:36	07/20/21 16:17	1
13C2 PFHxDA	65		25 - 150	07/18/21 18:36	07/20/21 16:17	1
13C3 PFBS	81		25 - 150	07/18/21 18:36	07/20/21 16:17	1
18O2 PFHxS	90		25 - 150	07/18/21 18:36	07/20/21 16:17	1
13C4 PFOS	93		25 - 150	07/18/21 18:36	07/20/21 16:17	1
13C8 FOSA	92		10 - 150	07/18/21 18:36	07/20/21 16:17	1
d3-NMeFOSAA	75		25 - 150	07/18/21 18:36	07/20/21 16:17	1
d5-NEtFOSAA	88		25 - 150	07/18/21 18:36	07/20/21 16:17	1
d-N-MeFOSA-M	79		10 - 150	07/18/21 18:36	07/20/21 16:17	1
d-N-EtFOSA-M	73		10 - 150	07/18/21 18:36	07/20/21 16:17	1
d7-N-MeFOSE-M	66		10 - 150	07/18/21 18:36	07/20/21 16:17	1
d9-N-EtFOSE-M	66		10 - 150	07/18/21 18:36	07/20/21 16:17	1
M2-4:2 FTS	68		25 - 150	07/18/21 18:36	07/20/21 16:17	1
M2-6:2 FTS	76		25 - 150	07/18/21 18:36	07/20/21 16:17	1
M2-8:2 FTS	109		25 - 150	07/18/21 18:36	07/20/21 16:17	1
13C3 HFPO-DA	82		25 - 150	07/18/21 18:36	07/20/21 16:17	1
13C2 10:2 FTS	114		25 - 150	07/18/21 18:36	07/20/21 16:17	1

Client Sample ID: V-44-A
Date Collected: 07/15/21 12:30
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76331-3
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**110**		4.6	2.2	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluoropentanoic acid (PFPeA)	**320**		1.9	0.45	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorohexanoic acid (PFHxA)	**170**		1.9	0.54	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluoroheptanoic acid (PFHpA)	**120**		1.9	0.23	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorooctanoic acid (PFOA)	**330**		1.9	0.79	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorononanoic acid (PFNA)	**29**		1.9	0.25	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorodecanoic acid (PFDA)	**9.5**		1.9	0.29	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluoroundecanoic acid (PFUnA)	**6.1**		1.9	1.0	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorododecanoic acid (PFDoA)	**0.60**	**J**	1.9	0.51	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorotridecanoic acid (PFTriA)	<1.9		1.9	1.2	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorotetradecanoic acid (PFTeA)	<1.9		1.9	0.68	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.9		1.9	0.83	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.9		1.9	0.87	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorobutanesulfonic acid (PFBS)	**5.2**		1.9	0.19	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluoropentanesulfonic acid (PFPeS)	**0.74**	**J**	1.9	0.28	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorohexanesulfonic acid (PFHxS)	**19**		1.9	0.53	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.70**	**J**	1.9	0.18	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorooctanesulfonic acid (PFOS)	**89**		1.9	0.50	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorononanesulfonic acid (PFNS)	<1.9		1.9	0.34	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorodecanesulfonic acid (PFDS)	<1.9		1.9	0.30	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorododecanesulfonic acid (PFDoS)	<1.9		1.9	0.90	ng/L		07/18/21 18:36	07/20/21 16:26	1
Perfluorooctanesulfonamide (FOSA)	**0.99**	**J**	1.9	0.91	ng/L		07/18/21 18:36	07/20/21 16:26	1
NEtFOSA	<1.9		1.9	0.81	ng/L		07/18/21 18:36	07/20/21 16:26	1
NMeFOSA	<1.9		1.9	0.40	ng/L		07/18/21 18:36	07/20/21 16:26	1
NMeFOSAA	<4.6		4.6	1.1	ng/L		07/18/21 18:36	07/20/21 16:26	1
NEtFOSAA	<4.6		4.6	1.2	ng/L		07/18/21 18:36	07/20/21 16:26	1
NMeFOSE	<3.7		3.7	1.3	ng/L		07/18/21 18:36	07/20/21 16:26	1
NEtFOSE	<1.9		1.9	0.79	ng/L		07/18/21 18:36	07/20/21 16:26	1
4:2 FTS	**1.3**	**J**	1.9	0.22	ng/L		07/18/21 18:36	07/20/21 16:26	1
6:2 FTS	**230**		4.6	2.3	ng/L		07/18/21 18:36	07/20/21 16:26	1
8:2 FTS	**200**		1.9	0.43	ng/L		07/18/21 18:36	07/20/21 16:26	1
10:2 FTS	**21**		1.9	0.62	ng/L		07/18/21 18:36	07/20/21 16:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9	0.37	ng/L		07/18/21 18:36	07/20/21 16:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.7		3.7	1.4	ng/L		07/18/21 18:36	07/20/21 16:26	1
F-53B Major	<1.9		1.9	0.22	ng/L		07/18/21 18:36	07/20/21 16:26	1
F-53B Minor	<1.9		1.9	0.30	ng/L		07/18/21 18:36	07/20/21 16:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*74*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:26*	*1*
13C5 PFPeA	*49*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:26*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 GAC

Job ID: 320-76331-1

Client Sample ID: V-44-A
Date Collected: 07/15/21 12:30
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76331-3
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C4 PFHpA	73		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C4 PFOA	91		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C5 PFNA	85		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C2 PFDA	111		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C2 PFUnA	107		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C2 PFDoA	102		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C2 PFTeDA	75		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C2 PFHxDA	75		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C3 PFBS	78		25 - 150	07/18/21 18:36	07/20/21 16:26	1
18O2 PFHxS	87		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C4 PFOS	103		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C8 FOSA	101		10 - 150	07/18/21 18:36	07/20/21 16:26	1
d3-NMeFOSAA	83		25 - 150	07/18/21 18:36	07/20/21 16:26	1
d5-NEtFOSAA	92		25 - 150	07/18/21 18:36	07/20/21 16:26	1
d-N-MeFOSA-M	78		10 - 150	07/18/21 18:36	07/20/21 16:26	1
d-N-EtFOSA-M	80		10 - 150	07/18/21 18:36	07/20/21 16:26	1
d7-N-MeFOSE-M	66		10 - 150	07/18/21 18:36	07/20/21 16:26	1
d9-N-EtFOSE-M	74		10 - 150	07/18/21 18:36	07/20/21 16:26	1
M2-4:2 FTS	105		25 - 150	07/18/21 18:36	07/20/21 16:26	1
M2-6:2 FTS	80		25 - 150	07/18/21 18:36	07/20/21 16:26	1
M2-8:2 FTS	109		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C3 HFPO-DA	85		25 - 150	07/18/21 18:36	07/20/21 16:26	1
13C2 10:2 FTS	118		25 - 150	07/18/21 18:36	07/20/21 16:26	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 GAC

Job ID: 320-76331-1

Client Sample ID: V-48-A
Date Collected: 07/15/21 12:35
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76331-4
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**46**		4.5	2.1	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluoropentanoic acid (PFPeA)	**47**		1.8	0.44	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorohexanoic acid (PFHxA)	**12**		1.8	0.52	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluoroheptanoic acid (PFHpA)	**3.5**		1.8	0.22	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorooctanoic acid (PFOA)	**5.9**		1.8	0.76	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.24	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.28	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	0.98	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.49	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.2	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.65	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.80	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.84	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.27	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.51	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.8		1.8	0.17	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorooctanesulfonic acid (PFOS)	**1.0**	**J**	1.8	0.48	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.33	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.87	ng/L		07/18/21 18:36	07/20/21 16:35	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.88	ng/L		07/18/21 18:36	07/20/21 16:35	1
NEtFOSA	<1.8		1.8	0.78	ng/L		07/18/21 18:36	07/20/21 16:35	1
NMeFOSA	<1.8		1.8	0.38	ng/L		07/18/21 18:36	07/20/21 16:35	1
NMeFOSAA	<4.5		4.5	1.1	ng/L		07/18/21 18:36	07/20/21 16:35	1
NEtFOSAA	<4.5		4.5	1.2	ng/L		07/18/21 18:36	07/20/21 16:35	1
NMeFOSE	<3.6		3.6	1.3	ng/L		07/18/21 18:36	07/20/21 16:35	1
NEtFOSE	<1.8		1.8	0.76	ng/L		07/18/21 18:36	07/20/21 16:35	1
4:2 FTS	<1.8		1.8	0.21	ng/L		07/18/21 18:36	07/20/21 16:35	1
6:2 FTS	**2.3**	**J**	4.5	2.2	ng/L		07/18/21 18:36	07/20/21 16:35	1
8:2 FTS	**3.1**		1.8	0.41	ng/L		07/18/21 18:36	07/20/21 16:35	1
10:2 FTS	**15**		1.8	0.60	ng/L		07/18/21 18:36	07/20/21 16:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		07/18/21 18:36	07/20/21 16:35	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.6		3.6	1.3	ng/L		07/18/21 18:36	07/20/21 16:35	1
F-53B Major	<1.8		1.8	0.21	ng/L		07/18/21 18:36	07/20/21 16:35	1
F-53B Minor	<1.8		1.8	0.29	ng/L		07/18/21 18:36	07/20/21 16:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*81*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:35*	*1*
13C5 PFPeA	*63*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:35*	*1*
13C2 PFHxA	*98*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:35*	*1*
13C4 PFHpA	*79*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:35*	*1*
13C4 PFOA	*90*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:35*	*1*
13C5 PFNA	*84*		*25 - 150*	*07/18/21 18:36*	*07/20/21 16:35*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 GAC

Job ID: 320-76331-1

Client Sample ID: V-48-A
Date Collected: 07/15/21 12:35
Date Received: 07/16/21 09:30

Lab Sample ID: 320-76331-4
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	100		25 - 150	07/18/21 18:36	07/20/21 16:35	1
13C2 PFUnA	98		25 - 150	07/18/21 18:36	07/20/21 16:35	1
13C2 PFDoA	89		25 - 150	07/18/21 18:36	07/20/21 16:35	1
13C2 PFTeDA	65		25 - 150	07/18/21 18:36	07/20/21 16:35	1
13C2 PFHxDA	58		25 - 150	07/18/21 18:36	07/20/21 16:35	1
13C3 PFBS	74		25 - 150	07/18/21 18:36	07/20/21 16:35	1
18O2 PFHxS	86		25 - 150	07/18/21 18:36	07/20/21 16:35	1
13C4 PFOS	91		25 - 150	07/18/21 18:36	07/20/21 16:35	1
13C8 FOSA	93		10 - 150	07/18/21 18:36	07/20/21 16:35	1
d3-NMeFOSAA	78		25 - 150	07/18/21 18:36	07/20/21 16:35	1
d5-NEtFOSAA	84		25 - 150	07/18/21 18:36	07/20/21 16:35	1
d-N-MeFOSA-M	65		10 - 150	07/18/21 18:36	07/20/21 16:35	1
d-N-EtFOSA-M	66		10 - 150	07/18/21 18:36	07/20/21 16:35	1
d7-N-MeFOSE-M	55		10 - 150	07/18/21 18:36	07/20/21 16:35	1
d9-N-EtFOSE-M	62		10 - 150	07/18/21 18:36	07/20/21 16:35	1
M2-4:2 FTS	67		25 - 150	07/18/21 18:36	07/20/21 16:35	1
M2-6:2 FTS	72		25 - 150	07/18/21 18:36	07/20/21 16:35	1
M2-8:2 FTS	131		25 - 150	07/18/21 18:36	07/20/21 16:35	1
13C3 HFPO-DA	90		25 - 150	07/18/21 18:36	07/20/21 16:35	1
13C2 10:2 FTS	111		25 - 150	07/18/21 18:36	07/20/21 16:35	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 GAC

Job ID: 320-76331-1

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)
320-76331-1	V-32-A	74	45	97	66	89	79	114	108
320-76331-1 - DL	V-32-A	85	65	85	77	84	82	100	89
320-76331-2	V-36-A	84	66	93	78	90	85	103	92
320-76331-3	V-44-A	74	49	98	73	91	85	111	107
320-76331-4	V-48-A	81	63	98	79	90	84	100	98
LCS 320-507884/2-A	Lab Control Sample	87	76	96	88	90	88	97	94
LCSD 320-507884/3-A	Lab Control Sample Dup	89	81	93	90	88	88	94	98
MB 320-507884/1-A	Method Blank	92	86	97	89	91	85	100	103

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
320-76331-1	V-32-A	99	88	94	76	92	107	98	81
320-76331-1 - DL	V-32-A	86	60	61	76	84	95	84	77
320-76331-2	V-36-A	90	69	65	81	90	93	92	75
320-76331-3	V-44-A	102	75	75	78	87	103	101	83
320-76331-4	V-48-A	89	65	58	74	86	91	93	78
LCS 320-507884/2-A	Lab Control Sample	94	83	93	84	92	96	85	74
LCSD 320-507884/3-A	Lab Control Sample Dup	100	93	96	85	94	105	89	80
MB 320-507884/1-A	Method Blank	98	82	88	79	90	100	88	77

		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)
320-76331-1	V-32-A	95	81	87	64	72	95	83	148
320-76331-1 - DL	V-32-A	88	63	62	66	81	66	72	92
320-76331-2	V-36-A	88	79	73	66	66	68	76	109
320-76331-3	V-44-A	92	78	80	66	74	105	80	109
320-76331-4	V-48-A	84	65	66	55	62	67	72	131
LCS 320-507884/2-A	Lab Control Sample	81	70	73	68	72	60	80	106
LCSD 320-507884/3-A	Lab Control Sample Dup	89	75	75	71	84	71	79	107
MB 320-507884/1-A	Method Blank	91	70	75	73	79	66	91	107

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
320-76331-1	V-32-A	86	140
320-76331-1 - DL	V-32-A	87	105
320-76331-2	V-36-A	82	114
320-76331-3	V-44-A	85	118
320-76331-4	V-48-A	90	111
LCS 320-507884/2-A	Lab Control Sample	85	111
LCSD 320-507884/3-A	Lab Control Sample Dup	83	120
MB 320-507884/1-A	Method Blank	95	114

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76331-1
Project/Site: Marinette, WI 30015296.00014 GAC

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-507884/1-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 507884

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	<2.0		2.0	0.19	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		07/18/21 18:36	07/20/21 12:13	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		07/18/21 18:36	07/20/21 12:13	1
NEtFOSA	<2.0		2.0	0.87	ng/L		07/18/21 18:36	07/20/21 12:13	1
NMeFOSA	<2.0		2.0	0.43	ng/L		07/18/21 18:36	07/20/21 12:13	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		07/18/21 18:36	07/20/21 12:13	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		07/18/21 18:36	07/20/21 12:13	1
NMeFOSE	<4.0		4.0	1.4	ng/L		07/18/21 18:36	07/20/21 12:13	1
NEtFOSE	<2.0		2.0	0.85	ng/L		07/18/21 18:36	07/20/21 12:13	1
4:2 FTS	<2.0		2.0	0.24	ng/L		07/18/21 18:36	07/20/21 12:13	1
6:2 FTS	<5.0		5.0	2.5	ng/L		07/18/21 18:36	07/20/21 12:13	1
8:2 FTS	<2.0		2.0	0.46	ng/L		07/18/21 18:36	07/20/21 12:13	1
10:2 FTS	<2.0		2.0	0.67	ng/L		07/18/21 18:36	07/20/21 12:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		07/18/21 18:36	07/20/21 12:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		07/18/21 18:36	07/20/21 12:13	1
F-53B Major	<2.0		2.0	0.24	ng/L		07/18/21 18:36	07/20/21 12:13	1
F-53B Minor	<2.0		2.0	0.32	ng/L		07/18/21 18:36	07/20/21 12:13	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*92*		*25 - 150*	*07/18/21 18:36*	*07/20/21 12:13*	*1*
13C5 PFPeA	*86*		*25 - 150*	*07/18/21 18:36*	*07/20/21 12:13*	*1*
13C2 PFHxA	*97*		*25 - 150*	*07/18/21 18:36*	*07/20/21 12:13*	*1*
13C4 PFHpA	*89*		*25 - 150*	*07/18/21 18:36*	*07/20/21 12:13*	*1*
13C4 PFOA	*91*		*25 - 150*	*07/18/21 18:36*	*07/20/21 12:13*	*1*

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

Lab Sample ID: MB 320-507884/1-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 507884

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	85		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 PFDA	100		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 PFUnA	103		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 PFDoA	98		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 PFTeDA	82		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 PFHxDA	88		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C3 PFBS	79		25 - 150	07/18/21 18:36	07/20/21 12:13	1
18O2 PFHxS	90		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C4 PFOS	100		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C8 FOSA	88		10 - 150	07/18/21 18:36	07/20/21 12:13	1
d3-NMeFOSAA	77		25 - 150	07/18/21 18:36	07/20/21 12:13	1
d5-NEtFOSAA	91		25 - 150	07/18/21 18:36	07/20/21 12:13	1
d-N-MeFOSA-M	70		10 - 150	07/18/21 18:36	07/20/21 12:13	1
d-N-EtFOSA-M	75		10 - 150	07/18/21 18:36	07/20/21 12:13	1
d7-N-MeFOSE-M	73		10 - 150	07/18/21 18:36	07/20/21 12:13	1
d9-N-EtFOSE-M	79		10 - 150	07/18/21 18:36	07/20/21 12:13	1
M2-4:2 FTS	66		25 - 150	07/18/21 18:36	07/20/21 12:13	1
M2-6:2 FTS	91		25 - 150	07/18/21 18:36	07/20/21 12:13	1
M2-8:2 FTS	107		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C3 HFPO-DA	95		25 - 150	07/18/21 18:36	07/20/21 12:13	1
13C2 10:2 FTS	114		25 - 150	07/18/21 18:36	07/20/21 12:13	1

Lab Sample ID: LCS 320-507884/2-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 507884

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	39.4		ng/L		98	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	44.2		ng/L		110	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	39.8		ng/L		100	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	38.9		ng/L		97	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	42.4		ng/L		106	60 - 135
Perfluorononanoic acid (PFNA)	40.0	43.1		ng/L		108	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	37.2		ng/L		93	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	45.9		ng/L		115	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	38.6		ng/L		96	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	40.4		ng/L		101	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	40.3		ng/L		101	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.6		ng/L		107	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	36.7		ng/L		92	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	39.0		ng/L		110	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.7		ng/L		106	60 - 135

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

Lab Sample ID: LCS 320-507884/2-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 507884

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.2		ng/L		97	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	37.4		ng/L		98	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	39.2		ng/L		106	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	40.1		ng/L		104	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	37.3		ng/L		97	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	38.8		ng/L		100	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.1		ng/L		105	60 - 135
NEtFOSA	40.0	42.6		ng/L		107	60 - 135
NMeFOSA	40.0	44.4		ng/L		111	60 - 135
NMeFOSAA	40.0	52.3		ng/L		131	60 - 135
NEtFOSAA	40.0	43.5		ng/L		109	60 - 135
NMeFOSE	40.0	44.0		ng/L		110	60 - 135
NEtFOSE	40.0	43.4		ng/L		108	60 - 135
4:2 FTS	37.4	46.0		ng/L		123	60 - 135
6:2 FTS	37.9	37.8		ng/L		100	60 - 135
8:2 FTS	38.3	34.8		ng/L		91	60 - 135
10:2 FTS	38.6	38.3		ng/L		99	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	36.1		ng/L		96	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.8		ng/L		99	60 - 135
F-53B Major	37.3	39.3		ng/L		105	60 - 135
F-53B Minor	37.7	39.6		ng/L		105	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*87*		*25 - 150*
13C5 PFPeA	*76*		*25 - 150*
13C2 PFHxA	*96*		*25 - 150*
13C4 PFHpA	*88*		*25 - 150*
13C4 PFOA	*90*		*25 - 150*
13C5 PFNA	*88*		*25 - 150*
13C2 PFDA	*97*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
13C2 PFDoA	*94*		*25 - 150*
13C2 PFTeDA	*83*		*25 - 150*
13C2 PFHxDA	*93*		*25 - 150*
13C3 PFBS	*84*		*25 - 150*
18O2 PFHxS	*92*		*25 - 150*
13C4 PFOS	*96*		*25 - 150*
13C8 FOSA	*85*		*10 - 150*
d3-NMeFOSAA	*74*		*25 - 150*
d5-NEtFOSAA	*81*		*25 - 150*
d-N-MeFOSA-M	*70*		*10 - 150*
d-N-EtFOSA-M	*73*		*10 - 150*

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

Lab Sample ID: LCS 320-507884/2-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 507884

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*68*		*10 - 150*
d9-N-EtFOSE-M	*72*		*10 - 150*
M2-4:2 FTS	*60*		*25 - 150*
M2-6:2 FTS	*80*		*25 - 150*
M2-8:2 FTS	*106*		*25 - 150*
13C3 HFPO-DA	*85*		*25 - 150*
13C2 10:2 FTS	*111*		*25 - 150*

Lab Sample ID: LCSD 320-507884/3-A
Matrix: Water
Analysis Batch: 508204

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 507884

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	40.1		ng/L		100	60 - 135	2	30
Perfluoropentanoic acid (PFPeA)			40.0	43.0		ng/L		107	60 - 135	3	30
Perfluorohexanoic acid (PFHxA)			40.0	39.9		ng/L		100	60 - 135	0	30
Perfluoroheptanoic acid (PFHpA)			40.0	40.9		ng/L		102	60 - 135	5	30
Perfluorooctanoic acid (PFOA)			40.0	41.7		ng/L		104	60 - 135	2	30
Perfluorononanoic acid (PFNA)			40.0	44.3		ng/L		111	60 - 135	3	30
Perfluorodecanoic acid (PFDA)			40.0	40.6		ng/L		101	60 - 135	9	30
Perfluoroundecanoic acid (PFUnA)			40.0	44.4		ng/L		111	60 - 135	3	30
Perfluorododecanoic acid (PFDoA)			40.0	41.2		ng/L		103	60 - 135	6	30
Perfluorotridecanoic acid (PFTriA)			40.0	40.2		ng/L		101	60 - 135	0	30
Perfluorotetradecanoic acid (PFTeA)			40.0	39.0		ng/L		97	60 - 135	3	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	45.8		ng/L		114	60 - 135	7	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	33.8		ng/L		84	60 - 135	8	30
Perfluorobutanesulfonic acid (PFBS)			35.4	39.4		ng/L		111	60 - 135	1	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	38.6		ng/L		103	60 - 135	3	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	36.2		ng/L		100	60 - 135	3	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	38.6		ng/L		101	60 - 135	3	30
Perfluorooctanesulfonic acid (PFOS)			37.1	36.8		ng/L		99	60 - 135	6	30
Perfluorononanesulfonic acid (PFNS)			38.4	39.3		ng/L		102	60 - 135	2	30
Perfluorodecanesulfonic acid (PFDS)			38.6	37.9		ng/L		98	60 - 135	1	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	39.6		ng/L		102	60 - 135	2	30
Perfluorooctanesulfonamide (FOSA)			40.0	39.4		ng/L		99	60 - 135	7	30
NEtFOSA			40.0	43.8		ng/L		109	60 - 135	3	30
NMeFOSA			40.0	42.8		ng/L		107	60 - 135	4	30
NMeFOSAA			40.0	48.5		ng/L		121	60 - 135	8	30

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

Lab Sample ID: LCSD 320-507884/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 508204
Prep Batch: 507884

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	41.0		ng/L		102	60 - 135	6	30
NMeFOSE			40.0	43.5		ng/L		109	60 - 135	1	30
NEtFOSE			40.0	40.3		ng/L		101	60 - 135	7	30
4:2 FTS			37.4	41.7		ng/L		112	60 - 135	10	30
6:2 FTS			37.9	37.2		ng/L		98	60 - 135	2	30
8:2 FTS			38.3	40.7		ng/L		106	60 - 135	15	30
10:2 FTS			38.6	39.5		ng/L		103	60 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	36.6		ng/L		97	60 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	43.7		ng/L		109	60 - 135	9	30
F-53B Major			37.3	35.8		ng/L		96	60 - 135	9	30
F-53B Minor			37.7	40.8		ng/L		108	60 - 135	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*89*		*25 - 150*
13C5 PFPeA	*81*		*25 - 150*
13C2 PFHxA	*93*		*25 - 150*
13C4 PFHpA	*90*		*25 - 150*
13C4 PFOA	*88*		*25 - 150*
13C5 PFNA	*88*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*98*		*25 - 150*
13C2 PFDoA	*100*		*25 - 150*
13C2 PFTeDA	*93*		*25 - 150*
13C2 PFHxDA	*96*		*25 - 150*
13C3 PFBS	*85*		*25 - 150*
18O2 PFHxS	*94*		*25 - 150*
13C4 PFOS	*105*		*25 - 150*
13C8 FOSA	*89*		*10 - 150*
d3-NMeFOSAA	*80*		*25 - 150*
d5-NEtFOSAA	*89*		*25 - 150*
d-N-MeFOSA-M	*75*		*10 - 150*
d-N-EtFOSA-M	*75*		*10 - 150*
d7-N-MeFOSE-M	*71*		*10 - 150*
d9-N-EtFOSE-M	*84*		*10 - 150*
M2-4:2 FTS	*71*		*25 - 150*
M2-6:2 FTS	*79*		*25 - 150*
M2-8:2 FTS	*107*		*25 - 150*
13C3 HFPO-DA	*83*		*25 - 150*
13C2 10:2 FTS	*120*		*25 - 150*

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76331-1
Project/Site: Marinette, WI 30015296.00014 GAC

LCMS

Prep Batch: 507884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-76331-1 - DL	V-32-A	Total/NA	Water	3535	
320-76331-1	V-32-A	Total/NA	Water	3535	
320-76331-2	V-36-A	Total/NA	Water	3535	
320-76331-3	V-44-A	Total/NA	Water	3535	
320-76331-4	V-48-A	Total/NA	Water	3535	
MB 320-507884/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-507884/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-507884/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 508204

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-76331-1	V-32-A	Total/NA	Water	537 (modified)	507884
320-76331-2	V-36-A	Total/NA	Water	537 (modified)	507884
320-76331-3	V-44-A	Total/NA	Water	537 (modified)	507884
320-76331-4	V-48-A	Total/NA	Water	537 (modified)	507884
MB 320-507884/1-A	Method Blank	Total/NA	Water	537 (modified)	507884
LCS 320-507884/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	507884
LCSD 320-507884/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	507884

Analysis Batch: 509000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-76331-1 - DL	V-32-A	Total/NA	Water	537 (modified)	507884

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-76331-1
Project/Site: Marinette, WI 30015296.00014 GAC

Client Sample ID: V-32-A
Lab Sample ID: 320-76331-1
Date Collected: 07/15/21 12:20
Matrix: Water
Date Received: 07/16/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267 mL	10.0 mL	507884	07/18/21 18:36	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			508204	07/20/21 15:39	K1S	TAL SAC
Total/NA	Prep	3535	DL		267 mL	10.0 mL	507884	07/18/21 18:36	VP	TAL SAC
Total/NA	Analysis	537 (modified)	DL	5			509000	07/21/21 17:24	S1M	TAL SAC

Client Sample ID: V-36-A
Lab Sample ID: 320-76331-2
Date Collected: 07/15/21 12:25
Matrix: Water
Date Received: 07/16/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			284.9 mL	10.0 mL	507884	07/18/21 18:36	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			508204	07/20/21 16:17	K1S	TAL SAC

Client Sample ID: V-44-A
Lab Sample ID: 320-76331-3
Date Collected: 07/15/21 12:30
Matrix: Water
Date Received: 07/16/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.4 mL	10.0 mL	507884	07/18/21 18:36	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			508204	07/20/21 16:26	K1S	TAL SAC

Client Sample ID: V-48-A
Lab Sample ID: 320-76331-4
Date Collected: 07/15/21 12:35
Matrix: Water
Date Received: 07/16/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.3 mL	10.0 mL	507884	07/18/21 18:36	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1			508204	07/20/21 16:35	K1S	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76331-1
Project/Site: Marinette, WI 30015296.00014 GAC

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-21

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76331-1
Project/Site: Marinette, WI 30015296.00014 GAC

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 GAC

Job ID: 320-76331-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-76331-1	V-32-A	Water	07/15/21 12:20	07/16/21 09:30
320-76331-2	V-36-A	Water	07/15/21 12:25	07/16/21 09:30
320-76331-3	V-44-A	Water	07/15/21 12:30	07/16/21 09:30
320-76331-4	V-48-A	Water	07/15/21 12:35	07/16/21 09:30

Eurofins TestAmerica, Sacramento
880 Riverside Pan

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Raminger	Date: 7-15-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time: ☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only: Walk-in Client: Lab Sampling:
Phone	TAT if different from Below: ☐ 2 weeks ☑ 1 week ☐ 2 days ☐ 1 day			Lab Project Number: 50015808
FAX				
Project Name: Marinette, WI				
Site: Marinette, WI				
P O # 30015296.00014 (GAC Efficiency)				Sample Specific Notes:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	EPA 537 Modified (36 Compounds)
V-32-A	7-15-21	12:20	G	W	2	N	N	X
V-36-A	↓	12:25	G	W	2	N	N	X
V-44-A	↓	12:30	G	W	2	N	N	X
V-48-A	↓	12:35	G	W	2	N	N	X

320-76331 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.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1442490		Cooler Temp. (°C): Obs'd: 0.8	Corr'd: 0.8	Therm ID No.: L-01
Relinquished by: Jacob Raminger	Company: Barley Excavating	Date/Time: 7-15-21 12:40	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time: 7/16/21 9:30

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

7/23/2021 (Rev. 1)

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Sacramento Sample Receiving Notes

320-76331 Field Sheet

Job: _____

Tracking # : 7125-4939-0666

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: C-01 Corr. Factor: (+ / -) - °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1442490

Cooler ID: -

Temp Observed: 0.8 °C Corrected: 0.8 °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: EO Date: 7/16/21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
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: 7/16/21

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: 7/16/21

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 158439-694 REV2 EXP 07/19

ORIGIN ID:RRLA (262) 202-5955
LISA RUTKOWSKI
ARCADIS
126 NORTH JEFFERSON STREET

MILWAUKEE, WI 53202
UNITED STATES US

SHIP DATE: 25OCT18
ACTWGT: 25.00 LB MAN
CAD: 525155/CAFE3211

TO

TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY

WEST SACRAMENTO CA 95605 – 1500

(916) 373-5600
INV:
PO:
REF:
DEPT:

RMA:

FedEx Express

FedEx
TRK# 0221 7125 4939 0666

FRI - 16 JUL AA
PRIORITY OVERNIGHT

NH BLUA

95605
CA-US
SMF

3604346 15Jul2021 GRBA 56DG2/0265/1B23

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1442490

Custody Seal

DATE

SIGNATURE

7-15-21

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1442490

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-76331-1

Login Number: 76331
List Number: 1
Creator: Oropeza, Salvador

List Source: Eurofins TestAmerica, Sacramento

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	1442490
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	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-76641-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
7/27/2021 4:09:15 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-76641-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Qualifiers

LCMS

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the 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.
¤	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

Job ID: 320-76641-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-76641-1

Comments
No additional comments.

Receipt
The samples were received on 7/23/2021 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 1.6º C.

LCMS
Method 537 (modified): The initial calibration blank (ICB) associated with initial calibration in analytical batch 320-506184 has a concentration of 0.0338 ng/mL for Perfluorooctadecanoic acid (PFODa), which is greater than 1/2 the reporting limit. The continuing calibration blanks and the associated sample are non-detect for this analyte. Data quality is not impacted by this anomaly. ICB 320-506184/9

Method 537 (modified): The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-510269 and analytical batch 320-510457 recovered outside control limits for the following analytes: Perfluoroheptanoic acid (PFHpA) and Perfluoro-n-octadecanoic acid (PFODA).

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 samples were light brown and contained a thin layer of sediment at the bottom of the bottle prior to extraction: 320-76641-1. Method Code: 3535_PFC_28D Matrix: Aqueous preparation batch 320-510269

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-510269. Method Code: 3535_PFC_28D Matrix: Aqueous

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

Client Sample ID: V-200-A
Date Collected: 07/22/21 09:30
Date Received: 07/23/21 10:39

Lab Sample ID: 320-76641-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**28**		4.4	2.1	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluoropentanoic acid (PFPeA)	**31**		1.8	0.43	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorohexanoic acid (PFHxA)	**15**		1.8	0.51	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluoroheptanoic acid (PFHpA)	**7.3**	*	1.8	0.22	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorooctanoic acid (PFOA)	**22**		1.8	0.75	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorononanoic acid (PFNA)	**2.8**		1.8	0.24	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorodecanoic acid (PFDA)	**2.5**		1.8	0.27	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluoroundecanoic acid (PFUnA)	**2.0**		1.8	0.97	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorotetradecanoic acid (PFTeA)	<0.65		1.8	0.65	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.79		1.8	0.79	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.83	*	1.8	0.83	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorobutanesulfonic acid (PFBS)	**0.29**	**J**	1.8	0.18	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorohexanesulfonic acid (PFHxS)	**2.2**		1.8	0.50	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.17		1.8	0.17	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorooctanesulfonic acid (PFOS)	**16**		1.8	0.48	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorododecanesulfonic acid (PFDoS)	<0.86		1.8	0.86	ng/L		07/26/21 11:34	07/26/21 19:33	1
Perfluorooctanesulfonamide (FOSA)	**1.5**	**J**	1.8	0.87	ng/L		07/26/21 11:34	07/26/21 19:33	1
NEtFOSA	<0.77		1.8	0.77	ng/L		07/26/21 11:34	07/26/21 19:33	1
NMeFOSA	<0.38		1.8	0.38	ng/L		07/26/21 11:34	07/26/21 19:33	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		07/26/21 11:34	07/26/21 19:33	1
NEtFOSAA	<1.2		4.4	1.2	ng/L		07/26/21 11:34	07/26/21 19:33	1
NMeFOSE	<1.2		3.5	1.2	ng/L		07/26/21 11:34	07/26/21 19:33	1
NEtFOSE	<0.75		1.8	0.75	ng/L		07/26/21 11:34	07/26/21 19:33	1
4:2 FTS	<0.21		1.8	0.21	ng/L		07/26/21 11:34	07/26/21 19:33	1
6:2 FTS	**22**		4.4	2.2	ng/L		07/26/21 11:34	07/26/21 19:33	1
8:2 FTS	**41**		1.8	0.41	ng/L		07/26/21 11:34	07/26/21 19:33	1
10:2 FTS	**15**		1.8	0.59	ng/L		07/26/21 11:34	07/26/21 19:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		07/26/21 11:34	07/26/21 19:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		07/26/21 11:34	07/26/21 19:33	1
F-53B Major	<0.21		1.8	0.21	ng/L		07/26/21 11:34	07/26/21 19:33	1
F-53B Minor	<0.28		1.8	0.28	ng/L		07/26/21 11:34	07/26/21 19:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*81*		*25 - 150*	*07/26/21 11:34*	*07/26/21 19:33*	*1*
13C5 PFPeA	*81*		*25 - 150*	*07/26/21 11:34*	*07/26/21 19:33*	*1*
13C2 PFHxA	*85*		*25 - 150*	*07/26/21 11:34*	*07/26/21 19:33*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76641-1

Client Sample ID: V-200-A
Date Collected: 07/22/21 09:30
Date Received: 07/23/21 10:39

Lab Sample ID: 320-76641-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	84		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C4 PFOA	82		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C5 PFNA	83		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C2 PFDA	82		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C2 PFUnA	76		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C2 PFDoA	73		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C2 PFTeDA	75		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C2 PFHxDA	81		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C3 PFBS	76		25 - 150	07/26/21 11:34	07/26/21 19:33	1
18O2 PFHxS	82		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C4 PFOS	72		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C8 FOSA	79		10 - 150	07/26/21 11:34	07/26/21 19:33	1
d3-NMeFOSAA	84		25 - 150	07/26/21 11:34	07/26/21 19:33	1
d5-NEtFOSAA	86		25 - 150	07/26/21 11:34	07/26/21 19:33	1
d-N-MeFOSA-M	63		10 - 150	07/26/21 11:34	07/26/21 19:33	1
d-N-EtFOSA-M	57		10 - 150	07/26/21 11:34	07/26/21 19:33	1
d7-N-MeFOSE-M	51		10 - 150	07/26/21 11:34	07/26/21 19:33	1
d9-N-EtFOSE-M	52		10 - 150	07/26/21 11:34	07/26/21 19:33	1
M2-4:2 FTS	93		25 - 150	07/26/21 11:34	07/26/21 19:33	1
M2-6:2 FTS	93		25 - 150	07/26/21 11:34	07/26/21 19:33	1
M2-8:2 FTS	85		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C3 HFPO-DA	88		25 - 150	07/26/21 11:34	07/26/21 19:33	1
13C2 10:2 FTS	66		25 - 150	07/26/21 11:34	07/26/21 19:33	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76641-1

Client Sample ID: V-900-A
Date Collected: 07/22/21 09:35
Date Received: 07/23/21 10:39

Lab Sample ID: 320-76641-2
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**24**		4.4	2.1	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluoropentanoic acid (PFPeA)	**14**		1.8	0.43	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorohexanoic acid (PFHxA)	**1.9**		1.8	0.51	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluoroheptanoic acid (PFHpA)	<0.22	*	1.8	0.22	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorooctanoic acid (PFOA)	<0.74		1.8	0.74	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorodecanoic acid (PFDA)	<0.27		1.8	0.27	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluoroundecanoic acid (PFUnA)	<0.96		1.8	0.96	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorododecanoic acid (PFDoA)	<0.48		1.8	0.48	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.8	1.1	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.8	0.64	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.78		1.8	0.78	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.82	*	1.8	0.82	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.8	0.26	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorohexanesulfonic acid (PFHxS)	<0.50		1.8	0.50	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.17		1.8	0.17	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorooctanesulfonic acid (PFOS)	<0.47		1.8	0.47	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.8	0.32	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorododecanesulfonic acid (PFDoS)	<0.85		1.8	0.85	ng/L		07/26/21 11:34	07/26/21 19:42	1
Perfluorooctanesulfonamide (FOSA)	<0.86		1.8	0.86	ng/L		07/26/21 11:34	07/26/21 19:42	1
NEtFOSA	<0.76		1.8	0.76	ng/L		07/26/21 11:34	07/26/21 19:42	1
NMeFOSA	<0.38		1.8	0.38	ng/L		07/26/21 11:34	07/26/21 19:42	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		07/26/21 11:34	07/26/21 19:42	1
NEtFOSAA	<1.1		4.4	1.1	ng/L		07/26/21 11:34	07/26/21 19:42	1
NMeFOSE	<1.2		3.5	1.2	ng/L		07/26/21 11:34	07/26/21 19:42	1
NEtFOSE	<0.74		1.8	0.74	ng/L		07/26/21 11:34	07/26/21 19:42	1
4:2 FTS	<0.21		1.8	0.21	ng/L		07/26/21 11:34	07/26/21 19:42	1
6:2 FTS	<2.2		4.4	2.2	ng/L		07/26/21 11:34	07/26/21 19:42	1
8:2 FTS	<0.40		1.8	0.40	ng/L		07/26/21 11:34	07/26/21 19:42	1
10:2 FTS	<0.59		1.8	0.59	ng/L		07/26/21 11:34	07/26/21 19:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		07/26/21 11:34	07/26/21 19:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		07/26/21 11:34	07/26/21 19:42	1
F-53B Major	<0.21		1.8	0.21	ng/L		07/26/21 11:34	07/26/21 19:42	1
F-53B Minor	<0.28		1.8	0.28	ng/L		07/26/21 11:34	07/26/21 19:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79*		*25 - 150*	*07/26/21 11:34*	*07/26/21 19:42*	*1*
13C5 PFPeA	*80*		*25 - 150*	*07/26/21 11:34*	*07/26/21 19:42*	*1*
13C2 PFHxA	*79*		*25 - 150*	*07/26/21 11:34*	*07/26/21 19:42*	*1*
13C4 PFHpA	*87*		*25 - 150*	*07/26/21 11:34*	*07/26/21 19:42*	*1*
13C4 PFOA	*85*		*25 - 150*	*07/26/21 11:34*	*07/26/21 19:42*	*1*
13C5 PFNA	*81*		*25 - 150*	*07/26/21 11:34*	*07/26/21 19:42*	*1*
13C2 PFDA	*81*		*25 - 150*	*07/26/21 11:34*	*07/26/21 19:42*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76641-1

Client Sample ID: V-900-A
Date Collected: 07/22/21 09:35
Date Received: 07/23/21 10:39

Lab Sample ID: 320-76641-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	78		25 - 150	07/26/21 11:34	07/26/21 19:42	1
13C2 PFDoA	74		25 - 150	07/26/21 11:34	07/26/21 19:42	1
13C2 PFTeDA	78		25 - 150	07/26/21 11:34	07/26/21 19:42	1
13C2 PFHxDA	83		25 - 150	07/26/21 11:34	07/26/21 19:42	1
13C3 PFBS	79		25 - 150	07/26/21 11:34	07/26/21 19:42	1
18O2 PFHxS	83		25 - 150	07/26/21 11:34	07/26/21 19:42	1
13C4 PFOS	72		25 - 150	07/26/21 11:34	07/26/21 19:42	1
13C8 FOSA	77		10 - 150	07/26/21 11:34	07/26/21 19:42	1
d3-NMeFOSAA	83		25 - 150	07/26/21 11:34	07/26/21 19:42	1
d5-NEtFOSAA	85		25 - 150	07/26/21 11:34	07/26/21 19:42	1
d-N-MeFOSA-M	63		10 - 150	07/26/21 11:34	07/26/21 19:42	1
d-N-EtFOSA-M	61		10 - 150	07/26/21 11:34	07/26/21 19:42	1
d7-N-MeFOSE-M	58		10 - 150	07/26/21 11:34	07/26/21 19:42	1
d9-N-EtFOSE-M	54		10 - 150	07/26/21 11:34	07/26/21 19:42	1
M2-4:2 FTS	86		25 - 150	07/26/21 11:34	07/26/21 19:42	1
M2-6:2 FTS	92		25 - 150	07/26/21 11:34	07/26/21 19:42	1
M2-8:2 FTS	72		25 - 150	07/26/21 11:34	07/26/21 19:42	1
13C3 HFPO-DA	82		25 - 150	07/26/21 11:34	07/26/21 19:42	1
13C2 10:2 FTS	62		25 - 150	07/26/21 11:34	07/26/21 19:42	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76641-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
320-76641-1	V-200-A	81	81	85	84	82	83	82	76
320-76641-2	V-900-A	79	80	79	87	85	81	81	78
LCS 320-510269/2-A	Lab Control Sample	88	84	91	84	89	89	84	87
LCSD 320-510269/3-A	Lab Control Sample Dup	85	89	95	95	92	95	94	94
MB 320-510269/1-A	Method Blank	83	83	92	87	83	90	86	90

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	PFTDA	PFHxDA	C3PFBS	PFHxS	PFOS	PFOSA	d3NMFOS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(10-150)	(25-150)
320-76641-1	V-200-A	73	75	81	76	82	72	79	84
320-76641-2	V-900-A	74	78	83	79	83	72	77	83
LCS 320-510269/2-A	Lab Control Sample	86	92	99	79	95	82	81	93
LCSD 320-510269/3-A	Lab Control Sample Dup	96	89	98	84	92	94	90	106
MB 320-510269/1-A	Method Blank	87	87	87	86	91	79	77	96

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		d5NEFOS	dMeFOSA	dEtFOSA	NMFM	NEFM	M242FTS	M262FTS	M282FTS
Lab Sample ID	Client Sample ID	(25-150)	(10-150)	(10-150)	(10-150)	(10-150)	(25-150)	(25-150)	(25-150)
320-76641-1	V-200-A	86	63	57	51	52	93	93	85
320-76641-2	V-900-A	85	63	61	58	54	86	92	72
LCS 320-510269/2-A	Lab Control Sample	85	68	68	71	67	94	103	84
LCSD 320-510269/3-A	Lab Control Sample Dup	92	81	85	78	78	97	101	95
MB 320-510269/1-A	Method Blank	98	66	64	64	63	99	100	80

		Percent Isotope Dilution Recovery (Acceptance Limits)	
		HFPODA	M102FTS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)
320-76641-1	V-200-A	88	66
320-76641-2	V-900-A	82	62
LCS 320-510269/2-A	Lab Control Sample	84	78
LCSD 320-510269/3-A	Lab Control Sample Dup	89	83
MB 320-510269/1-A	Method Blank	87	75

Surrogate Legend

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

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76641-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-510269/1-A
Matrix: Water
Analysis Batch: 510457

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 510269

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		07/26/21 11:34	07/26/21 18:36	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		07/26/21 11:34	07/26/21 18:36	1
NEtFOSA	<0.87		2.0	0.87	ng/L		07/26/21 11:34	07/26/21 18:36	1
NMeFOSA	<0.43		2.0	0.43	ng/L		07/26/21 11:34	07/26/21 18:36	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		07/26/21 11:34	07/26/21 18:36	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		07/26/21 11:34	07/26/21 18:36	1
NMeFOSE	<1.4		4.0	1.4	ng/L		07/26/21 11:34	07/26/21 18:36	1
NEtFOSE	<0.85		2.0	0.85	ng/L		07/26/21 11:34	07/26/21 18:36	1
4:2 FTS	<0.24		2.0	0.24	ng/L		07/26/21 11:34	07/26/21 18:36	1
6:2 FTS	<2.5		5.0	2.5	ng/L		07/26/21 11:34	07/26/21 18:36	1
8:2 FTS	<0.46		2.0	0.46	ng/L		07/26/21 11:34	07/26/21 18:36	1
10:2 FTS	<0.67		2.0	0.67	ng/L		07/26/21 11:34	07/26/21 18:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		07/26/21 11:34	07/26/21 18:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		07/26/21 11:34	07/26/21 18:36	1
F-53B Major	<0.24		2.0	0.24	ng/L		07/26/21 11:34	07/26/21 18:36	1
F-53B Minor	<0.32		2.0	0.32	ng/L		07/26/21 11:34	07/26/21 18:36	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*83*		*25 - 150*	*07/26/21 11:34*	*07/26/21 18:36*	*1*
13C5 PFPeA	*83*		*25 - 150*	*07/26/21 11:34*	*07/26/21 18:36*	*1*
13C2 PFHxA	*92*		*25 - 150*	*07/26/21 11:34*	*07/26/21 18:36*	*1*
13C4 PFHpA	*87*		*25 - 150*	*07/26/21 11:34*	*07/26/21 18:36*	*1*
13C4 PFOA	*83*		*25 - 150*	*07/26/21 11:34*	*07/26/21 18:36*	*1*

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

Lab Sample ID: MB 320-510269/1-A
Matrix: Water
Analysis Batch: 510457

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 510269

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	90		25 - 150	07/26/21 11:34	07/26/21 18:36	1
13C2 PFDA	86		25 - 150	07/26/21 11:34	07/26/21 18:36	1
13C2 PFUnA	90		25 - 150	07/26/21 11:34	07/26/21 18:36	1
13C2 PFDoA	87		25 - 150	07/26/21 11:34	07/26/21 18:36	1
13C2 PFTeDA	87		25 - 150	07/26/21 11:34	07/26/21 18:36	1
13C2 PFHxDA	87		25 - 150	07/26/21 11:34	07/26/21 18:36	1
13C3 PFBS	86		25 - 150	07/26/21 11:34	07/26/21 18:36	1
18O2 PFHxS	91		25 - 150	07/26/21 11:34	07/26/21 18:36	1
13C4 PFOS	79		25 - 150	07/26/21 11:34	07/26/21 18:36	1
13C8 FOSA	77		10 - 150	07/26/21 11:34	07/26/21 18:36	1
d3-NMeFOSAA	96		25 - 150	07/26/21 11:34	07/26/21 18:36	1
d5-NEtFOSAA	98		25 - 150	07/26/21 11:34	07/26/21 18:36	1
d-N-MeFOSA-M	66		10 - 150	07/26/21 11:34	07/26/21 18:36	1
d-N-EtFOSA-M	64		10 - 150	07/26/21 11:34	07/26/21 18:36	1
d7-N-MeFOSE-M	64		10 - 150	07/26/21 11:34	07/26/21 18:36	1
d9-N-EtFOSE-M	63		10 - 150	07/26/21 11:34	07/26/21 18:36	1
M2-4:2 FTS	99		25 - 150	07/26/21 11:34	07/26/21 18:36	1
M2-6:2 FTS	100		25 - 150	07/26/21 11:34	07/26/21 18:36	1
M2-8:2 FTS	80		25 - 150	07/26/21 11:34	07/26/21 18:36	1
13C3 HFPO-DA	87		25 - 150	07/26/21 11:34	07/26/21 18:36	1
13C2 10:2 FTS	75		25 - 150	07/26/21 11:34	07/26/21 18:36	1

Lab Sample ID: LCS 320-510269/2-A
Matrix: Water
Analysis Batch: 510457

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 510269

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	43.3		ng/L		108	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	41.3		ng/L		103	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	38.1		ng/L		95	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	49.3		ng/L		123	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	42.5		ng/L		106	60 - 135
Perfluorononanoic acid (PFNA)	40.0	40.4		ng/L		101	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	39.5		ng/L		99	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	42.8		ng/L		107	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	40.2		ng/L		101	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	40.9		ng/L		102	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	42.0		ng/L		105	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	43.6		ng/L		109	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	38.3		ng/L		96	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	38.2		ng/L		108	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	44.9		ng/L		120	60 - 135

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

Lab Sample ID: LCS 320-510269/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 510457
Prep Batch: 510269

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.0		ng/L		99	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.0		ng/L		118	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	38.5		ng/L		104	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	38.2		ng/L		100	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	38.6		ng/L		100	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	45.1		ng/L		116	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	41.9		ng/L		105	60 - 135
NEtFOSA	40.0	41.0		ng/L		103	60 - 135
NMeFOSA	40.0	36.5		ng/L		91	60 - 135
NMeFOSAA	40.0	40.6		ng/L		102	60 - 135
NEtFOSAA	40.0	40.1		ng/L		100	60 - 135
NMeFOSE	40.0	40.2		ng/L		101	60 - 135
NEtFOSE	40.0	40.6		ng/L		101	60 - 135
4:2 FTS	37.4	34.9		ng/L		93	60 - 135
6:2 FTS	37.9	35.6		ng/L		94	60 - 135
8:2 FTS	38.3	38.0		ng/L		99	60 - 135
10:2 FTS	38.6	42.1		ng/L		109	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	46.4		ng/L		123	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.3		ng/L		103	60 - 135
F-53B Major	37.3	39.0		ng/L		105	60 - 135
F-53B Minor	37.7	42.7		ng/L		113	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*88*		*25 - 150*
13C5 PFPeA	*84*		*25 - 150*
13C2 PFHxA	*91*		*25 - 150*
13C4 PFHpA	*84*		*25 - 150*
13C4 PFOA	*89*		*25 - 150*
13C5 PFNA	*89*		*25 - 150*
13C2 PFDA	*84*		*25 - 150*
13C2 PFUnA	*87*		*25 - 150*
13C2 PFDoA	*86*		*25 - 150*
13C2 PFTeDA	*92*		*25 - 150*
13C2 PFHxDA	*99*		*25 - 150*
13C3 PFBS	*79*		*25 - 150*
18O2 PFHxS	*95*		*25 - 150*
13C4 PFOS	*82*		*25 - 150*
13C8 FOSA	*81*		*10 - 150*
d3-NMeFOSAA	*93*		*25 - 150*
d5-NEtFOSAA	*85*		*25 - 150*
d-N-MeFOSA-M	*68*		*10 - 150*
d-N-EtFOSA-M	*68*		*10 - 150*

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

Lab Sample ID: LCS 320-510269/2-A
Matrix: Water
Analysis Batch: 510457

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 510269

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*71*		*10 - 150*
d9-N-EtFOSE-M	*67*		*10 - 150*
M2-4:2 FTS	*94*		*25 - 150*
M2-6:2 FTS	*103*		*25 - 150*
M2-8:2 FTS	*84*		*25 - 150*
13C3 HFPO-DA	*84*		*25 - 150*
13C2 10:2 FTS	*78*		*25 - 150*

Lab Sample ID: LCSD 320-510269/3-A
Matrix: Water
Analysis Batch: 510543

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 510269

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	39.9		ng/L		100	60 - 135	8	30
Perfluoropentanoic acid (PFPeA)			40.0	39.7		ng/L		99	60 - 135	4	30
Perfluorohexanoic acid (PFHxA)			40.0	35.4		ng/L		89	60 - 135	7	30
Perfluoroheptanoic acid (PFHpA)			40.0	35.7	*	ng/L		89	60 - 135	32	30
Perfluorooctanoic acid (PFOA)			40.0	40.2		ng/L		100	60 - 135	6	30
Perfluorononanoic acid (PFNA)			40.0	37.7		ng/L		94	60 - 135	7	30
Perfluorodecanoic acid (PFDA)			40.0	37.0		ng/L		93	60 - 135	7	30
Perfluoroundecanoic acid (PFUnA)			40.0	42.5		ng/L		106	60 - 135	1	30
Perfluorododecanoic acid (PFDoA)			40.0	40.3		ng/L		101	60 - 135	0	30
Perfluorotridecanoic acid (PFTriA)			40.0	39.2		ng/L		98	60 - 135	4	30
Perfluorotetradecanoic acid (PFTeA)			40.0	38.6		ng/L		96	60 - 135	8	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	40.0		ng/L		100	60 - 135	9	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	25.0	*	ng/L		62	60 - 135	42	30
Perfluorobutanesulfonic acid (PFBS)			35.4	35.8		ng/L		101	60 - 135	7	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	37.7		ng/L		101	60 - 135	17	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	34.4		ng/L		94	60 - 135	4	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	38.1		ng/L		100	60 - 135	17	30
Perfluorooctanesulfonic acid (PFOS)			37.1	35.7		ng/L		96	60 - 135	7	30
Perfluorononanesulfonic acid (PFNS)			38.4	37.2		ng/L		97	60 - 135	3	30
Perfluorodecanesulfonic acid (PFDS)			38.6	35.1		ng/L		91	60 - 135	9	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	38.1		ng/L		98	60 - 135	17	30
Perfluorooctanesulfonamide (FOSA)			40.0	40.2		ng/L		101	60 - 135	4	30
NEtFOSA			40.0	38.3		ng/L		96	60 - 135	7	30
NMeFOSA			40.0	38.6		ng/L		96	60 - 135	5	30
NMeFOSAA			40.0	37.9		ng/L		95	60 - 135	7	30

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

Lab Sample ID: LCSD 320-510269/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 510543
Prep Batch: 510269

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	38.5		ng/L		96	60 - 135	4	30
NMeFOSE			40.0	43.1		ng/L		108	60 - 135	7	30
NEtFOSE			40.0	43.8		ng/L		110	60 - 135	8	30
4:2 FTS			37.4	33.7		ng/L		90	60 - 135	3	30
6:2 FTS			37.9	36.3		ng/L		96	60 - 135	2	30
8:2 FTS			38.3	43.2		ng/L		113	60 - 135	13	30
10:2 FTS			38.6	41.2		ng/L		107	60 - 135	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	35.9		ng/L		95	60 - 135	25	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	33.4		ng/L		83	60 - 135	21	30
F-53B Major			37.3	33.9		ng/L		91	60 - 135	14	30
F-53B Minor			37.7	37.3		ng/L		99	60 - 135	14	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*85*		*25 - 150*
13C5 PFPeA	*89*		*25 - 150*
13C2 PFHxA	*95*		*25 - 150*
13C4 PFHpA	*95*		*25 - 150*
13C4 PFOA	*92*		*25 - 150*
13C5 PFNA	*95*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
13C2 PFDoA	*96*		*25 - 150*
13C2 PFTeDA	*89*		*25 - 150*
13C2 PFHxDA	*98*		*25 - 150*
13C3 PFBS	*84*		*25 - 150*
18O2 PFHxS	*92*		*25 - 150*
13C4 PFOS	*94*		*25 - 150*
13C8 FOSA	*90*		*10 - 150*
d3-NMeFOSAA	*106*		*25 - 150*
d5-NEtFOSAA	*92*		*25 - 150*
d-N-MeFOSA-M	*81*		*10 - 150*
d-N-EtFOSA-M	*85*		*10 - 150*
d7-N-MeFOSE-M	*78*		*10 - 150*
d9-N-EtFOSE-M	*78*		*10 - 150*
M2-4:2 FTS	*97*		*25 - 150*
M2-6:2 FTS	*101*		*25 - 150*
M2-8:2 FTS	*95*		*25 - 150*
13C3 HFPO-DA	*89*		*25 - 150*
13C2 10:2 FTS	*83*		*25 - 150*

LCMS

Prep Batch: 510269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-76641-1	V-200-A	Total/NA	Water	3535	
320-76641-2	V-900-A	Total/NA	Water	3535	
MB 320-510269/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-510269/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-510269/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 510457

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-76641-1	V-200-A	Total/NA	Water	537 (modified)	510269
320-76641-2	V-900-A	Total/NA	Water	537 (modified)	510269
MB 320-510269/1-A	Method Blank	Total/NA	Water	537 (modified)	510269
LCS 320-510269/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	510269

Analysis Batch: 510543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 320-510269/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	510269

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-76641-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-76641-1
Date Collected: 07/22/21 09:30
Matrix: Water
Date Received: 07/23/21 10:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.2 mL	10.0 mL	510269	07/26/21 11:34	RAC	TAL SAC
Total/NA	Analysis	537 (modified)		1			510457	07/26/21 19:33	S1M	TAL SAC

Client Sample ID: V-900-A
Lab Sample ID: 320-76641-2
Date Collected: 07/22/21 09:35
Matrix: Water
Date Received: 07/23/21 10:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			285.6 mL	10.0 mL	510269	07/26/21 11:34	RAC	TAL SAC
Total/NA	Analysis	537 (modified)		1			510457	07/26/21 19:42	S1M	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76641-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-21

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76641-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76641-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-76641-1	V-200-A	Water	07/22/21 09:30	07/23/21 10:39
320-76641-2	V-900-A	Water	07/22/21 09:35	07/23/21 10:39

Eurofin
880 River

West Sac
phone 91

320-76641 Chain of Custody

Dep: Wgt: 10.00 LBS SPECIAL: 0.00
DV: 0.00 HANDLING: 0.00
TOTAL: 0.00

Svcs: PRIORITY OVERNIGHT Master 5049 4009 1491
TRCK: 5049 4009 1539

eurofins Environment Testing TestAmerica

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

Regul

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Raminger	Date: 7-22-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time			For Lab Use Only:
Phone	☑ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
FAX	TAT if different from Below ____			Lab Sampling:
Project Name: Marinette, WI	☐ 2 weeks			Lab Project Number
Site: Marinette, WI	☑ 1 week			50015522
P O # 30015296.00014 (WPDES)	☐ 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)	Sample Specific Notes:
V-200-A	7-22-21	9:30	G	W	2	N	N	X	System Influent
V-900-A	↓	9:35	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.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 144 2493		Cooler Temp. (°C): Obs'd: 1.6	Corr'd: 1.6	Therm ID No.: 2-04
Relinquished by: Jacob Raminger	Company: Barley Excavating	Date/Time: 7-22-21/10:00	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: EA SAC	Date/Time: 7-23-21 / 09:30
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

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Sacramento Sample Receiving Notes

320-76641 Field Sheet

Job: _____

Tracking # : 5049 4009 1539

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-04 Corr. Factor: (+ / -) N/A °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1442493

Cooler ID: _____

Temp Observed: 1.6 °C Corrected: 1.6 °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: NC Date: 7-23-21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
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: NC Date: 7-23-21

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: NC Date: 7-23-21


ORIGIN ID:PHDA (906) 863-9373
JOE BARLEY
BARLEY EXCAVATING INC
1824 10TH AVE
MENOMINEE, MI 49858
UNITED STATES US
SHIP DATE: 24JUN21
ACTWGT: 10.00 LB MAN
CAD: 0562065/CAFE3504
TO
EUROFINS TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY
WEST SACRAMENTO CA 956051500
(916) 373-5600
REF: 8500-87841
RMA:
FedEx Express
FedEx
TRK# 0221 5049 4009 1539
FRI - 23 JUL AA
PRIORITY OVERNIGHT
95605
CA-US
SMF
NH BLUA
3604346 22Jul2021 GRBA 56DG2/0265/1B23
eurofins | Environment Testing TestAmerica
1442493
Custody Seal
DATE
SIGNATURE
7-22-21
eurofins | Environment Testing TestAmerica
1442493

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-76641-1

Login Number: 76641
List Number: 1
Creator: Guzman, Juan

List Source: Eurofins TestAmerica, Sacramento

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	1442493
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	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-76944-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
8/2/2021 11:52:05 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-76944-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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.
¤	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

Job ID: 320-76944-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-76944-1

Comments
No additional comments.

Receipt
The samples were received on 7/30/2021 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 1.0º C.

LCMS
Method 537 (modified): The concentration of several analytes associated with the following samples exceeded the instrument calibration range: 320-76944-1. 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 320-76944-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte 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 10X analysis is 106% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The transition mass ratio for the indicated analyte was outside of the established ratio limit. 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 CCVL 320-511937/2

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 320-511910. 3535_PFC Aqueous

Method 3535: Samples are yellowish in color. 320-76944-1 and 320-76944-2 preparation batch 320-511910 3535_PFC Aqueous

Method 3535: During the solid-phase extraction process the following sample contained particulates which clogged the solid-phase extraction column: 320-76944-1 preparation batch 320-511910 3535_PFC Aqueous

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

Client Sample ID: V-200-A
Date Collected: 07/29/21 07:00
Date Received: 07/30/21 09:45

Lab Sample ID: 320-76944-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**150**		4.3	2.1	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluoropentanoic acid (PFPeA)	**530**	**E**	1.7	0.43	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorohexanoic acid (PFHxA)	**390**	**E**	1.7	0.50	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluoroheptanoic acid (PFHpA)	**310**		1.7	0.22	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorooctanoic acid (PFOA)	**700**	**E**	1.7	0.74	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorononanoic acid (PFNA)	**100**		1.7	0.23	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorodecanoic acid (PFDA)	**54**		1.7	0.27	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluoroundecanoic acid (PFUnA)	**39**		1.7	0.95	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorododecanoic acid (PFDoA)	**3.3**		1.7	0.48	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorotridecanoic acid (PFTriA)	**1.5**	**J**	1.7	1.1	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorotetradecanoic acid (PFTeA)	<0.63		1.7	0.63	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.77		1.7	0.77	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.82		1.7	0.82	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorobutanesulfonic acid (PFBS)	**4.7**		1.7	0.17	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluoropentanesulfonic acid (PFPeS)	**3.4**		1.7	0.26	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorohexanesulfonic acid (PFHxS)	**87**		1.7	0.49	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluoroheptanesulfonic Acid (PFHpS)	**4.6**		1.7	0.16	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorooctanesulfonic acid (PFOS)	**520**	**E**	1.7	0.47	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorononanesulfonic acid (PFNS)	**0.89**	**J**	1.7	0.32	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.7	0.28	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorododecanesulfonic acid (PFDoS)	<0.84		1.7	0.84	ng/L		07/30/21 19:56	07/31/21 18:04	1
Perfluorooctanesulfonamide (FOSA)	**16**		1.7	0.85	ng/L		07/30/21 19:56	07/31/21 18:04	1
NEtFOSA	<0.75		1.7	0.75	ng/L		07/30/21 19:56	07/31/21 18:04	1
NMeFOSA	<0.37		1.7	0.37	ng/L		07/30/21 19:56	07/31/21 18:04	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		07/30/21 19:56	07/31/21 18:04	1
NEtFOSAA	**8.1**		4.3	1.1	ng/L		07/30/21 19:56	07/31/21 18:04	1
NMeFOSE	<1.2		3.5	1.2	ng/L		07/30/21 19:56	07/31/21 18:04	1
NEtFOSE	<0.74		1.7	0.74	ng/L		07/30/21 19:56	07/31/21 18:04	1
4:2 FTS	**4.7**		1.7	0.21	ng/L		07/30/21 19:56	07/31/21 18:04	1
6:2 FTS	**950**	**E**	4.3	2.2	ng/L		07/30/21 19:56	07/31/21 18:04	1
8:2 FTS	**1100**	**E**	1.7	0.40	ng/L		07/30/21 19:56	07/31/21 18:04	1
10:2 FTS	**120**		1.7	0.58	ng/L		07/30/21 19:56	07/31/21 18:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.7	0.35	ng/L		07/30/21 19:56	07/31/21 18:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		07/30/21 19:56	07/31/21 18:04	1
F-53B Major	<0.21		1.7	0.21	ng/L		07/30/21 19:56	07/31/21 18:04	1
F-53B Minor	<0.28		1.7	0.28	ng/L		07/30/21 19:56	07/31/21 18:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*60*		*25 - 150*	*07/30/21 19:56*	*07/31/21 18:04*	*1*
13C5 PFPeA	*66*		*25 - 150*	*07/30/21 19:56*	*07/31/21 18:04*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76944-1

Client Sample ID: V-200-A

Date Collected: 07/29/21 07:00
Date Received: 07/30/21 09:45

Lab Sample ID: 320-76944-1

Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	64		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C4 PFHpA	68		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C4 PFOA	69		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C5 PFNA	73		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C2 PFDA	65		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C2 PFUnA	68		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C2 PFDoA	71		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C2 PFTeDA	61		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C2 PFHxDA	66		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C3 PFBS	77		25 - 150	07/30/21 19:56	07/31/21 18:04	1
18O2 PFHxS	77		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C4 PFOS	72		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C8 FOSA	69		10 - 150	07/30/21 19:56	07/31/21 18:04	1
d3-NMeFOSAA	65		25 - 150	07/30/21 19:56	07/31/21 18:04	1
d5-NEtFOSAA	68		25 - 150	07/30/21 19:56	07/31/21 18:04	1
d-N-MeFOSA-M	49		10 - 150	07/30/21 19:56	07/31/21 18:04	1
d-N-EtFOSA-M	43		10 - 150	07/30/21 19:56	07/31/21 18:04	1
d7-N-MeFOSE-M	47		10 - 150	07/30/21 19:56	07/31/21 18:04	1
d9-N-EtFOSE-M	43		10 - 150	07/30/21 19:56	07/31/21 18:04	1
M2-4:2 FTS	92		25 - 150	07/30/21 19:56	07/31/21 18:04	1
M2-6:2 FTS	68		25 - 150	07/30/21 19:56	07/31/21 18:04	1
M2-8:2 FTS	60		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C3 HFPO-DA	73		25 - 150	07/30/21 19:56	07/31/21 18:04	1
13C2 10:2 FTS	66		25 - 150	07/30/21 19:56	07/31/21 18:04	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**150**		43	21	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluoropentanoic acid (PFPeA)	**550**		17	4.3	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorohexanoic acid (PFHxA)	**380**		17	5.0	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluoroheptanoic acid (PFHpA)	**300**		17	2.2	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorooctanoic acid (PFOA)	**830**		17	7.4	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorononanoic acid (PFNA)	**100**		17	2.3	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorodecanoic acid (PFDA)	**54**		17	2.7	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluoroundecanoic acid (PFUnA)	**36**		17	9.5	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorododecanoic acid (PFDoA)	<4.8		17	4.8	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorotridecanoic acid (PFTriA)	<11		17	11	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorotetradecanoic acid (PFTeA)	<6.3		17	6.3	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<7.7		17	7.7	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluoro-n-octadecanoic acid (PFODA)	<8.2		17	8.2	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorobutanesulfonic acid (PFBS)	**6.3**	**J**	17	1.7	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluoropentanesulfonic acid (PFPeS)	**3.4**	**J**	17	2.6	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorohexanesulfonic acid (PFHxS)	**97**		17	4.9	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluoroheptanesulfonic Acid (PFHpS)	**3.6**	**J**	17	1.6	ng/L		07/30/21 19:56	08/01/21 13:30	10

Client Sample ID: V-200-A
Date Collected: 07/29/21 07:00
Date Received: 07/30/21 09:45

Lab Sample ID: 320-76944-1
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**510**		17	4.7	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorononanesulfonic acid (PFNS)	<3.2		17	3.2	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorodecanesulfonic acid (PFDS)	<2.8		17	2.8	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorododecanesulfonic acid (PFDoS)	<8.4		17	8.4	ng/L		07/30/21 19:56	08/01/21 13:30	10
Perfluorooctanesulfonamide (FOSA)	**18**		17	8.5	ng/L		07/30/21 19:56	08/01/21 13:30	10
NEtFOSA	<7.5		17	7.5	ng/L		07/30/21 19:56	08/01/21 13:30	10
NMeFOSA	<3.7		17	3.7	ng/L		07/30/21 19:56	08/01/21 13:30	10
NMeFOSAA	<10		43	10	ng/L		07/30/21 19:56	08/01/21 13:30	10
NEtFOSAA	<11		43	11	ng/L		07/30/21 19:56	08/01/21 13:30	10
NMeFOSE	<12		35	12	ng/L		07/30/21 19:56	08/01/21 13:30	10
NEtFOSE	<7.4		17	7.4	ng/L		07/30/21 19:56	08/01/21 13:30	10
4:2 FTS	**5.9**	**J**	17	2.1	ng/L		07/30/21 19:56	08/01/21 13:30	10
6:2 FTS	**920**		43	22	ng/L		07/30/21 19:56	08/01/21 13:30	10
8:2 FTS	**950**		17	4.0	ng/L		07/30/21 19:56	08/01/21 13:30	10
10:2 FTS	**98**		17	5.8	ng/L		07/30/21 19:56	08/01/21 13:30	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.5		17	3.5	ng/L		07/30/21 19:56	08/01/21 13:30	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<13		35	13	ng/L		07/30/21 19:56	08/01/21 13:30	10
F-53B Major	<2.1		17	2.1	ng/L		07/30/21 19:56	08/01/21 13:30	10
F-53B Minor	<2.8		17	2.8	ng/L		07/30/21 19:56	08/01/21 13:30	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*72*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C5 PFPeA	*79*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C2 PFHxA	*75*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C4 PFHpA	*72*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C4 PFOA	*76*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C5 PFNA	*71*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C2 PFDA	*69*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C2 PFUnA	*74*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C2 PFDoA	*76*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C2 PFTeDA	*52*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C2 PFHxDA	*49*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C3 PFBS	*80*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
18O2 PFHxS	*67*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C4 PFOS	*74*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C8 FOSA	*68*		*10 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
d3-NMeFOSAA	*71*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
d5-NEtFOSAA	*59*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
d-N-MeFOSA-M	*52*		*10 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
d-N-EtFOSA-M	*41*		*10 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
d7-N-MeFOSE-M	*51*		*10 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
d9-N-EtFOSE-M	*46*		*10 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
M2-4:2 FTS	*68*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
M2-6:2 FTS	*93*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
M2-8:2 FTS	*77*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*
13C3 HFPO-DA	*80*		*25 - 150*	*07/30/21 19:56*	*08/01/21 13:30*	*10*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76944-1

Client Sample ID: V-200-A
Date Collected: 07/29/21 07:00
Date Received: 07/30/21 09:45

Lab Sample ID: 320-76944-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 10:2 FTS	72		25 - 150	07/30/21 19:56	08/01/21 13:30	10

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76944-1

Client Sample ID: V-900-A
Date Collected: 07/29/21 07:05
Date Received: 07/30/21 09:45

Lab Sample ID: 320-76944-2
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.3**	**J**	4.3	2.1	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluoropentanoic acid (PFPeA)	<0.42		1.7	0.42	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorohexanoic acid (PFHxA)	<0.50		1.7	0.50	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluoroheptanoic acid (PFHpA)	<0.21		1.7	0.21	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorooctanoic acid (PFOA)	<0.73		1.7	0.73	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorodecanoic acid (PFDA)	<0.27		1.7	0.27	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluoroundecanoic acid (PFUnA)	<0.94		1.7	0.94	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorododecanoic acid (PFDoA)	<0.47		1.7	0.47	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorotetradecanoic acid (PFTeA)	<0.63		1.7	0.63	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.76		1.7	0.76	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.81		1.7	0.81	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.7	0.26	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorohexanesulfonic acid (PFHxS)	<0.49		1.7	0.49	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.16		1.7	0.16	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorooctanesulfonic acid (PFOS)	<0.46		1.7	0.46	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorodecanesulfonic acid (PFDS)	<0.27		1.7	0.27	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorododecanesulfonic acid (PFDoS)	<0.83		1.7	0.83	ng/L		07/30/21 19:56	07/31/21 18:13	1
Perfluorooctanesulfonamide (FOSA)	<0.84		1.7	0.84	ng/L		07/30/21 19:56	07/31/21 18:13	1
NEtFOSA	<0.75		1.7	0.75	ng/L		07/30/21 19:56	07/31/21 18:13	1
NMeFOSA	<0.37		1.7	0.37	ng/L		07/30/21 19:56	07/31/21 18:13	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		07/30/21 19:56	07/31/21 18:13	1
NEtFOSAA	<1.1		4.3	1.1	ng/L		07/30/21 19:56	07/31/21 18:13	1
NMeFOSE	<1.2		3.4	1.2	ng/L		07/30/21 19:56	07/31/21 18:13	1
NEtFOSE	<0.73		1.7	0.73	ng/L		07/30/21 19:56	07/31/21 18:13	1
4:2 FTS	<0.21		1.7	0.21	ng/L		07/30/21 19:56	07/31/21 18:13	1
6:2 FTS	<2.1		4.3	2.1	ng/L		07/30/21 19:56	07/31/21 18:13	1
8:2 FTS	**0.42**	**J**	1.7	0.39	ng/L		07/30/21 19:56	07/31/21 18:13	1
10:2 FTS	**3.9**		1.7	0.57	ng/L		07/30/21 19:56	07/31/21 18:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		07/30/21 19:56	07/31/21 18:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		07/30/21 19:56	07/31/21 18:13	1
F-53B Major	<0.21		1.7	0.21	ng/L		07/30/21 19:56	07/31/21 18:13	1
F-53B Minor	<0.27		1.7	0.27	ng/L		07/30/21 19:56	07/31/21 18:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*25 - 150*	*07/30/21 19:56*	*07/31/21 18:13*	*1*
13C5 PFPeA	*79*		*25 - 150*	*07/30/21 19:56*	*07/31/21 18:13*	*1*
13C2 PFHxA	*80*		*25 - 150*	*07/30/21 19:56*	*07/31/21 18:13*	*1*
13C4 PFHpA	*85*		*25 - 150*	*07/30/21 19:56*	*07/31/21 18:13*	*1*
13C4 PFOA	*90*		*25 - 150*	*07/30/21 19:56*	*07/31/21 18:13*	*1*
13C5 PFNA	*80*		*25 - 150*	*07/30/21 19:56*	*07/31/21 18:13*	*1*
13C2 PFDA	*76*		*25 - 150*	*07/30/21 19:56*	*07/31/21 18:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76944-1

Client Sample ID: V-900-A
Date Collected: 07/29/21 07:05
Date Received: 07/30/21 09:45

Lab Sample ID: 320-76944-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	73		25 - 150	07/30/21 19:56	07/31/21 18:13	1
13C2 PFDoA	66		25 - 150	07/30/21 19:56	07/31/21 18:13	1
13C2 PFTeDA	67		25 - 150	07/30/21 19:56	07/31/21 18:13	1
13C2 PFHxDA	60		25 - 150	07/30/21 19:56	07/31/21 18:13	1
13C3 PFBS	86		25 - 150	07/30/21 19:56	07/31/21 18:13	1
18O2 PFHxS	89		25 - 150	07/30/21 19:56	07/31/21 18:13	1
13C4 PFOS	71		25 - 150	07/30/21 19:56	07/31/21 18:13	1
13C8 FOSA	79		10 - 150	07/30/21 19:56	07/31/21 18:13	1
d3-NMeFOSAA	76		25 - 150	07/30/21 19:56	07/31/21 18:13	1
d5-NEtFOSAA	71		25 - 150	07/30/21 19:56	07/31/21 18:13	1
d-N-MeFOSA-M	52		10 - 150	07/30/21 19:56	07/31/21 18:13	1
d-N-EtFOSA-M	45		10 - 150	07/30/21 19:56	07/31/21 18:13	1
d7-N-MeFOSE-M	51		10 - 150	07/30/21 19:56	07/31/21 18:13	1
d9-N-EtFOSE-M	53		10 - 150	07/30/21 19:56	07/31/21 18:13	1
M2-4:2 FTS	67		25 - 150	07/30/21 19:56	07/31/21 18:13	1
M2-6:2 FTS	82		25 - 150	07/30/21 19:56	07/31/21 18:13	1
M2-8:2 FTS	67		25 - 150	07/30/21 19:56	07/31/21 18:13	1
13C3 HFPO-DA	81		25 - 150	07/30/21 19:56	07/31/21 18:13	1
13C2 10:2 FTS	62		25 - 150	07/30/21 19:56	07/31/21 18:13	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76944-1

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)
320-76944-1	V-200-A	60	66	64	68	69	73	65	68
320-76944-1 - DL	V-200-A	72	79	75	72	76	71	69	74
320-76944-2	V-900-A	88	79	80	85	90	80	76	73
LCS 320-511910/2-A	Lab Control Sample	86	77	83	86	87	84	81	84
LCSD 320-511910/3-A	Lab Control Sample Dup	91	81	82	90	91	85	76	78
MB 320-511910/1-A	Method Blank	89	80	78	88	95	84	79	80

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
320-76944-1	V-200-A	71	61	66	77	77	72	69	65
320-76944-1 - DL	V-200-A	76	52	49	80	67	74	68	71
320-76944-2	V-900-A	66	67	60	86	89	71	79	76
LCS 320-511910/2-A	Lab Control Sample	93	95	102	87	93	79	77	84
LCSD 320-511910/3-A	Lab Control Sample Dup	91	95	103	93	95	80	78	75
MB 320-511910/1-A	Method Blank	85	89	97	94	97	83	78	85

		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)
320-76944-1	V-200-A	68	49	43	47	43	92	68	60
320-76944-1 - DL	V-200-A	59	52	41	51	46	68	93	77
320-76944-2	V-900-A	71	52	45	51	53	67	82	67
LCS 320-511910/2-A	Lab Control Sample	85	66	57	67	66	81	97	76
LCSD 320-511910/3-A	Lab Control Sample Dup	82	61	58	74	68	83	94	75
MB 320-511910/1-A	Method Blank	89	61	60	68	73	90	103	74

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
320-76944-1	V-200-A	73	66
320-76944-1 - DL	V-200-A	80	72
320-76944-2	V-900-A	81	62
LCS 320-511910/2-A	Lab Control Sample	76	92
LCSD 320-511910/3-A	Lab Control Sample Dup	81	86
MB 320-511910/1-A	Method Blank	81	92

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxDA = 13C2 PFHxDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76944-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76944-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-511910/1-A
Matrix: Water
Analysis Batch: 511947

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 511910

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		07/30/21 19:56	07/31/21 15:24	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		07/30/21 19:56	07/31/21 15:24	1
NEtFOSA	<0.87		2.0	0.87	ng/L		07/30/21 19:56	07/31/21 15:24	1
NMeFOSA	<0.43		2.0	0.43	ng/L		07/30/21 19:56	07/31/21 15:24	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		07/30/21 19:56	07/31/21 15:24	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		07/30/21 19:56	07/31/21 15:24	1
NMeFOSE	<1.4		4.0	1.4	ng/L		07/30/21 19:56	07/31/21 15:24	1
NEtFOSE	<0.85		2.0	0.85	ng/L		07/30/21 19:56	07/31/21 15:24	1
4:2 FTS	<0.24		2.0	0.24	ng/L		07/30/21 19:56	07/31/21 15:24	1
6:2 FTS	<2.5		5.0	2.5	ng/L		07/30/21 19:56	07/31/21 15:24	1
8:2 FTS	<0.46		2.0	0.46	ng/L		07/30/21 19:56	07/31/21 15:24	1
10:2 FTS	<0.67		2.0	0.67	ng/L		07/30/21 19:56	07/31/21 15:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		07/30/21 19:56	07/31/21 15:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		07/30/21 19:56	07/31/21 15:24	1
F-53B Major	<0.24		2.0	0.24	ng/L		07/30/21 19:56	07/31/21 15:24	1
F-53B Minor	<0.32		2.0	0.32	ng/L		07/30/21 19:56	07/31/21 15:24	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*89*		*25 - 150*	*07/30/21 19:56*	*07/31/21 15:24*	*1*
13C5 PFPeA	*80*		*25 - 150*	*07/30/21 19:56*	*07/31/21 15:24*	*1*
13C2 PFHxA	*78*		*25 - 150*	*07/30/21 19:56*	*07/31/21 15:24*	*1*
13C4 PFHpA	*88*		*25 - 150*	*07/30/21 19:56*	*07/31/21 15:24*	*1*
13C4 PFOA	*95*		*25 - 150*	*07/30/21 19:56*	*07/31/21 15:24*	*1*

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

Lab Sample ID: MB 320-511910/1-A
Matrix: Water
Analysis Batch: 511947

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 511910

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	84		25 - 150	07/30/21 19:56	07/31/21 15:24	1
13C2 PFDA	79		25 - 150	07/30/21 19:56	07/31/21 15:24	1
13C2 PFUnA	80		25 - 150	07/30/21 19:56	07/31/21 15:24	1
13C2 PFDoA	85		25 - 150	07/30/21 19:56	07/31/21 15:24	1
13C2 PFTeDA	89		25 - 150	07/30/21 19:56	07/31/21 15:24	1
13C2 PFHxDA	97		25 - 150	07/30/21 19:56	07/31/21 15:24	1
13C3 PFBS	94		25 - 150	07/30/21 19:56	07/31/21 15:24	1
18O2 PFHxS	97		25 - 150	07/30/21 19:56	07/31/21 15:24	1
13C4 PFOS	83		25 - 150	07/30/21 19:56	07/31/21 15:24	1
13C8 FOSA	78		10 - 150	07/30/21 19:56	07/31/21 15:24	1
d3-NMeFOSAA	85		25 - 150	07/30/21 19:56	07/31/21 15:24	1
d5-NEtFOSAA	89		25 - 150	07/30/21 19:56	07/31/21 15:24	1
d-N-MeFOSA-M	61		10 - 150	07/30/21 19:56	07/31/21 15:24	1
d-N-EtFOSA-M	60		10 - 150	07/30/21 19:56	07/31/21 15:24	1
d7-N-MeFOSE-M	68		10 - 150	07/30/21 19:56	07/31/21 15:24	1
d9-N-EtFOSE-M	73		10 - 150	07/30/21 19:56	07/31/21 15:24	1
M2-4:2 FTS	90		25 - 150	07/30/21 19:56	07/31/21 15:24	1
M2-6:2 FTS	103		25 - 150	07/30/21 19:56	07/31/21 15:24	1
M2-8:2 FTS	74		25 - 150	07/30/21 19:56	07/31/21 15:24	1
13C3 HFPO-DA	81		25 - 150	07/30/21 19:56	07/31/21 15:24	1
13C2 10:2 FTS	92		25 - 150	07/30/21 19:56	07/31/21 15:24	1

Lab Sample ID: LCS 320-511910/2-A
Matrix: Water
Analysis Batch: 511947

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 511910

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	45.2		ng/L		113	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	45.8		ng/L		115	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	41.2		ng/L		103	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	44.6		ng/L		111	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	47.6		ng/L		119	60 - 135
Perfluorononanoic acid (PFNA)	40.0	44.6		ng/L		112	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	43.9		ng/L		110	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	44.0		ng/L		110	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	39.8		ng/L		100	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	40.3		ng/L		101	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	44.9		ng/L		112	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	43.8		ng/L		110	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	34.2		ng/L		85	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	34.9		ng/L		99	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	38.6		ng/L		103	60 - 135

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

Lab Sample ID: LCS 320-511910/2-A
Matrix: Water
Analysis Batch: 511947

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 511910

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.1		ng/L		105	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	50.8		ng/L		133	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	41.6		ng/L		112	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	40.2		ng/L		105	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	41.8		ng/L		108	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	51.5		ng/L		133	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.6		ng/L		106	60 - 135
NEtFOSA	40.0	45.9		ng/L		115	60 - 135
NMeFOSA	40.0	39.0		ng/L		98	60 - 135
NMeFOSAA	40.0	46.5		ng/L		116	60 - 135
NEtFOSAA	40.0	41.7		ng/L		104	60 - 135
NMeFOSE	40.0	40.7		ng/L		102	60 - 135
NEtFOSE	40.0	47.6		ng/L		119	60 - 135
4:2 FTS	37.4	43.7		ng/L		117	60 - 135
6:2 FTS	37.9	35.9		ng/L		95	60 - 135
8:2 FTS	38.3	38.7		ng/L		101	60 - 135
10:2 FTS	38.6	42.3		ng/L		110	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	47.7		ng/L		127	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.0		ng/L		110	60 - 135
F-53B Major	37.3	45.2		ng/L		121	60 - 135
F-53B Minor	37.7	46.8		ng/L		124	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*86*		*25 - 150*
13C5 PFPeA	*77*		*25 - 150*
13C2 PFHxA	*83*		*25 - 150*
13C4 PFHpA	*86*		*25 - 150*
13C4 PFOA	*87*		*25 - 150*
13C5 PFNA	*84*		*25 - 150*
13C2 PFDA	*81*		*25 - 150*
13C2 PFUnA	*84*		*25 - 150*
13C2 PFDoA	*93*		*25 - 150*
13C2 PFTeDA	*95*		*25 - 150*
13C2 PFHxDA	*102*		*25 - 150*
13C3 PFBS	*87*		*25 - 150*
18O2 PFHxS	*93*		*25 - 150*
13C4 PFOS	*79*		*25 - 150*
13C8 FOSA	*77*		*10 - 150*
d3-NMeFOSAA	*84*		*25 - 150*
d5-NEtFOSAA	*85*		*25 - 150*
d-N-MeFOSA-M	*66*		*10 - 150*
d-N-EtFOSA-M	*57*		*10 - 150*

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

Lab Sample ID: LCS 320-511910/2-A
Matrix: Water
Analysis Batch: 511947

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 511910

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*67*		*10 - 150*
d9-N-EtFOSE-M	*66*		*10 - 150*
M2-4:2 FTS	*81*		*25 - 150*
M2-6:2 FTS	*97*		*25 - 150*
M2-8:2 FTS	*76*		*25 - 150*
13C3 HFPO-DA	*76*		*25 - 150*
13C2 10:2 FTS	*92*		*25 - 150*

Lab Sample ID: LCSD 320-511910/3-A
Matrix: Water
Analysis Batch: 511947

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 511910

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	44.4		ng/L		111	60 - 135	2	30
Perfluoropentanoic acid (PFPeA)			40.0	44.9		ng/L		112	60 - 135	2	30
Perfluorohexanoic acid (PFHxA)			40.0	45.1		ng/L		113	60 - 135	9	30
Perfluoroheptanoic acid (PFHpA)			40.0	44.3		ng/L		111	60 - 135	1	30
Perfluorooctanoic acid (PFOA)			40.0	41.5		ng/L		104	60 - 135	13	30
Perfluorononanoic acid (PFNA)			40.0	44.9		ng/L		112	60 - 135	1	30
Perfluorodecanoic acid (PFDA)			40.0	44.8		ng/L		112	60 - 135	2	30
Perfluoroundecanoic acid (PFUnA)			40.0	53.6		ng/L		134	60 - 135	20	30
Perfluorododecanoic acid (PFDoA)			40.0	39.1		ng/L		98	60 - 135	2	30
Perfluorotridecanoic acid (PFTriA)			40.0	38.8		ng/L		97	60 - 135	4	30
Perfluorotetradecanoic acid (PFTeA)			40.0	43.8		ng/L		110	60 - 135	2	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	45.5		ng/L		114	60 - 135	4	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	33.3		ng/L		83	60 - 135	2	30
Perfluorobutanesulfonic acid (PFBS)			35.4	33.0		ng/L		93	60 - 135	5	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	36.5		ng/L		97	60 - 135	6	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	38.0		ng/L		104	60 - 135	0	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	48.5		ng/L		127	60 - 135	5	30
Perfluorooctanesulfonic acid (PFOS)			37.1	39.3		ng/L		106	60 - 135	6	30
Perfluorononanesulfonic acid (PFNS)			38.4	39.0		ng/L		102	60 - 135	3	30
Perfluorodecanesulfonic acid (PFDS)			38.6	40.2		ng/L		104	60 - 135	4	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	51.1		ng/L		132	60 - 135	1	30
Perfluorooctanesulfonamide (FOSA)			40.0	42.6		ng/L		107	60 - 135	0	30
NEtFOSA			40.0	46.0		ng/L		115	60 - 135	0	30
NMeFOSA			40.0	44.8		ng/L		112	60 - 135	14	30
NMeFOSAA			40.0	49.8		ng/L		124	60 - 135	7	30

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

Lab Sample ID: LCSD 320-511910/3-A
Matrix: Water
Analysis Batch: 511947

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 511910

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	45.7		ng/L		114	60 - 135	9	30
NMeFOSE			40.0	42.6		ng/L		106	60 - 135	5	30
NEtFOSE			40.0	42.1		ng/L		105	60 - 135	12	30
4:2 FTS			37.4	40.3		ng/L		108	60 - 135	8	30
6:2 FTS			37.9	34.6		ng/L		91	60 - 135	4	30
8:2 FTS			38.3	33.2		ng/L		87	60 - 135	15	30
10:2 FTS			38.6	36.9		ng/L		96	60 - 135	14	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	45.7		ng/L		121	60 - 135	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	41.3		ng/L		103	60 - 135	6	30
F-53B Major			37.3	42.3		ng/L		114	60 - 135	7	30
F-53B Minor			37.7	46.5		ng/L		123	60 - 135	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*91*		*25 - 150*
13C5 PFPeA	*81*		*25 - 150*
13C2 PFHxA	*82*		*25 - 150*
13C4 PFHpA	*90*		*25 - 150*
13C4 PFOA	*91*		*25 - 150*
13C5 PFNA	*85*		*25 - 150*
13C2 PFDA	*76*		*25 - 150*
13C2 PFUnA	*78*		*25 - 150*
13C2 PFDoA	*91*		*25 - 150*
13C2 PFTeDA	*95*		*25 - 150*
13C2 PFHxDA	*103*		*25 - 150*
13C3 PFBS	*93*		*25 - 150*
18O2 PFHxS	*95*		*25 - 150*
13C4 PFOS	*80*		*25 - 150*
13C8 FOSA	*78*		*10 - 150*
d3-NMeFOSAA	*75*		*25 - 150*
d5-NEtFOSAA	*82*		*25 - 150*
d-N-MeFOSA-M	*61*		*10 - 150*
d-N-EtFOSA-M	*58*		*10 - 150*
d7-N-MeFOSE-M	*74*		*10 - 150*
d9-N-EtFOSE-M	*68*		*10 - 150*
M2-4:2 FTS	*83*		*25 - 150*
M2-6:2 FTS	*94*		*25 - 150*
M2-8:2 FTS	*75*		*25 - 150*
13C3 HFPO-DA	*81*		*25 - 150*
13C2 10:2 FTS	*86*		*25 - 150*

LCMS

Prep Batch: 511910

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-76944-1 - DL	V-200-A	Total/NA	Water	3535	
320-76944-1	V-200-A	Total/NA	Water	3535	
320-76944-2	V-900-A	Total/NA	Water	3535	
MB 320-511910/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-511910/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-511910/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 511947

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-76944-1	V-200-A	Total/NA	Water	537 (modified)	511910
320-76944-2	V-900-A	Total/NA	Water	537 (modified)	511910
MB 320-511910/1-A	Method Blank	Total/NA	Water	537 (modified)	511910
LCS 320-511910/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	511910
LCSD 320-511910/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	511910

Analysis Batch: 512114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-76944-1 - DL	V-200-A	Total/NA	Water	537 (modified)	511910

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-76944-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-76944-1
Date Collected: 07/29/21 07:00
Matrix: Water
Date Received: 07/30/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			288.2 mL	10.0 mL	511910	07/30/21 19:56	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			511947	07/31/21 18:04	K1S	TAL SAC
Total/NA	Prep	3535	DL		288.2 mL	10.0 mL	511910	07/30/21 19:56	JER	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			512114	08/01/21 13:30	S1M	TAL SAC

Client Sample ID: V-900-A
Lab Sample ID: 320-76944-2
Date Collected: 07/29/21 07:05
Matrix: Water
Date Received: 07/30/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			291.4 mL	10.0 mL	511910	07/30/21 19:56	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			511947	07/31/21 18:13	K1S	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76944-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-21

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-76944-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-76944-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-76944-1	V-200-A	Water	07/29/21 07:00	07/30/21 09:45
320-76944-2	V-900-A	Water	07/29/21 07:05	07/30/21 09:45

Eurofins TestAmerica, Sacramento
880 Riverside Park

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Fred Raminger	Date: 7-29-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time			For Lab Use Only:
Phone	☑ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
FAX	TAT if different from Below			Lab Sampling:
Project Name: Marinette, WI	☐ 2 weeks			
Site: Marinette, WI	☑ 1 week			Lab Project Number
P O # 30015296.00014 (WPDES)	☐ 2 days			50015522
	☐ 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)	Sample Specific Notes:
V-200-A	7-29-21	7:00	G	W	2	N	N	X	System Influent
V-900-A	↓	7:05	G	W	2	N	N	X	System Effluent

320-76944 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 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

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

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1442494		Cooler Temp. (°C): Obs'd: 1.0	Corr'd: 1.0	Therm ID No.: CF2
Relinquished by: Fred Raminger	Company: Barley Excavating	Date/Time: 7-29-21 7:30	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: ETASAC	Date/Time: 7-30-21 09:45
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

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Sacramento Sample Receiving Notes

Job: 320-76944 Field Sheet

Tracking # : 7125 4944 8974

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-02 Corr. Factor: (+ / -) N/A °C

Ice ✓ Wet ✓ Gel ____ Other ____

Cooler Custody Seal: 144 2494

Cooler ID: ✓

Temp Observed: 1.0 °C Corrected: 1.0 °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: NC Date: 7-30-21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
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: 7/30/21

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: 7/30/21


ORIGIN ID:RRLA (906) 863-9373
JOE BARLEY
BARLEY EXCAVATING INC.
1024 10TH AVE.
MENOMINEE, MI 49858
UNITED STATES US
SHIP DATE: 16JUL21
ACTWGT: 25.00 LB MAN
CAD: 525156/CAFE3408
TO
TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY
WEST SACRAMENTO CA 95605-1500
DEPT:
FedEx Express
FedEx
TRK# 0221 7125 4944 8974
FRI - 30 JUL AA
PRIORITY OVERNIGHT
NH BLUA
95605
CA-US
SMF
eurofins | Environment Testing TestAmerica
1442494
Custody Seal
SIGNATURE
DATE
7-29-21

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc. Job Number: 320-76944-1

Login Number: 76944 **List Source: Eurofins TestAmerica, Sacramento**
List Number: 1
Creator: Oropeza, Salvador

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	1442494
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	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-77184-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
8/9/2021 8:19:13 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-77184-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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.
¤	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

Job ID: 320-77184-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-77184-1

Comments
No additional comments.

Receipt
The samples were received on 8/4/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.1º 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 320-513366. Method code: 3535_PFC_28D Matrix: Aqueous

Method 3535: The following samples were yellow in color and contain a thin layer of sediment at the bottom of the bottle prior to extraction: 320-77184-1. preparation batch 320-513366. Method code: 3535_PFC_28D Matrix: Aqueous

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

Client Sample ID: V-200-A
Date Collected: 08/03/21 11:00
Date Received: 08/04/21 10:00

Lab Sample ID: 320-77184-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**31**		4.7	2.3	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluoropentanoic acid (PFPeA)	**140**		1.9	0.46	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorohexanoic acid (PFHxA)	**90**		1.9	0.55	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluoroheptanoic acid (PFHpA)	**58**		1.9	0.24	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorooctanoic acid (PFOA)	**210**		1.9	0.80	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorononanoic acid (PFNA)	**23**		1.9	0.25	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorodecanoic acid (PFDA)	**9.7**		1.9	0.29	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluoroundecanoic acid (PFUnA)	**8.6**		1.9	1.0	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorododecanoic acid (PFDoA)	**1.0**	**J**	1.9	0.52	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorotetradecanoic acid (PFTeA)	<0.69		1.9	0.69	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.84		1.9	0.84	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.88		1.9	0.88	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.9	0.19	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluoropentanesulfonic acid (PFPeS)	**0.70**	**J**	1.9	0.28	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorohexanesulfonic acid (PFHxS)	**15**		1.9	0.54	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.66**	**J**	1.9	0.18	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorooctanesulfonic acid (PFOS)	**110**		1.9	0.51	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorononanesulfonic acid (PFNS)	<0.35		1.9	0.35	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorododecanesulfonic acid (PFDoS)	<0.91		1.9	0.91	ng/L		08/05/21 12:36	08/07/21 01:23	1
Perfluorooctanesulfonamide (FOSA)	**4.8**		1.9	0.92	ng/L		08/05/21 12:36	08/07/21 01:23	1
NEtFOSA	<0.82		1.9	0.82	ng/L		08/05/21 12:36	08/07/21 01:23	1
NMeFOSA	<0.40		1.9	0.40	ng/L		08/05/21 12:36	08/07/21 01:23	1
NMeFOSAA	<1.1		4.7	1.1	ng/L		08/05/21 12:36	08/07/21 01:23	1
NEtFOSAA	<1.2		4.7	1.2	ng/L		08/05/21 12:36	08/07/21 01:23	1
NMeFOSE	<1.3		3.8	1.3	ng/L		08/05/21 12:36	08/07/21 01:23	1
NEtFOSE	<0.80		1.9	0.80	ng/L		08/05/21 12:36	08/07/21 01:23	1
4:2 FTS	**1.4**	**J**	1.9	0.23	ng/L		08/05/21 12:36	08/07/21 01:23	1
6:2 FTS	**240**		4.7	2.4	ng/L		08/05/21 12:36	08/07/21 01:23	1
8:2 FTS	**270**		1.9	0.43	ng/L		08/05/21 12:36	08/07/21 01:23	1
10:2 FTS	**34**		1.9	0.63	ng/L		08/05/21 12:36	08/07/21 01:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		08/05/21 12:36	08/07/21 01:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.8	1.4	ng/L		08/05/21 12:36	08/07/21 01:23	1
F-53B Major	<0.23		1.9	0.23	ng/L		08/05/21 12:36	08/07/21 01:23	1
F-53B Minor	<0.30		1.9	0.30	ng/L		08/05/21 12:36	08/07/21 01:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*102*		*25 - 150*	*08/05/21 12:36*	*08/07/21 01:23*	*1*
13C5 PFPeA	*82*		*25 - 150*	*08/05/21 12:36*	*08/07/21 01:23*	*1*

Client: ARCADIS U.S., Inc.
Job ID: 320-77184-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-77184-1
Date Collected: 08/03/21 11:00
Matrix: Water
Date Received: 08/04/21 10:00

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	114		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C4 PFHpA	103		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C4 PFOA	97		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C5 PFNA	105		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C2 PFDA	111		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C2 PFUnA	112		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C2 PFDoA	100		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C2 PFTeDA	94		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C2 PFHxDA	135		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C3 PFBS	102		25 - 150	08/05/21 12:36	08/07/21 01:23	1
18O2 PFHxS	102		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C4 PFOS	108		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C8 FOSA	108		10 - 150	08/05/21 12:36	08/07/21 01:23	1
d3-NMeFOSAA	88		25 - 150	08/05/21 12:36	08/07/21 01:23	1
d5-NEtFOSAA	101		25 - 150	08/05/21 12:36	08/07/21 01:23	1
d-N-MeFOSA-M	86		10 - 150	08/05/21 12:36	08/07/21 01:23	1
d-N-EtFOSA-M	84		10 - 150	08/05/21 12:36	08/07/21 01:23	1
d7-N-MeFOSE-M	78		10 - 150	08/05/21 12:36	08/07/21 01:23	1
d9-N-EtFOSE-M	84		10 - 150	08/05/21 12:36	08/07/21 01:23	1
M2-4:2 FTS	96		25 - 150	08/05/21 12:36	08/07/21 01:23	1
M2-6:2 FTS	94		25 - 150	08/05/21 12:36	08/07/21 01:23	1
M2-8:2 FTS	112		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C3 HFPO-DA	90		25 - 150	08/05/21 12:36	08/07/21 01:23	1
13C2 10:2 FTS	89		25 - 150	08/05/21 12:36	08/07/21 01:23	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77184-1

Client Sample ID: V-900-A
Date Collected: 08/03/21 11:05
Date Received: 08/04/21 10:00

Lab Sample ID: 320-77184-2
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.1**	**J**	4.6	2.2	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluoropentanoic acid (PFPeA)	<0.45		1.8	0.45	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorohexanoic acid (PFHxA)	<0.54		1.8	0.54	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.8	0.23	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorooctanoic acid (PFOA)	<0.79		1.8	0.79	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorononanoic acid (PFNA)	<0.25		1.8	0.25	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorodecanoic acid (PFDA)	<0.29		1.8	0.29	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.8	1.0	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorododecanoic acid (PFDoA)	<0.51		1.8	0.51	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorotetradecanoic acid (PFTeA)	<0.68		1.8	0.68	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.82		1.8	0.82	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.87		1.8	0.87	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluoropentanesulfonic acid (PFPeS)	<0.28		1.8	0.28	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorohexanesulfonic acid (PFHxS)	<0.53		1.8	0.53	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.18		1.8	0.18	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorooctanesulfonic acid (PFOS)	<0.50		1.8	0.50	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorononanesulfonic acid (PFNS)	<0.34		1.8	0.34	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.8	0.30	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorododecanesulfonic acid (PFDoS)	<0.90		1.8	0.90	ng/L		08/05/21 12:36	08/07/21 02:01	1
Perfluorooctanesulfonamide (FOSA)	<0.91		1.8	0.91	ng/L		08/05/21 12:36	08/07/21 02:01	1
NEtFOSA	<0.80		1.8	0.80	ng/L		08/05/21 12:36	08/07/21 02:01	1
NMeFOSA	<0.40		1.8	0.40	ng/L		08/05/21 12:36	08/07/21 02:01	1
NMeFOSAA	<1.1		4.6	1.1	ng/L		08/05/21 12:36	08/07/21 02:01	1
NEtFOSAA	<1.2		4.6	1.2	ng/L		08/05/21 12:36	08/07/21 02:01	1
NMeFOSE	<1.3		3.7	1.3	ng/L		08/05/21 12:36	08/07/21 02:01	1
NEtFOSE	<0.79		1.8	0.79	ng/L		08/05/21 12:36	08/07/21 02:01	1
4:2 FTS	<0.22		1.8	0.22	ng/L		08/05/21 12:36	08/07/21 02:01	1
6:2 FTS	<2.3		4.6	2.3	ng/L		08/05/21 12:36	08/07/21 02:01	1
8:2 FTS	<0.43		1.8	0.43	ng/L		08/05/21 12:36	08/07/21 02:01	1
10:2 FTS	<0.62		1.8	0.62	ng/L		08/05/21 12:36	08/07/21 02:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.37		1.8	0.37	ng/L		08/05/21 12:36	08/07/21 02:01	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.7	1.4	ng/L		08/05/21 12:36	08/07/21 02:01	1
F-53B Major	<0.22		1.8	0.22	ng/L		08/05/21 12:36	08/07/21 02:01	1
F-53B Minor	<0.30		1.8	0.30	ng/L		08/05/21 12:36	08/07/21 02:01	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*97*		*25 - 150*	*08/05/21 12:36*	*08/07/21 02:01*	*1*
13C5 PFPeA	*98*		*25 - 150*	*08/05/21 12:36*	*08/07/21 02:01*	*1*
13C2 PFHxA	*111*		*25 - 150*	*08/05/21 12:36*	*08/07/21 02:01*	*1*
13C4 PFHpA	*102*		*25 - 150*	*08/05/21 12:36*	*08/07/21 02:01*	*1*
13C4 PFOA	*104*		*25 - 150*	*08/05/21 12:36*	*08/07/21 02:01*	*1*
13C5 PFNA	*105*		*25 - 150*	*08/05/21 12:36*	*08/07/21 02:01*	*1*
13C2 PFDA	*114*		*25 - 150*	*08/05/21 12:36*	*08/07/21 02:01*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77184-1

Client Sample ID: V-900-A
Date Collected: 08/03/21 11:05
Date Received: 08/04/21 10:00

Lab Sample ID: 320-77184-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	110		25 - 150	08/05/21 12:36	08/07/21 02:01	1
13C2 PFDoA	97		25 - 150	08/05/21 12:36	08/07/21 02:01	1
13C2 PFTeDA	93		25 - 150	08/05/21 12:36	08/07/21 02:01	1
13C2 PFHxDA	123		25 - 150	08/05/21 12:36	08/07/21 02:01	1
13C3 PFBS	97		25 - 150	08/05/21 12:36	08/07/21 02:01	1
18O2 PFHxS	97		25 - 150	08/05/21 12:36	08/07/21 02:01	1
13C4 PFOS	109		25 - 150	08/05/21 12:36	08/07/21 02:01	1
13C8 FOSA	105		10 - 150	08/05/21 12:36	08/07/21 02:01	1
d3-NMeFOSAA	84		25 - 150	08/05/21 12:36	08/07/21 02:01	1
d5-NEtFOSAA	92		25 - 150	08/05/21 12:36	08/07/21 02:01	1
d-N-MeFOSA-M	76		10 - 150	08/05/21 12:36	08/07/21 02:01	1
d-N-EtFOSA-M	79		10 - 150	08/05/21 12:36	08/07/21 02:01	1
d7-N-MeFOSE-M	83		10 - 150	08/05/21 12:36	08/07/21 02:01	1
d9-N-EtFOSE-M	84		10 - 150	08/05/21 12:36	08/07/21 02:01	1
M2-4:2 FTS	98		25 - 150	08/05/21 12:36	08/07/21 02:01	1
M2-6:2 FTS	89		25 - 150	08/05/21 12:36	08/07/21 02:01	1
M2-8:2 FTS	107		25 - 150	08/05/21 12:36	08/07/21 02:01	1
13C3 HFPO-DA	98		25 - 150	08/05/21 12:36	08/07/21 02:01	1
13C2 10:2 FTS	78		25 - 150	08/05/21 12:36	08/07/21 02:01	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77184-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
320-77184-1	V-200-A	102	82	114	103	97	105	111	112
320-77184-2	V-900-A	97	98	111	102	104	105	114	110
LCS 320-513366/2-A	Lab Control Sample	92	96	109	103	96	100	110	110
LCSD 320-513366/3-A	Lab Control Sample Dup	89	85	101	93	94	91	100	107
MB 320-513366/1-A	Method Blank	95	95	104	98	93	96	114	107

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	PFTDA	PFHxDA	C3PFBS	PFHxS	PFOS	PFOSA	d3NMFOS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(10-150)	(25-150)
320-77184-1	V-200-A	100	94	135	102	102	108	108	88
320-77184-2	V-900-A	97	93	123	97	97	109	105	84
LCS 320-513366/2-A	Lab Control Sample	103	95	127	97	98	111	106	89
LCSD 320-513366/3-A	Lab Control Sample Dup	97	91	116	93	94	105	94	78
MB 320-513366/1-A	Method Blank	104	96	126	94	97	104	102	82

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		d5NEFOS	dMeFOSA	dEtFOSA	NMFM	NEFM	M242FTS	M262FTS	M282FTS
Lab Sample ID	Client Sample ID	(25-150)	(10-150)	(10-150)	(10-150)	(10-150)	(25-150)	(25-150)	(25-150)
320-77184-1	V-200-A	101	86	84	78	84	96	94	112
320-77184-2	V-900-A	92	76	79	83	84	98	89	107
LCS 320-513366/2-A	Lab Control Sample	103	79	85	85	90	94	93	114
LCSD 320-513366/3-A	Lab Control Sample Dup	88	68	78	78	87	89	93	95
MB 320-513366/1-A	Method Blank	96	81	84	87	91	98	105	108

		Percent Isotope Dilution Recovery (Acceptance Limits)	
		HFPODA	M102FTS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)
320-77184-1	V-200-A	90	89
320-77184-2	V-900-A	98	78
LCS 320-513366/2-A	Lab Control Sample	101	93
LCSD 320-513366/3-A	Lab Control Sample Dup	91	78
MB 320-513366/1-A	Method Blank	92	97

Surrogate Legend

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

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77184-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-513366/1-A
Matrix: Water
Analysis Batch: 514034

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 513366

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		08/05/21 12:36	08/06/21 23:59	1
NEtFOSA	<0.87		2.0	0.87	ng/L		08/05/21 12:36	08/06/21 23:59	1
NMeFOSA	<0.43		2.0	0.43	ng/L		08/05/21 12:36	08/06/21 23:59	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		08/05/21 12:36	08/06/21 23:59	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		08/05/21 12:36	08/06/21 23:59	1
NMeFOSE	<1.4		4.0	1.4	ng/L		08/05/21 12:36	08/06/21 23:59	1
NEtFOSE	<0.85		2.0	0.85	ng/L		08/05/21 12:36	08/06/21 23:59	1
4:2 FTS	<0.24		2.0	0.24	ng/L		08/05/21 12:36	08/06/21 23:59	1
6:2 FTS	<2.5		5.0	2.5	ng/L		08/05/21 12:36	08/06/21 23:59	1
8:2 FTS	<0.46		2.0	0.46	ng/L		08/05/21 12:36	08/06/21 23:59	1
10:2 FTS	<0.67		2.0	0.67	ng/L		08/05/21 12:36	08/06/21 23:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		08/05/21 12:36	08/06/21 23:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		08/05/21 12:36	08/06/21 23:59	1
F-53B Major	<0.24		2.0	0.24	ng/L		08/05/21 12:36	08/06/21 23:59	1
F-53B Minor	<0.32		2.0	0.32	ng/L		08/05/21 12:36	08/06/21 23:59	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*95*		*25 - 150*	*08/05/21 12:36*	*08/06/21 23:59*	*1*
13C5 PFPeA	*95*		*25 - 150*	*08/05/21 12:36*	*08/06/21 23:59*	*1*
13C2 PFHxA	*104*		*25 - 150*	*08/05/21 12:36*	*08/06/21 23:59*	*1*
13C4 PFHpA	*98*		*25 - 150*	*08/05/21 12:36*	*08/06/21 23:59*	*1*
13C4 PFOA	*93*		*25 - 150*	*08/05/21 12:36*	*08/06/21 23:59*	*1*

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

Lab Sample ID: MB 320-513366/1-A
Matrix: Water
Analysis Batch: 514034

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 513366

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	96		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 PFDA	114		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 PFUnA	107		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 PFDoA	104		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 PFTeDA	96		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 PFHxDA	126		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C3 PFBS	94		25 - 150	08/05/21 12:36	08/06/21 23:59	1
18O2 PFHxS	97		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C4 PFOS	104		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C8 FOSA	102		10 - 150	08/05/21 12:36	08/06/21 23:59	1
d3-NMeFOSAA	82		25 - 150	08/05/21 12:36	08/06/21 23:59	1
d5-NEtFOSAA	96		25 - 150	08/05/21 12:36	08/06/21 23:59	1
d-N-MeFOSA-M	81		10 - 150	08/05/21 12:36	08/06/21 23:59	1
d-N-EtFOSA-M	84		10 - 150	08/05/21 12:36	08/06/21 23:59	1
d7-N-MeFOSE-M	87		10 - 150	08/05/21 12:36	08/06/21 23:59	1
d9-N-EtFOSE-M	91		10 - 150	08/05/21 12:36	08/06/21 23:59	1
M2-4:2 FTS	98		25 - 150	08/05/21 12:36	08/06/21 23:59	1
M2-6:2 FTS	105		25 - 150	08/05/21 12:36	08/06/21 23:59	1
M2-8:2 FTS	108		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C3 HFPO-DA	92		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 10:2 FTS	97		25 - 150	08/05/21 12:36	08/06/21 23:59	1

Lab Sample ID: LCS 320-513366/2-A
Matrix: Water
Analysis Batch: 514193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 513366

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	38.3		ng/L		96	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	41.1		ng/L		103	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	37.6		ng/L		94	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	40.4		ng/L		101	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	40.3		ng/L		101	60 - 135
Perfluorononanoic acid (PFNA)	40.0	42.1		ng/L		105	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	39.0		ng/L		97	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	41.6		ng/L		104	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.0		ng/L		107	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	43.1		ng/L		108	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	42.3		ng/L		106	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	43.0		ng/L		108	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	45.3		ng/L		113	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	38.6		ng/L		109	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	38.4		ng/L		102	60 - 135

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

Lab Sample ID: LCS 320-513366/2-A
Matrix: Water
Analysis Batch: 514193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 513366

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	37.3		ng/L		103	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	36.4		ng/L		96	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	33.5		ng/L		90	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	33.9		ng/L		88	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	32.5		ng/L		84	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	32.5		ng/L		84	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	32.8		ng/L		82	60 - 135
NEtFOSA	40.0	41.4		ng/L		104	60 - 135
NMeFOSA	40.0	45.0		ng/L		113	60 - 135
NMeFOSAA	40.0	50.7		ng/L		127	60 - 135
NEtFOSAA	40.0	38.6		ng/L		96	60 - 135
NMeFOSE	40.0	41.8		ng/L		104	60 - 135
NEtFOSE	40.0	39.6		ng/L		99	60 - 135
4:2 FTS	37.4	40.9		ng/L		110	60 - 135
6:2 FTS	37.9	39.1		ng/L		103	60 - 135
8:2 FTS	38.3	35.5		ng/L		93	60 - 135
10:2 FTS	38.6	38.9		ng/L		101	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	34.4		ng/L		91	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	37.1		ng/L		93	60 - 135
F-53B Major	37.3	35.0		ng/L		94	60 - 135
F-53B Minor	37.7	38.8		ng/L		103	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*92*		*25 - 150*
13C5 PFPeA	*96*		*25 - 150*
13C2 PFHxA	*109*		*25 - 150*
13C4 PFHpA	*103*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*100*		*25 - 150*
13C2 PFDA	*110*		*25 - 150*
13C2 PFUnA	*110*		*25 - 150*
13C2 PFDoA	*103*		*25 - 150*
13C2 PFTeDA	*95*		*25 - 150*
13C2 PFHxDA	*127*		*25 - 150*
13C3 PFBS	*97*		*25 - 150*
18O2 PFHxS	*98*		*25 - 150*
13C4 PFOS	*111*		*25 - 150*
13C8 FOSA	*106*		*10 - 150*
d3-NMeFOSAA	*89*		*25 - 150*
d5-NEtFOSAA	*103*		*25 - 150*
d-N-MeFOSA-M	*79*		*10 - 150*
d-N-EtFOSA-M	*85*		*10 - 150*

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

Lab Sample ID: LCS 320-513366/2-A
Matrix: Water
Analysis Batch: 514193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 513366

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*85*		*10 - 150*
d9-N-EtFOSE-M	*90*		*10 - 150*
M2-4:2 FTS	*94*		*25 - 150*
M2-6:2 FTS	*93*		*25 - 150*
M2-8:2 FTS	*114*		*25 - 150*
13C3 HFPO-DA	*101*		*25 - 150*
13C2 10:2 FTS	*93*		*25 - 150*

Lab Sample ID: LCSD 320-513366/3-A
Matrix: Water
Analysis Batch: 514034

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 513366

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	37.2		ng/L		93	60 - 135	3	30
Perfluoropentanoic acid (PFPeA)			40.0	40.9		ng/L		102	60 - 135	1	30
Perfluorohexanoic acid (PFHxA)			40.0	37.4		ng/L		94	60 - 135	0	30
Perfluoroheptanoic acid (PFHpA)			40.0	39.0		ng/L		97	60 - 135	4	30
Perfluorooctanoic acid (PFOA)			40.0	37.9		ng/L		95	60 - 135	6	30
Perfluorononanoic acid (PFNA)			40.0	44.0		ng/L		110	60 - 135	4	30
Perfluorodecanoic acid (PFDA)			40.0	37.9		ng/L		95	60 - 135	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	38.8		ng/L		97	60 - 135	7	30
Perfluorododecanoic acid (PFDoA)			40.0	43.2		ng/L		108	60 - 135	0	30
Perfluorotridecanoic acid (PFTriA)			40.0	44.3		ng/L		111	60 - 135	3	30
Perfluorotetradecanoic acid (PFTeA)			40.0	40.2		ng/L		100	60 - 135	5	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	39.6		ng/L		99	60 - 135	8	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	45.0		ng/L		112	60 - 135	1	30
Perfluorobutanesulfonic acid (PFBS)			35.4	37.5		ng/L		106	60 - 135	3	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	39.6		ng/L		105	60 - 135	3	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	34.9		ng/L		96	60 - 135	7	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	36.4		ng/L		96	60 - 135	0	30
Perfluorooctanesulfonic acid (PFOS)			37.1	33.8		ng/L		91	60 - 135	1	30
Perfluorononanesulfonic acid (PFNS)			38.4	33.6		ng/L		87	60 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)			38.6	30.5		ng/L		79	60 - 135	6	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	31.6		ng/L		82	60 - 135	3	30
Perfluorooctanesulfonamide (FOSA)			40.0	32.1		ng/L		80	60 - 135	2	30
NEtFOSA			40.0	40.2		ng/L		101	60 - 135	3	30
NMeFOSA			40.0	46.5		ng/L		116	60 - 135	3	30
NMeFOSAA			40.0	47.4		ng/L		118	60 - 135	7	30

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

Lab Sample ID: LCSD 320-513366/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 514034
Prep Batch: 513366

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	39.5		ng/L		99	60 - 135	2	30
NMeFOSE			40.0	44.2		ng/L		111	60 - 135	6	30
NEtFOSE			40.0	39.9		ng/L		100	60 - 135	1	30
4:2 FTS			37.4	39.8		ng/L		107	60 - 135	3	30
6:2 FTS			37.9	36.5		ng/L		96	60 - 135	7	30
8:2 FTS			38.3	37.2		ng/L		97	60 - 135	5	30
10:2 FTS			38.6	44.2		ng/L		115	60 - 135	13	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	38.0		ng/L		101	60 - 135	10	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	38.9		ng/L		97	60 - 135	5	30
F-53B Major			37.3	34.9		ng/L		94	60 - 135	0	30
F-53B Minor			37.7	38.4		ng/L		102	60 - 135	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*89*		*25 - 150*
13C5 PFPeA	*85*		*25 - 150*
13C2 PFHxA	*101*		*25 - 150*
13C4 PFHpA	*93*		*25 - 150*
13C4 PFOA	*94*		*25 - 150*
13C5 PFNA	*91*		*25 - 150*
13C2 PFDA	*100*		*25 - 150*
13C2 PFUnA	*107*		*25 - 150*
13C2 PFDoA	*97*		*25 - 150*
13C2 PFTeDA	*91*		*25 - 150*
13C2 PFHxDA	*116*		*25 - 150*
13C3 PFBS	*93*		*25 - 150*
18O2 PFHxS	*94*		*25 - 150*
13C4 PFOS	*105*		*25 - 150*
13C8 FOSA	*94*		*10 - 150*
d3-NMeFOSAA	*78*		*25 - 150*
d5-NEtFOSAA	*88*		*25 - 150*
d-N-MeFOSA-M	*68*		*10 - 150*
d-N-EtFOSA-M	*78*		*10 - 150*
d7-N-MeFOSE-M	*78*		*10 - 150*
d9-N-EtFOSE-M	*87*		*10 - 150*
M2-4:2 FTS	*89*		*25 - 150*
M2-6:2 FTS	*93*		*25 - 150*
M2-8:2 FTS	*95*		*25 - 150*
13C3 HFPO-DA	*91*		*25 - 150*
13C2 10:2 FTS	*78*		*25 - 150*

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77184-1
Project/Site: Marinette, WI 30015296.00014 WPDES

LCMS

Prep Batch: 513366

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77184-1	V-200-A	Total/NA	Water	3535	
320-77184-2	V-900-A	Total/NA	Water	3535	
MB 320-513366/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-513366/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-513366/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 514034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77184-1	V-200-A	Total/NA	Water	537 (modified)	513366
320-77184-2	V-900-A	Total/NA	Water	537 (modified)	513366
MB 320-513366/1-A	Method Blank	Total/NA	Water	537 (modified)	513366
LCSD 320-513366/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	513366

Analysis Batch: 514193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-513366/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	513366

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-77184-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-77184-1
Date Collected: 08/03/21 11:00
Matrix: Water
Date Received: 08/04/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.8 mL	10.0 mL	513366	08/05/21 12:36	KJW	TAL SAC
Total/NA	Analysis	537 (modified)		1			514034	08/07/21 01:23	JRB	TAL SAC

Client Sample ID: V-900-A
Lab Sample ID: 320-77184-2
Date Collected: 08/03/21 11:05
Matrix: Water
Date Received: 08/04/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.3 mL	10.0 mL	513366	08/05/21 12:36	KJW	TAL SAC
Total/NA	Analysis	537 (modified)		1			514034	08/07/21 02:01	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77184-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-21

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77184-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77184-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-77184-1	V-200-A	Water	08/03/21 11:00	08/04/21 10:00
320-77184-2	V-900-A	Water	08/03/21 11:05	08/04/21 10:00

Eurofins TestAmerica, Sacramento
880 Riverside Park

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Ramminger	Date: 8-3-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time: ☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only: Walk-in Client: Lab Sampling:
Phone	TAT if different from Below: ☐ 2 weeks ☑ 1 week ☐ 2 days ☐ 1 day			Lab Project Number: 50015522
FAX				
Project Name: Marinette, WI				
Site: Marinette, WI				
P O # 30015296.00014 (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 (36 Compounds)	Sample Specific Notes:
V-200-A	8-3-21	11:00	G	W	2	N	N	X	System Influent
V-900-A	↓	11:05	G	W	2	N	N	X	System Effluent

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320-77184 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.
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1600563	Cooler Temp. (°C): Obs'd: 4.1 Corr'd: 1.1	Therm ID No.: 205

Relinquished by: Jacob Ramminger	Company: Barley Excavating	Date/Time: 8-3-21 / 11:30	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: ETA SAC	Date/Time: 8/4/21 SO 8/4/21 10:00
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

8/9/2021

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

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Sacramento Sample Receiving Notes

320-77184 Field Sheet

Job: _____

Tracking # : 7125 4944 9000

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-05 Corr. Factor: (+ / -) N/A °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1600563

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?	☐	☒	☐
Cooler Temperature is acceptable?	☒	☐	☐
Frozen samples show signs of thaw?	☐	☐	☒

Initials: CV Date: 8/4/21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☒	☐	☐
Samples compromised/tampered with?	☐	☒	☐
Sample containers have legible labels?	☒	☐	☐
Sample custody seal?	☐	☐	☒
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided?	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
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: DH Date: 8/4/21

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: DH Date: 8/4/21

eurofins

1600563

Custody Seal

DATE 8-3-21

SIGNATURE

1600563

eurofins

ORIGIN ID:RRLA (906) 863-8373
JOE BARLEY
BARLEY EXCAVATING INC.
1824 10TH AVE.

MONOMINEE, MI 49858
UNITED STATES US

SHIP DATE: 16JUL21
ACTWGT: 25.00 LB MAN
CAD: 525155/CAFE3406

TO

TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY

WEST SACRAMENTO CA 95605-1500

(916) 373-5600 REF:

PO: DEPT:

RRLA:

FedEx Express

FedEx.
TRK# 0221 7125 4944 9000

WED - 04 AUG AA
PRIORITY OVERNIGHT

NH BLUA

95605
CA-US
SMF

3684346 03Aug2021 GRBA 560G1/BAE3/1B23

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc. Job Number: 320-77184-1

Login Number: 77184 **List Source: Eurofins TestAmerica, Sacramento**
List Number: 1
Creator: Oropeza, Salvador

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	1600563
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	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-77462-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

For:
ARCADIS U.S., Inc.
126 North Jefferson Street
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Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
8/17/2021 10:09:54 AM

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Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-77462-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Qualifiers

LCMS

Qualifier	Qualifier Description
^c	CCV Recovery is outside acceptance limits.
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.
¤	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

Job ID: 320-77462-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-77462-1

Comments
No additional comments.

Receipt
The samples were received on 8/11/2021 9:50 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 8.2º C.

Receipt Exceptions
The following sample(s) was received at the laboratory outside the required temperature criteria: Cooler received out of temp at 8.2C. Water in cooler indicates ice melted en route to lab. FedEx tag has delivery by TUE - 10 AUG but was received on 8/11/21. 320-77462-1 and 320-77462-2.

LCMS
Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-516441 recovered above the upper control limit for Perfluorodecanesulfonic acid (PFDS). The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated samples are impacted: 320-77462-1 and CCV 320-516441/1.

Method 537 (modified): The concentration of one or more analytes associated with the following sample exceeded the instrument calibration range: 320-77462-1. These analytes have been qualified; however, the peak(s) did not saturate the instrument detector. The samples were also run diluted to bring the analytes within the calibration range and both results are 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 320-515835. 320-515835 Method: PFC_IDA_WI Matrix: Water

Method 3535: The following samples are yellow prior to extraction: 320-77462-1 and 320-77462-2. 320-515835 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.

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77462-1

Client Sample ID: V-200-A
Date Collected: 08/09/21 10:00
Date Received: 08/11/21 09:50

Lab Sample ID: 320-77462-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**95**		4.5	2.2	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluoropentanoic acid (PFPeA)	**340**		1.8	0.44	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorohexanoic acid (PFHxA)	**290**		1.8	0.52	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluoroheptanoic acid (PFHpA)	**240**		1.8	0.22	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorooctanoic acid (PFOA)	**820**	**E**	1.8	0.76	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorononanoic acid (PFNA)	**100**		1.8	0.24	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorodecanoic acid (PFDA)	**49**		1.8	0.28	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluoroundecanoic acid (PFUnA)	**36**		1.8	0.99	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorododecanoic acid (PFDoA)	**3.0**		1.8	0.49	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorotetradecanoic acid (PFTeA)	<0.65		1.8	0.65	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.80		1.8	0.80	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.84		1.8	0.84	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorobutanesulfonic acid (PFBS)	**6.5**		1.8	0.18	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluoropentanesulfonic acid (PFPeS)	**2.5**		1.8	0.27	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorohexanesulfonic acid (PFHxS)	**54**		1.8	0.51	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluoroheptanesulfonic Acid (PFHpS)	**4.1**		1.8	0.17	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorooctanesulfonic acid (PFOS)	**530**	**E**	1.8	0.48	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorononanesulfonic acid (PFNS)	**0.70**	**J**	1.8	0.33	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorodecanesulfonic acid (PFDS)	<0.29		1.8	0.29	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorododecanesulfonic acid (PFDoS)	<0.87		1.8	0.87	ng/L		08/12/21 18:31	08/13/21 23:54	1
Perfluorooctanesulfonamide (FOSA)	**14**		1.8	0.88	ng/L		08/12/21 18:31	08/13/21 23:54	1
NEtFOSA	<0.78		1.8	0.78	ng/L		08/12/21 18:31	08/13/21 23:54	1
NMeFOSA	<0.39		1.8	0.39	ng/L		08/12/21 18:31	08/13/21 23:54	1
NMeFOSAA	<1.1		4.5	1.1	ng/L		08/12/21 18:31	08/13/21 23:54	1
NEtFOSAA	**5.0**		4.5	1.2	ng/L		08/12/21 18:31	08/13/21 23:54	1
NMeFOSE	<1.3		3.6	1.3	ng/L		08/12/21 18:31	08/13/21 23:54	1
NEtFOSE	<0.76		1.8	0.76	ng/L		08/12/21 18:31	08/13/21 23:54	1
4:2 FTS	**3.2**		1.8	0.22	ng/L		08/12/21 18:31	08/13/21 23:54	1
6:2 FTS	**780**	**E**	4.5	2.2	ng/L		08/12/21 18:31	08/13/21 23:54	1
8:2 FTS	**1000**	**E**	1.8	0.41	ng/L		08/12/21 18:31	08/13/21 23:54	1
10:2 FTS	**90**		1.8	0.60	ng/L		08/12/21 18:31	08/13/21 23:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		08/12/21 18:31	08/13/21 23:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.6	1.3	ng/L		08/12/21 18:31	08/13/21 23:54	1
F-53B Major	<0.22		1.8	0.22	ng/L		08/12/21 18:31	08/13/21 23:54	1
F-53B Minor	<0.29		1.8	0.29	ng/L		08/12/21 18:31	08/13/21 23:54	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*80*		*25 - 150*	*08/12/21 18:31*	*08/13/21 23:54*	*1*
13C5 PFPeA	*93*		*25 - 150*	*08/12/21 18:31*	*08/13/21 23:54*	*1*

Eurofins TestAmerica, Sacramento

Client Sample ID: V-200-A
Date Collected: 08/09/21 10:00
Date Received: 08/11/21 09:50

Lab Sample ID: 320-77462-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	82		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C4 PFHpA	88		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C4 PFOA	92		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C5 PFNA	101		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C2 PFDA	92		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C2 PFUnA	88		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C2 PFDoA	92		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C2 PFTeDA	78		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C2 PFHxDA	76		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C3 PFBS	105		25 - 150	08/12/21 18:31	08/13/21 23:54	1
18O2 PFHxS	100		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C4 PFOS	98		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C8 FOSA	94		10 - 150	08/12/21 18:31	08/13/21 23:54	1
d3-NMeFOSAA	83		25 - 150	08/12/21 18:31	08/13/21 23:54	1
d5-NEtFOSAA	99		25 - 150	08/12/21 18:31	08/13/21 23:54	1
d-N-MeFOSA-M	69		10 - 150	08/12/21 18:31	08/13/21 23:54	1
d-N-EtFOSA-M	62		10 - 150	08/12/21 18:31	08/13/21 23:54	1
d7-N-MeFOSE-M	53		10 - 150	08/12/21 18:31	08/13/21 23:54	1
d9-N-EtFOSE-M	57		10 - 150	08/12/21 18:31	08/13/21 23:54	1
M2-4:2 FTS	100		25 - 150	08/12/21 18:31	08/13/21 23:54	1
M2-6:2 FTS	82		25 - 150	08/12/21 18:31	08/13/21 23:54	1
M2-8:2 FTS	85		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C3 HFPO-DA	96		25 - 150	08/12/21 18:31	08/13/21 23:54	1
13C2 10:2 FTS	79		25 - 150	08/12/21 18:31	08/13/21 23:54	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**99**		45	22	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluoropentanoic acid (PFPeA)	**320**		18	4.4	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorohexanoic acid (PFHxA)	**260**		18	5.2	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluoroheptanoic acid (PFHpA)	**250**		18	2.2	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorooctanoic acid (PFOA)	**1000**		18	7.6	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorononanoic acid (PFNA)	**110**		18	2.4	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorodecanoic acid (PFDA)	**53**		18	2.8	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluoroundecanoic acid (PFUnA)	**33**		18	9.9	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorododecanoic acid (PFDoA)	<4.9		18	4.9	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorotridecanoic acid (PFTriA)	<12		18	12	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorotetradecanoic acid (PFTeA)	<6.5		18	6.5	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<8.0		18	8.0	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluoro-n-octadecanoic acid (PFODA)	<8.4		18	8.4	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorobutanesulfonic acid (PFBS)	**6.9**	**J**	18	1.8	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluoropentanesulfonic acid (PFPeS)	<2.7		18	2.7	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorohexanesulfonic acid (PFHxS)	**52**		18	5.1	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluoroheptanesulfonic Acid (PFHpS)	**3.7**	**J**	18	1.7	ng/L		08/12/21 18:31	08/15/21 00:51	10

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77462-1

Client Sample ID: V-200-A
Date Collected: 08/09/21 10:00
Date Received: 08/11/21 09:50

Lab Sample ID: 320-77462-1
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**550**		18	4.8	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorononanesulfonic acid (PFNS)	<3.3		18	3.3	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorodecanesulfonic acid (PFDS)	<2.9		18	2.9	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorododecanesulfonic acid (PFDoS)	<8.7	^c	18	8.7	ng/L		08/12/21 18:31	08/15/21 00:51	10
Perfluorooctanesulfonamide (FOSA)	**16**	**J**	18	8.8	ng/L		08/12/21 18:31	08/15/21 00:51	10
NEtFOSA	<7.8		18	7.8	ng/L		08/12/21 18:31	08/15/21 00:51	10
NMeFOSA	<3.9		18	3.9	ng/L		08/12/21 18:31	08/15/21 00:51	10
NMeFOSAA	<11		45	11	ng/L		08/12/21 18:31	08/15/21 00:51	10
NEtFOSAA	<12		45	12	ng/L		08/12/21 18:31	08/15/21 00:51	10
NMeFOSE	<13		36	13	ng/L		08/12/21 18:31	08/15/21 00:51	10
NEtFOSE	<7.6		18	7.6	ng/L		08/12/21 18:31	08/15/21 00:51	10
4:2 FTS	<2.2		18	2.2	ng/L		08/12/21 18:31	08/15/21 00:51	10
6:2 FTS	**700**		45	22	ng/L		08/12/21 18:31	08/15/21 00:51	10
8:2 FTS	**980**		18	4.1	ng/L		08/12/21 18:31	08/15/21 00:51	10
10:2 FTS	**80**		18	6.0	ng/L		08/12/21 18:31	08/15/21 00:51	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.6		18	3.6	ng/L		08/12/21 18:31	08/15/21 00:51	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<13		36	13	ng/L		08/12/21 18:31	08/15/21 00:51	10
F-53B Major	<2.2		18	2.2	ng/L		08/12/21 18:31	08/15/21 00:51	10
F-53B Minor	<2.9		18	2.9	ng/L		08/12/21 18:31	08/15/21 00:51	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C5 PFPeA	*82*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C2 PFHxA	*71*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C4 PFHpA	*73*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C4 PFOA	*90*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C5 PFNA	*83*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C2 PFDA	*74*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C2 PFUnA	*71*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C2 PFDoA	*72*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C2 PFTeDA	*68*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C2 PFHxDA	*57*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C3 PFBS	*78*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
18O2 PFHxS	*90*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C4 PFOS	*77*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C8 FOSA	*79*		*10 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
d3-NMeFOSAA	*74*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
d5-NEtFOSAA	*106*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
d-N-MeFOSA-M	*50*		*10 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
d-N-EtFOSA-M	*54*		*10 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
d7-N-MeFOSE-M	*48*		*10 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
d9-N-EtFOSE-M	*46*		*10 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
M2-4:2 FTS	*76*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
M2-6:2 FTS	*115*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
M2-8:2 FTS	*92*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*
13C3 HFPO-DA	*72*		*25 - 150*	*08/12/21 18:31*	*08/15/21 00:51*	*10*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77462-1

Client Sample ID: V-200-A
Date Collected: 08/09/21 10:00
Date Received: 08/11/21 09:50

Lab Sample ID: 320-77462-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 10:2 FTS	70		25 - 150	08/12/21 18:31	08/15/21 00:51	10

Client Sample ID: V-900-A
Date Collected: 08/09/21 10:05
Date Received: 08/11/21 09:50

Lab Sample ID: 320-77462-2
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.1**		4.4	2.1	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluoropentanoic acid (PFPeA)	<0.43		1.8	0.43	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorohexanoic acid (PFHxA)	<0.51		1.8	0.51	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.8	0.22	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorooctanoic acid (PFOA)	<0.75		1.8	0.75	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorodecanoic acid (PFDA)	<0.27		1.8	0.27	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluoroundecanoic acid (PFUnA)	<0.96		1.8	0.96	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorododecanoic acid (PFDoA)	<0.48		1.8	0.48	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.8	1.1	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.8	0.64	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.78		1.8	0.78	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.82		1.8	0.82	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.8	0.26	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorohexanesulfonic acid (PFHxS)	<0.50		1.8	0.50	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.17		1.8	0.17	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorooctanesulfonic acid (PFOS)	<0.47		1.8	0.47	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.8	0.32	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorododecanesulfonic acid (PFDoS)	<0.85		1.8	0.85	ng/L		08/12/21 18:31	08/14/21 00:03	1
Perfluorooctanesulfonamide (FOSA)	<0.86		1.8	0.86	ng/L		08/12/21 18:31	08/14/21 00:03	1
NEtFOSA	<0.76		1.8	0.76	ng/L		08/12/21 18:31	08/14/21 00:03	1
NMeFOSA	<0.38		1.8	0.38	ng/L		08/12/21 18:31	08/14/21 00:03	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		08/12/21 18:31	08/14/21 00:03	1
NEtFOSAA	<1.1		4.4	1.1	ng/L		08/12/21 18:31	08/14/21 00:03	1
NMeFOSE	<1.2		3.5	1.2	ng/L		08/12/21 18:31	08/14/21 00:03	1
NEtFOSE	<0.75		1.8	0.75	ng/L		08/12/21 18:31	08/14/21 00:03	1
4:2 FTS	<0.21		1.8	0.21	ng/L		08/12/21 18:31	08/14/21 00:03	1
6:2 FTS	<2.2		4.4	2.2	ng/L		08/12/21 18:31	08/14/21 00:03	1
8:2 FTS	**0.64**	**J**	1.8	0.40	ng/L		08/12/21 18:31	08/14/21 00:03	1
10:2 FTS	**3.2**		1.8	0.59	ng/L		08/12/21 18:31	08/14/21 00:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		08/12/21 18:31	08/14/21 00:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		08/12/21 18:31	08/14/21 00:03	1
F-53B Major	<0.21		1.8	0.21	ng/L		08/12/21 18:31	08/14/21 00:03	1
F-53B Minor	<0.28		1.8	0.28	ng/L		08/12/21 18:31	08/14/21 00:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*94*		*25 - 150*	*08/12/21 18:31*	*08/14/21 00:03*	*1*
13C5 PFPeA	*82*		*25 - 150*	*08/12/21 18:31*	*08/14/21 00:03*	*1*
13C2 PFHxA	*76*		*25 - 150*	*08/12/21 18:31*	*08/14/21 00:03*	*1*
13C4 PFHpA	*86*		*25 - 150*	*08/12/21 18:31*	*08/14/21 00:03*	*1*
13C4 PFOA	*92*		*25 - 150*	*08/12/21 18:31*	*08/14/21 00:03*	*1*
13C5 PFNA	*87*		*25 - 150*	*08/12/21 18:31*	*08/14/21 00:03*	*1*
13C2 PFDA	*86*		*25 - 150*	*08/12/21 18:31*	*08/14/21 00:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77462-1

Client Sample ID: V-900-A
Date Collected: 08/09/21 10:05
Date Received: 08/11/21 09:50

Lab Sample ID: 320-77462-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	72		25 - 150	08/12/21 18:31	08/14/21 00:03	1
13C2 PFDoA	79		25 - 150	08/12/21 18:31	08/14/21 00:03	1
13C2 PFTeDA	75		25 - 150	08/12/21 18:31	08/14/21 00:03	1
13C2 PFHxDA	74		25 - 150	08/12/21 18:31	08/14/21 00:03	1
13C3 PFBS	95		25 - 150	08/12/21 18:31	08/14/21 00:03	1
18O2 PFHxS	89		25 - 150	08/12/21 18:31	08/14/21 00:03	1
13C4 PFOS	81		25 - 150	08/12/21 18:31	08/14/21 00:03	1
13C8 FOSA	83		10 - 150	08/12/21 18:31	08/14/21 00:03	1
d3-NMeFOSAA	68		25 - 150	08/12/21 18:31	08/14/21 00:03	1
d5-NEtFOSAA	76		25 - 150	08/12/21 18:31	08/14/21 00:03	1
d-N-MeFOSA-M	52		10 - 150	08/12/21 18:31	08/14/21 00:03	1
d-N-EtFOSA-M	55		10 - 150	08/12/21 18:31	08/14/21 00:03	1
d7-N-MeFOSE-M	49		10 - 150	08/12/21 18:31	08/14/21 00:03	1
d9-N-EtFOSE-M	53		10 - 150	08/12/21 18:31	08/14/21 00:03	1
M2-4:2 FTS	61		25 - 150	08/12/21 18:31	08/14/21 00:03	1
M2-6:2 FTS	82		25 - 150	08/12/21 18:31	08/14/21 00:03	1
M2-8:2 FTS	67		25 - 150	08/12/21 18:31	08/14/21 00:03	1
13C3 HFPO-DA	91		25 - 150	08/12/21 18:31	08/14/21 00:03	1
13C2 10:2 FTS	62		25 - 150	08/12/21 18:31	08/14/21 00:03	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77462-1

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)
320-77462-1	V-200-A	80	93	82	88	92	101	92	88
320-77462-1 - DL	V-200-A	88	82	71	73	90	83	74	71
320-77462-2	V-900-A	94	82	76	86	92	87	86	72
LCS 320-515835/2-A	Lab Control Sample	88	79	79	87	92	89	80	80
LCS 320-515835/2-A - RA	Lab Control Sample								
LCSD 320-515835/3-A	Lab Control Sample Dup	94	83	85	91	97	94	88	81
LCSD 320-515835/3-A - RA	Lab Control Sample Dup								
MB 320-515835/1-A	Method Blank	93	82	84	87	98	92	85	84

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
320-77462-1	V-200-A	92	78	76	105	100	98	94	83
320-77462-1 - DL	V-200-A	72	68	57	78	90	77	79	74
320-77462-2	V-900-A	79	75	74	95	89	81	83	68
LCS 320-515835/2-A	Lab Control Sample	86	106	97	86	88	80	81	81
LCS 320-515835/2-A - RA	Lab Control Sample			110					
LCSD 320-515835/3-A	Lab Control Sample Dup	97	110	103	98	97	84	81	86
LCSD 320-515835/3-A - RA	Lab Control Sample Dup						88		
MB 320-515835/1-A	Method Blank	94	103	107	89	90	88	82	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)
320-77462-1	V-200-A	99	69	62	53	57	100	82	85
320-77462-1 - DL	V-200-A	106	50	54	48	46	76	115	92
320-77462-2	V-900-A	76	52	55	49	53	61	82	67
LCS 320-515835/2-A	Lab Control Sample	83	63	63	67	76	81	85	79
LCS 320-515835/2-A - RA	Lab Control Sample								
LCSD 320-515835/3-A	Lab Control Sample Dup	92	68	64	73	72	80	98	90
LCSD 320-515835/3-A - RA	Lab Control Sample Dup								
MB 320-515835/1-A	Method Blank	94	68	67	68	70	78	92	95

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)						
320-77462-1	V-200-A	96	79						
320-77462-1 - DL	V-200-A	72	70						
320-77462-2	V-900-A	91	62						
LCS 320-515835/2-A	Lab Control Sample	89	86						
LCS 320-515835/2-A - RA	Lab Control Sample								
LCSD 320-515835/3-A	Lab Control Sample Dup	88	106						
LCSD 320-515835/3-A - RA	Lab Control Sample Dup								
MB 320-515835/1-A	Method Blank	89	112						

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77462-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-515835/1-A
Matrix: Water
Analysis Batch: 516159

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 515835

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		08/12/21 18:31	08/13/21 21:23	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		08/12/21 18:31	08/13/21 21:23	1
NEtFOSA	<0.87		2.0	0.87	ng/L		08/12/21 18:31	08/13/21 21:23	1
NMeFOSA	<0.43		2.0	0.43	ng/L		08/12/21 18:31	08/13/21 21:23	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		08/12/21 18:31	08/13/21 21:23	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		08/12/21 18:31	08/13/21 21:23	1
NMeFOSE	<1.4		4.0	1.4	ng/L		08/12/21 18:31	08/13/21 21:23	1
NEtFOSE	<0.85		2.0	0.85	ng/L		08/12/21 18:31	08/13/21 21:23	1
4:2 FTS	<0.24		2.0	0.24	ng/L		08/12/21 18:31	08/13/21 21:23	1
6:2 FTS	<2.5		5.0	2.5	ng/L		08/12/21 18:31	08/13/21 21:23	1
8:2 FTS	<0.46		2.0	0.46	ng/L		08/12/21 18:31	08/13/21 21:23	1
10:2 FTS	<0.67		2.0	0.67	ng/L		08/12/21 18:31	08/13/21 21:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		08/12/21 18:31	08/13/21 21:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		08/12/21 18:31	08/13/21 21:23	1
F-53B Major	<0.24		2.0	0.24	ng/L		08/12/21 18:31	08/13/21 21:23	1
F-53B Minor	<0.32		2.0	0.32	ng/L		08/12/21 18:31	08/13/21 21:23	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*93*		*25 - 150*	*08/12/21 18:31*	*08/13/21 21:23*	*1*
13C5 PFPeA	*82*		*25 - 150*	*08/12/21 18:31*	*08/13/21 21:23*	*1*
13C2 PFHxA	*84*		*25 - 150*	*08/12/21 18:31*	*08/13/21 21:23*	*1*
13C4 PFHpA	*87*		*25 - 150*	*08/12/21 18:31*	*08/13/21 21:23*	*1*
13C4 PFOA	*98*		*25 - 150*	*08/12/21 18:31*	*08/13/21 21:23*	*1*

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

Lab Sample ID: MB 320-515835/1-A
Matrix: Water
Analysis Batch: 516159

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 515835

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	92		25 - 150	08/12/21 18:31	08/13/21 21:23	1
13C2 PFDA	85		25 - 150	08/12/21 18:31	08/13/21 21:23	1
13C2 PFUnA	84		25 - 150	08/12/21 18:31	08/13/21 21:23	1
13C2 PFDoA	94		25 - 150	08/12/21 18:31	08/13/21 21:23	1
13C2 PFTeDA	103		25 - 150	08/12/21 18:31	08/13/21 21:23	1
13C2 PFHxDA	107		25 - 150	08/12/21 18:31	08/13/21 21:23	1
13C3 PFBS	89		25 - 150	08/12/21 18:31	08/13/21 21:23	1
18O2 PFHxS	90		25 - 150	08/12/21 18:31	08/13/21 21:23	1
13C4 PFOS	88		25 - 150	08/12/21 18:31	08/13/21 21:23	1
13C8 FOSA	82		10 - 150	08/12/21 18:31	08/13/21 21:23	1
d3-NMeFOSAA	81		25 - 150	08/12/21 18:31	08/13/21 21:23	1
d5-NEtFOSAA	94		25 - 150	08/12/21 18:31	08/13/21 21:23	1
d-N-MeFOSA-M	68		10 - 150	08/12/21 18:31	08/13/21 21:23	1
d-N-EtFOSA-M	67		10 - 150	08/12/21 18:31	08/13/21 21:23	1
d7-N-MeFOSE-M	68		10 - 150	08/12/21 18:31	08/13/21 21:23	1
d9-N-EtFOSE-M	70		10 - 150	08/12/21 18:31	08/13/21 21:23	1
M2-4:2 FTS	78		25 - 150	08/12/21 18:31	08/13/21 21:23	1
M2-6:2 FTS	92		25 - 150	08/12/21 18:31	08/13/21 21:23	1
M2-8:2 FTS	95		25 - 150	08/12/21 18:31	08/13/21 21:23	1
13C3 HFPO-DA	89		25 - 150	08/12/21 18:31	08/13/21 21:23	1
13C2 10:2 FTS	112		25 - 150	08/12/21 18:31	08/13/21 21:23	1

Lab Sample ID: LCS 320-515835/2-A
Matrix: Water
Analysis Batch: 516159

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 515835

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	45.3		ng/L		113	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	43.3		ng/L		108	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	46.0		ng/L		115	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	45.3		ng/L		113	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	47.0		ng/L		118	60 - 135
Perfluorononanoic acid (PFNA)	40.0	42.0		ng/L		105	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	46.1		ng/L		115	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	43.0		ng/L		108	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	44.4		ng/L		111	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	46.6		ng/L		117	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	44.8		ng/L		112	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	48.0		ng/L		120	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	34.7		ng/L		98	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	46.2		ng/L		123	60 - 135
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.2		ng/L		105	60 - 135

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

Lab Sample ID: LCS 320-515835/2-A
Matrix: Water
Analysis Batch: 516159

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 515835

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	48.0		ng/L		126	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	41.1		ng/L		111	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	39.6		ng/L		103	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	43.1		ng/L		112	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	51.0		ng/L		132	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	38.6		ng/L		97	60 - 135
NEtFOSA	40.0	46.8		ng/L		117	60 - 135
NMeFOSA	40.0	42.2		ng/L		105	60 - 135
NMeFOSAA	40.0	38.5		ng/L		96	60 - 135
NEtFOSAA	40.0	43.6		ng/L		109	60 - 135
NMeFOSE	40.0	47.7		ng/L		119	60 - 135
NEtFOSE	40.0	36.5		ng/L		91	60 - 135
4:2 FTS	37.4	40.4		ng/L		108	60 - 135
6:2 FTS	37.9	42.9		ng/L		113	60 - 135
8:2 FTS	38.3	39.2		ng/L		102	60 - 135
10:2 FTS	38.6	44.6		ng/L		116	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	47.2		ng/L		125	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.6		ng/L		104	60 - 135
F-53B Major	37.3	38.1		ng/L		102	60 - 135
F-53B Minor	37.7	43.7		ng/L		116	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*88*		*25 - 150*
13C5 PFPeA	*79*		*25 - 150*
13C2 PFHxA	*79*		*25 - 150*
13C4 PFHpA	*87*		*25 - 150*
13C4 PFOA	*92*		*25 - 150*
13C5 PFNA	*89*		*25 - 150*
13C2 PFDA	*80*		*25 - 150*
13C2 PFUnA	*80*		*25 - 150*
13C2 PFDoA	*86*		*25 - 150*
13C2 PFTeDA	*106*		*25 - 150*
13C2 PFHxDA	*97*		*25 - 150*
13C3 PFBS	*86*		*25 - 150*
18O2 PFHxS	*88*		*25 - 150*
13C4 PFOS	*80*		*25 - 150*
13C8 FOSA	*81*		*10 - 150*
d3-NMeFOSAA	*81*		*25 - 150*
d5-NEtFOSAA	*83*		*25 - 150*
d-N-MeFOSA-M	*63*		*10 - 150*
d-N-EtFOSA-M	*63*		*10 - 150*
d7-N-MeFOSE-M	*67*		*10 - 150*
d9-N-EtFOSE-M	*76*		*10 - 150*

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

Lab Sample ID: LCS 320-515835/2-A
Matrix: Water
Analysis Batch: 516159

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 515835

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
M2-4:2 FTS	*81*		*25 - 150*
M2-6:2 FTS	*85*		*25 - 150*
M2-8:2 FTS	*79*		*25 - 150*
13C3 HFPO-DA	*89*		*25 - 150*
13C2 10:2 FTS	*86*		*25 - 150*

Lab Sample ID: LCSD 320-515835/3-A
Matrix: Water
Analysis Batch: 516159

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 515835

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	7	30
Perfluoropentanoic acid (PFPeA)			40.0	43.5		ng/L		109	60 - 135	0	30
Perfluorohexanoic acid (PFHxA)			40.0	41.1		ng/L		103	60 - 135	11	30
Perfluoroheptanoic acid (PFHpA)			40.0	47.7		ng/L		119	60 - 135	5	30
Perfluorooctanoic acid (PFOA)			40.0	44.3		ng/L		111	60 - 135	6	30
Perfluorononanoic acid (PFNA)			40.0	41.4		ng/L		103	60 - 135	1	30
Perfluorodecanoic acid (PFDA)			40.0	41.8		ng/L		105	60 - 135	10	30
Perfluoroundecanoic acid (PFUnA)			40.0	44.1		ng/L		110	60 - 135	2	30
Perfluorododecanoic acid (PFDoA)			40.0	36.9		ng/L		92	60 - 135	18	30
Perfluorotridecanoic acid (PFTriA)			40.0	45.4		ng/L		113	60 - 135	3	30
Perfluorotetradecanoic acid (PFTeA)			40.0	45.0		ng/L		112	60 - 135	0	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	44.6		ng/L		112	60 - 135	7	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	51.5		ng/L		129	60 - 135	6	30
Perfluorobutanesulfonic acid (PFBS)			35.4	31.9		ng/L		90	60 - 135	8	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	41.2		ng/L		110	60 - 135	11	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	34.9		ng/L		96	60 - 135	9	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	46.5		ng/L		122	60 - 135	3	30
Perfluorooctanesulfonic acid (PFOS)			37.1	42.1		ng/L		113	60 - 135	2	30
Perfluorononanesulfonic acid (PFNS)			38.4	35.3		ng/L		92	60 - 135	12	30
Perfluorodecanesulfonic acid (PFDS)			38.6	41.0		ng/L		106	60 - 135	5	30
Perfluorooctanesulfonamide (FOSA)			40.0	38.6		ng/L		97	60 - 135	0	30
NEtFOSA			40.0	45.7		ng/L		114	60 - 135	2	30
NMeFOSA			40.0	39.5		ng/L		99	60 - 135	7	30
NMeFOSAA			40.0	40.0		ng/L		100	60 - 135	4	30
NEtFOSAA			40.0	39.0		ng/L		98	60 - 135	11	30
NMeFOSE			40.0	42.3		ng/L		106	60 - 135	12	30
NEtFOSE			40.0	39.7		ng/L		99	60 - 135	9	30

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

Lab Sample ID: LCSD 320-515835/3-A
Matrix: Water
Analysis Batch: 516159

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 515835

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4:2 FTS			37.4	43.0		ng/L		115	60 - 135	6	30
6:2 FTS			37.9	37.8		ng/L		100	60 - 135	13	30
8:2 FTS			38.3	33.4		ng/L		87	60 - 135	16	30
10:2 FTS			38.6	41.0		ng/L		106	60 - 135	9	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	47.0		ng/L		125	60 - 135	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	40.5		ng/L		101	60 - 135	3	30
F-53B Major			37.3	38.2		ng/L		102	60 - 135	0	30
F-53B Minor			37.7	42.8		ng/L		114	60 - 135	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*94*		*25 - 150*
13C5 PFPeA	*83*		*25 - 150*
13C2 PFHxA	*85*		*25 - 150*
13C4 PFHpA	*91*		*25 - 150*
13C4 PFOA	*97*		*25 - 150*
13C5 PFNA	*94*		*25 - 150*
13C2 PFDA	*88*		*25 - 150*
13C2 PFUnA	*81*		*25 - 150*
13C2 PFDoA	*97*		*25 - 150*
13C2 PFTeDA	*110*		*25 - 150*
13C2 PFHxDA	*103*		*25 - 150*
13C3 PFBS	*98*		*25 - 150*
18O2 PFHxS	*97*		*25 - 150*
13C4 PFOS	*84*		*25 - 150*
13C8 FOSA	*81*		*10 - 150*
d3-NMeFOSAA	*86*		*25 - 150*
d5-NEtFOSAA	*92*		*25 - 150*
d-N-MeFOSA-M	*68*		*10 - 150*
d-N-EtFOSA-M	*64*		*10 - 150*
d7-N-MeFOSE-M	*73*		*10 - 150*
d9-N-EtFOSE-M	*72*		*10 - 150*
M2-4:2 FTS	*80*		*25 - 150*
M2-6:2 FTS	*98*		*25 - 150*
M2-8:2 FTS	*90*		*25 - 150*
13C3 HFPO-DA	*88*		*25 - 150*
13C2 10:2 FTS	*106*		*25 - 150*

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

Lab Sample ID: LCS 320-515835/2-A
Matrix: Water
Analysis Batch: 516441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 515835

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluoro-n-octadecanoic acid (PFODA) - RA			40.0	47.3		ng/L		118	60 - 135		

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxDA - RA	110		25 - 150

Lab Sample ID: LCSD 320-515835/3-A
Matrix: Water
Analysis Batch: 516441

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 515835

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorododecanesulfonic acid (PFDoS) - RA			38.7	48.5		ng/L		125	60 - 135	16	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4 PFOS - RA	88		25 - 150

Client: ARCADIS U.S., Inc.
Job ID: 320-77462-1
Project/Site: Marinette, WI 30015296.00014 WPDES

LCMS

Prep Batch: 515835

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77462-1	V-200-A	Total/NA	Water	3535	
320-77462-1 - DL	V-200-A	Total/NA	Water	3535	
320-77462-2	V-900-A	Total/NA	Water	3535	
MB 320-515835/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-515835/2-A - RA	Lab Control Sample	Total/NA	Water	3535	
LCS 320-515835/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-515835/3-A - RA	Lab Control Sample Dup	Total/NA	Water	3535	
LCSD 320-515835/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 516159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77462-1	V-200-A	Total/NA	Water	537 (modified)	515835
320-77462-2	V-900-A	Total/NA	Water	537 (modified)	515835
MB 320-515835/1-A	Method Blank	Total/NA	Water	537 (modified)	515835
LCS 320-515835/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	515835
LCSD 320-515835/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	515835

Analysis Batch: 516441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77462-1 - DL	V-200-A	Total/NA	Water	537 (modified)	515835
LCS 320-515835/2-A - RA	Lab Control Sample	Total/NA	Water	537 (modified)	515835
LCSD 320-515835/3-A - RA	Lab Control Sample Dup	Total/NA	Water	537 (modified)	515835

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-77462-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-77462-1
Date Collected: 08/09/21 10:00
Matrix: Water
Date Received: 08/11/21 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.9 mL	10.0 mL	515835	08/12/21 18:31	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			516159	08/13/21 23:54	JRB	TAL SAC
Total/NA	Prep	3535	DL		278.9 mL	10.0 mL	515835	08/12/21 18:31	PV	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			516441	08/15/21 00:51	K1S	TAL SAC

Client Sample ID: V-900-A
Lab Sample ID: 320-77462-2
Date Collected: 08/09/21 10:05
Matrix: Water
Date Received: 08/11/21 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			285.2 mL	10.0 mL	515835	08/12/21 18:31	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			516159	08/14/21 00:03	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77462-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-21

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77462-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77462-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-77462-1	V-200-A	Water	08/09/21 10:00	08/11/21 09:50
320-77462-2	V-900-A	Water	08/09/21 10:05	08/11/21 09:50

Eurofins Test[illegible]ica, Sacramento
880 Riverside Park[illegible]

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Ref:
Dep:
Date: 23Jul21
Wgt: 25.00 LBS
DV:
0.00
SHIPPING: 0.00
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 0.00

Svcs: PRIORITY OVERNIGHT Master 7125 4944 9455
TRCK: 7125 4944 9466

eurofins Environment Testing TestAmerica

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

Regulatory

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Ramminger	Date: 8-9-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time: ☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone	TAT if different from Below: ☐ 2 weeks ☑ 1 week ☐ 2 days ☐ 1 day			Walk-in Client:
FAX				Lab Sampling:
Project Name: Marinette, WI				Lab Project Number: 50015522
Site: Marinette, WI				
P O # 30015296.00014 (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 (36 Compounds)	Sample Specific Notes:
V-200-A	8-9-21	10:00	G	W	2	N	N	X	System Influent
V-900-A	↓	10:05	G	W	2	N	N	X	System Effluent

320-77462 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.
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1600570	Cooler Temp. (°C): Obs'd: 5.2	Corr'd: 5.2	Therm ID No.: 107
Relinquished by: Jacob Ramminger	Company: Barley Excavating	Date/Time: 8-9-21/10:25	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: EMSLC	Date/Time: 8/11/21 950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

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Sacramento
Sample Receiving Notes

320-77462 Field Sheet

Tracking # : 3125 4944 9466

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: 607 Corr. Factor: (+ / -) N/A °C

Ice SS 8/11/21 Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 16005270

Cooler ID: —

Temp Observed: 8.2 °C Corrected: 8.2 °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: 8/11/21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
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: 8/11/21

Notes:
- Temp blank 8.6°C
Cooler out of temp at 8.2°C
Fedex tag has delivery
Tue - 10 AUG received on
8/11/21. Only water in cooler

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☑	☐	☐
Samples received within hold time?	☑	☐	☐
NCM Filed?	☐	☐	☑ DV 8/11/21
Log Release checked in TALS?	☑	☐	☐

Initials: DV Date: 8/11/21


1600570
Custody Seal
8-9
DATE
SIGNATURE
eurofins
Environment Testing
TestAmerica
ORIGIN ID:RRLA (906) 863-9373
JOE BARLEY
BARLEY EXCAVATING INC.
1824 10TH AVE.
MONOMINEE, MI 49858
UNITED STATES US
SHIP DATE: 23JUL21
ACTWGT: 25.00 LB MAN
CAD: 525155/CAFE3
362
TO
TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY
WEST SACRAMENTO CA 95605-1500
(916) 373-5600
REF:
INV:
PO:
DEPT:
RMA:
FedEx Express
FedEx
TRK#
0221 7125 4944 9466
PRIORITY OVERNIGHT
NH BLUA
95605
CA-US
SMF
1600570
eurofins
Environment Testing
TestAmerica

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc. Job Number: 320-77462-1

Login Number: 77462 **List Source: Eurofins TestAmerica, Sacramento**
List Number: 1
Creator: Oropeza, Salvador

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	1600570
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.	False	Water present in cooler; indicates evidence of melted ice.
Cooler Temperature is acceptable.	False	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-77781-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
8/24/2021 2:49:09 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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.
¤	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

Job ID: 320-77781-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-77781-1

Comments
No additional comments.

Receipt
The samples were received on 8/19/2021 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 1.3º 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 320-518052. 320-518052 Method: PFC_IDA_WI Matrix: Water

Method 3535: The following sample is yellow prior to extraction: 320-77781-1. 320-518052 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.

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77781-1

Client Sample ID: V-200-A
Date Collected: 08/18/21 10:00
Date Received: 08/19/21 09:45

Lab Sample ID: 320-77781-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**24**		4.5	2.1	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoropentanoic acid (PFPeA)	**14**		1.8	0.44	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorohexanoic acid (PFHxA)	**2.5**		1.8	0.52	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoroheptanoic acid (PFHpA)	**0.37**	**J**	1.8	0.22	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorooctanoic acid (PFOA)	**2.9**		1.8	0.76	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoroundecanoic acid (PFUnA)	<0.98		1.8	0.98	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorotetradecanoic acid (PFTeA)	<0.65		1.8	0.65	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.79		1.8	0.79	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.84		1.8	0.84	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorohexanesulfonic acid (PFHxS)	<0.51		1.8	0.51	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.17		1.8	0.17	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorooctanesulfonic acid (PFOS)	<0.48		1.8	0.48	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorododecanesulfonic acid (PFDoS)	<0.86		1.8	0.86	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorooctanesulfonamide (FOSA)	<0.87		1.8	0.87	ng/L		08/19/21 19:22	08/20/21 15:22	1
NEtFOSA	<0.77		1.8	0.77	ng/L		08/19/21 19:22	08/20/21 15:22	1
NMeFOSA	<0.38		1.8	0.38	ng/L		08/19/21 19:22	08/20/21 15:22	1
NMeFOSAA	<1.1		4.5	1.1	ng/L		08/19/21 19:22	08/20/21 15:22	1
NEtFOSAA	<1.2		4.5	1.2	ng/L		08/19/21 19:22	08/20/21 15:22	1
NMeFOSE	<1.2		3.6	1.2	ng/L		08/19/21 19:22	08/20/21 15:22	1
NEtFOSE	<0.76		1.8	0.76	ng/L		08/19/21 19:22	08/20/21 15:22	1
4:2 FTS	<0.21		1.8	0.21	ng/L		08/19/21 19:22	08/20/21 15:22	1
6:2 FTS	<2.2		4.5	2.2	ng/L		08/19/21 19:22	08/20/21 15:22	1
8:2 FTS	<0.41		1.8	0.41	ng/L		08/19/21 19:22	08/20/21 15:22	1
10:2 FTS	<0.60		1.8	0.60	ng/L		08/19/21 19:22	08/20/21 15:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		08/19/21 19:22	08/20/21 15:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.6	1.3	ng/L		08/19/21 19:22	08/20/21 15:22	1
F-53B Major	<0.21		1.8	0.21	ng/L		08/19/21 19:22	08/20/21 15:22	1
F-53B Minor	<0.28		1.8	0.28	ng/L		08/19/21 19:22	08/20/21 15:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*92*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C5 PFPeA	*101*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C2 PFHxA	*98*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C4 PFHpA	*110*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C4 PFOA	*105*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C5 PFNA	*81*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C2 PFDA	*110*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77781-1

Client Sample ID: V-200-A
Date Collected: 08/18/21 10:00
Date Received: 08/19/21 09:45

Lab Sample ID: 320-77781-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	111		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C2 PFDoA	96		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C2 PFTeDA	107		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C2 PFHxDA	115		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C3 PFBS	113		25 - 150	08/19/21 19:22	08/20/21 15:22	1
18O2 PFHxS	100		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C4 PFOS	99		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C8 FOSA	107		10 - 150	08/19/21 19:22	08/20/21 15:22	1
d3-NMeFOSAA	84		25 - 150	08/19/21 19:22	08/20/21 15:22	1
d5-NEtFOSAA	91		25 - 150	08/19/21 19:22	08/20/21 15:22	1
d-N-MeFOSA-M	90		10 - 150	08/19/21 19:22	08/20/21 15:22	1
d-N-EtFOSA-M	87		10 - 150	08/19/21 19:22	08/20/21 15:22	1
d7-N-MeFOSE-M	97		10 - 150	08/19/21 19:22	08/20/21 15:22	1
d9-N-EtFOSE-M	100		10 - 150	08/19/21 19:22	08/20/21 15:22	1
M2-4:2 FTS	112		25 - 150	08/19/21 19:22	08/20/21 15:22	1
M2-6:2 FTS	114		25 - 150	08/19/21 19:22	08/20/21 15:22	1
M2-8:2 FTS	123		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C3 HFPO-DA	102		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C2 10:2 FTS	117		25 - 150	08/19/21 19:22	08/20/21 15:22	1

Client Sample ID: V-900-A
Lab Sample ID: 320-77781-2
Date Collected: 08/18/21 10:05
Matrix: Water
Date Received: 08/19/21 09:45

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.6**		4.3	2.1	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoropentanoic acid (PFPeA)	**9.7**		1.7	0.42	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorohexanoic acid (PFHxA)	**6.5**		1.7	0.50	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoroheptanoic acid (PFHpA)	**5.3**		1.7	0.21	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorooctanoic acid (PFOA)	**20**		1.7	0.73	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorononanoic acid (PFNA)	**3.4**		1.7	0.23	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorodecanoic acid (PFDA)	**1.3**	**J**	1.7	0.27	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoroundecanoic acid (PFUnA)	**1.4**	**J**	1.7	0.95	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorododecanoic acid (PFDoA)	<0.47		1.7	0.47	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorotetradecanoic acid (PFTeA)	<0.63		1.7	0.63	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.77		1.7	0.77	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.81		1.7	0.81	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.7	0.26	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorohexanesulfonic acid (PFHxS)	**1.6**	**J**	1.7	0.49	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.16		1.7	0.16	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorooctanesulfonic acid (PFOS)	**13**		1.7	0.46	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.7	0.28	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorododecanesulfonic acid (PFDoS)	<0.83		1.7	0.83	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorooctanesulfonamide (FOSA)	<0.84		1.7	0.84	ng/L		08/19/21 19:22	08/20/21 15:59	1
NEtFOSA	<0.75		1.7	0.75	ng/L		08/19/21 19:22	08/20/21 15:59	1
NMeFOSA	<0.37		1.7	0.37	ng/L		08/19/21 19:22	08/20/21 15:59	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		08/19/21 19:22	08/20/21 15:59	1
NEtFOSAA	<1.1		4.3	1.1	ng/L		08/19/21 19:22	08/20/21 15:59	1
NMeFOSE	<1.2		3.4	1.2	ng/L		08/19/21 19:22	08/20/21 15:59	1
NEtFOSE	<0.73		1.7	0.73	ng/L		08/19/21 19:22	08/20/21 15:59	1
4:2 FTS	<0.21		1.7	0.21	ng/L		08/19/21 19:22	08/20/21 15:59	1
6:2 FTS	**17**		4.3	2.1	ng/L		08/19/21 19:22	08/20/21 15:59	1
8:2 FTS	**30**		1.7	0.40	ng/L		08/19/21 19:22	08/20/21 15:59	1
10:2 FTS	**4.8**		1.7	0.58	ng/L		08/19/21 19:22	08/20/21 15:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		08/19/21 19:22	08/20/21 15:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		08/19/21 19:22	08/20/21 15:59	1
F-53B Major	<0.21		1.7	0.21	ng/L		08/19/21 19:22	08/20/21 15:59	1
F-53B Minor	<0.28		1.7	0.28	ng/L		08/19/21 19:22	08/20/21 15:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*87*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:59*	*1*
13C5 PFPeA	*85*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:59*	*1*
13C2 PFHxA	*91*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:59*	*1*
13C4 PFHpA	*92*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:59*	*1*
13C4 PFOA	*93*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77781-1

Client Sample ID: V-900-A
Date Collected: 08/18/21 10:05
Date Received: 08/19/21 09:45

Lab Sample ID: 320-77781-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	73		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 PFDA	99		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 PFUnA	96		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 PFDoA	90		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 PFTeDA	96		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 PFHxDA	106		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C3 PFBS	105		25 - 150	08/19/21 19:22	08/20/21 15:59	1
18O2 PFHxS	90		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C4 PFOS	90		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C8 FOSA	94		10 - 150	08/19/21 19:22	08/20/21 15:59	1
d3-NMeFOSAA	76		25 - 150	08/19/21 19:22	08/20/21 15:59	1
d5-NEtFOSAA	81		25 - 150	08/19/21 19:22	08/20/21 15:59	1
d-N-MeFOSA-M	81		10 - 150	08/19/21 19:22	08/20/21 15:59	1
d-N-EtFOSA-M	79		10 - 150	08/19/21 19:22	08/20/21 15:59	1
d7-N-MeFOSE-M	79		10 - 150	08/19/21 19:22	08/20/21 15:59	1
d9-N-EtFOSE-M	96		10 - 150	08/19/21 19:22	08/20/21 15:59	1
M2-4:2 FTS	89		25 - 150	08/19/21 19:22	08/20/21 15:59	1
M2-6:2 FTS	107		25 - 150	08/19/21 19:22	08/20/21 15:59	1
M2-8:2 FTS	104		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C3 HFPO-DA	93		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 10:2 FTS	107		25 - 150	08/19/21 19:22	08/20/21 15:59	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77781-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
320-77781-1	V-200-A	92	101	98	110	105	81	110	111
320-77781-2	V-900-A	87	85	91	92	93	73	99	96
LCS 320-518052/2-A	Lab Control Sample	96	97	119	105	98	73	94	94
LCSD 320-518052/3-A	Lab Control Sample Dup	97	95	126	110	100	80	103	100
MB 320-518052/1-A	Method Blank	88	88	91	97	96	78	101	103

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	PFTDA	PFHxDA	C3PFBS	PFHxS	PFOS	PFOSA	d3NMFOS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(10-150)	(25-150)
320-77781-1	V-200-A	96	107	115	113	100	99	107	84
320-77781-2	V-900-A	90	96	106	105	90	90	94	76
LCS 320-518052/2-A	Lab Control Sample	84	92	70	126	96	86	86	95
LCSD 320-518052/3-A	Lab Control Sample Dup	98	84	72	124	98	92	93	107
MB 320-518052/1-A	Method Blank	107	112	125	107	92	91	96	84

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		d5NEFOS	dMeFOSA	dEtFOSA	NMFM	NEFM	M242FTS	M262FTS	M282FTS
Lab Sample ID	Client Sample ID	(25-150)	(10-150)	(10-150)	(10-150)	(10-150)	(25-150)	(25-150)	(25-150)
320-77781-1	V-200-A	91	90	87	97	100	112	114	123
320-77781-2	V-900-A	81	81	79	79	96	89	107	104
LCS 320-518052/2-A	Lab Control Sample	95	80	82	78	71	87	80	92
LCSD 320-518052/3-A	Lab Control Sample Dup	108	82	88	86	80	86	78	81
MB 320-518052/1-A	Method Blank	93	83	85	97	103	96	113	108

		Percent Isotope Dilution Recovery (Acceptance Limits)	
		HFPODA	M102FTS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)
320-77781-1	V-200-A	102	117
320-77781-2	V-900-A	93	107
LCS 320-518052/2-A	Lab Control Sample	111	92
LCSD 320-518052/3-A	Lab Control Sample Dup	108	107
MB 320-518052/1-A	Method Blank	94	120

Surrogate Legend

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

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-518052/1-A
Matrix: Water
Analysis Batch: 518455

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 518052

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		08/19/21 19:22	08/20/21 14:00	1
NEtFOSA	<0.87		2.0	0.87	ng/L		08/19/21 19:22	08/20/21 14:00	1
NMeFOSA	<0.43		2.0	0.43	ng/L		08/19/21 19:22	08/20/21 14:00	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		08/19/21 19:22	08/20/21 14:00	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		08/19/21 19:22	08/20/21 14:00	1
NMeFOSE	<1.4		4.0	1.4	ng/L		08/19/21 19:22	08/20/21 14:00	1
NEtFOSE	<0.85		2.0	0.85	ng/L		08/19/21 19:22	08/20/21 14:00	1
4:2 FTS	<0.24		2.0	0.24	ng/L		08/19/21 19:22	08/20/21 14:00	1
6:2 FTS	<2.5		5.0	2.5	ng/L		08/19/21 19:22	08/20/21 14:00	1
8:2 FTS	<0.46		2.0	0.46	ng/L		08/19/21 19:22	08/20/21 14:00	1
10:2 FTS	<0.67		2.0	0.67	ng/L		08/19/21 19:22	08/20/21 14:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		08/19/21 19:22	08/20/21 14:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		08/19/21 19:22	08/20/21 14:00	1
F-53B Major	<0.24		2.0	0.24	ng/L		08/19/21 19:22	08/20/21 14:00	1
F-53B Minor	<0.32		2.0	0.32	ng/L		08/19/21 19:22	08/20/21 14:00	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*25 - 150*	*08/19/21 19:22*	*08/20/21 14:00*	*1*
13C5 PFPeA	*88*		*25 - 150*	*08/19/21 19:22*	*08/20/21 14:00*	*1*
13C2 PFHxA	*91*		*25 - 150*	*08/19/21 19:22*	*08/20/21 14:00*	*1*
13C4 PFHpA	*97*		*25 - 150*	*08/19/21 19:22*	*08/20/21 14:00*	*1*
13C4 PFOA	*96*		*25 - 150*	*08/19/21 19:22*	*08/20/21 14:00*	*1*

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

Lab Sample ID: MB 320-518052/1-A
Matrix: Water
Analysis Batch: 518455

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 518052

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	78		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 PFDA	101		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 PFUnA	103		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 PFDoA	107		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 PFTeDA	112		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 PFHxDA	125		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C3 PFBS	107		25 - 150	08/19/21 19:22	08/20/21 14:00	1
18O2 PFHxS	92		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C4 PFOS	91		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C8 FOSA	96		10 - 150	08/19/21 19:22	08/20/21 14:00	1
d3-NMeFOSAA	84		25 - 150	08/19/21 19:22	08/20/21 14:00	1
d5-NEtFOSAA	93		25 - 150	08/19/21 19:22	08/20/21 14:00	1
d-N-MeFOSA-M	83		10 - 150	08/19/21 19:22	08/20/21 14:00	1
d-N-EtFOSA-M	85		10 - 150	08/19/21 19:22	08/20/21 14:00	1
d7-N-MeFOSE-M	97		10 - 150	08/19/21 19:22	08/20/21 14:00	1
d9-N-EtFOSE-M	103		10 - 150	08/19/21 19:22	08/20/21 14:00	1
M2-4:2 FTS	96		25 - 150	08/19/21 19:22	08/20/21 14:00	1
M2-6:2 FTS	113		25 - 150	08/19/21 19:22	08/20/21 14:00	1
M2-8:2 FTS	108		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C3 HFPO-DA	94		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 10:2 FTS	120		25 - 150	08/19/21 19:22	08/20/21 14:00	1

Lab Sample ID: LCS 320-518052/2-A
Matrix: Water
Analysis Batch: 518575

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 518052

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	43.2		ng/L		108	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	41.9		ng/L		105	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	39.3		ng/L		98	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	41.9		ng/L		105	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	39.1		ng/L		98	60 - 135
Perfluorononanoic acid (PFNA)	40.0	52.7		ng/L		132	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	38.7		ng/L		97	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	40.7		ng/L		102	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.7		ng/L		109	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	44.0		ng/L		110	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	43.0		ng/L		107	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	44.1		ng/L		110	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	40.4		ng/L		101	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	32.0		ng/L		91	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	30.7		ng/L		82	60 - 135

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

Lab Sample ID: LCS 320-518052/2-A
Matrix: Water
Analysis Batch: 518575

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 518052

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.5		ng/L		100	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	46.2		ng/L		121	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	40.4		ng/L		109	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	36.8		ng/L		96	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	42.7		ng/L		111	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	42.6		ng/L		110	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	40.1		ng/L		100	60 - 135
NEtFOSA	40.0	40.0		ng/L		100	60 - 135
NMeFOSA	40.0	36.5		ng/L		91	60 - 135
NMeFOSAA	40.0	41.7		ng/L		104	60 - 135
NEtFOSAA	40.0	43.3		ng/L		108	60 - 135
NMeFOSE	40.0	39.1		ng/L		98	60 - 135
NEtFOSE	40.0	44.7		ng/L		112	60 - 135
4:2 FTS	37.4	38.5		ng/L		103	60 - 135
6:2 FTS	37.9	31.4		ng/L		83	60 - 135
8:2 FTS	38.3	38.6		ng/L		101	60 - 135
10:2 FTS	38.6	39.7		ng/L		103	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	48.2		ng/L		128	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.2		ng/L		95	60 - 135
F-53B Major	37.3	39.5		ng/L		106	60 - 135
F-53B Minor	37.7	43.4		ng/L		115	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*97*		*25 - 150*
13C2 PFHxA	*119*		*25 - 150*
13C4 PFHpA	*105*		*25 - 150*
13C4 PFOA	*98*		*25 - 150*
13C5 PFNA	*73*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
13C2 PFDoA	*84*		*25 - 150*
13C2 PFTeDA	*92*		*25 - 150*
13C2 PFHxDA	*70*		*25 - 150*
13C3 PFBS	*126*		*25 - 150*
18O2 PFHxS	*96*		*25 - 150*
13C4 PFOS	*86*		*25 - 150*
13C8 FOSA	*86*		*10 - 150*
d3-NMeFOSAA	*95*		*25 - 150*
d5-NEtFOSAA	*95*		*25 - 150*
d-N-MeFOSA-M	*80*		*10 - 150*
d-N-EtFOSA-M	*82*		*10 - 150*

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

Lab Sample ID: LCS 320-518052/2-A
Matrix: Water
Analysis Batch: 518575

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 518052

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*78*		*10 - 150*
d9-N-EtFOSE-M	*71*		*10 - 150*
M2-4:2 FTS	*87*		*25 - 150*
M2-6:2 FTS	*80*		*25 - 150*
M2-8:2 FTS	*92*		*25 - 150*
13C3 HFPO-DA	*111*		*25 - 150*
13C2 10:2 FTS	*92*		*25 - 150*

Lab Sample ID: LCSD 320-518052/3-A
Matrix: Water
Analysis Batch: 518575

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 518052

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	47.7		ng/L		119	60 - 135	10	30
Perfluoropentanoic acid (PFPeA)			40.0	43.6		ng/L		109	60 - 135	4	30
Perfluorohexanoic acid (PFHxA)			40.0	40.6		ng/L		102	60 - 135	3	30
Perfluoroheptanoic acid (PFHpA)			40.0	43.0		ng/L		107	60 - 135	2	30
Perfluorooctanoic acid (PFOA)			40.0	41.0		ng/L		103	60 - 135	5	30
Perfluorononanoic acid (PFNA)			40.0	50.8		ng/L		127	60 - 135	4	30
Perfluorodecanoic acid (PFDA)			40.0	37.6		ng/L		94	60 - 135	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	42.5		ng/L		106	60 - 135	4	30
Perfluorododecanoic acid (PFDoA)			40.0	39.3		ng/L		98	60 - 135	11	30
Perfluorotridecanoic acid (PFTriA)			40.0	39.2		ng/L		98	60 - 135	11	30
Perfluorotetradecanoic acid (PFTeA)			40.0	49.8		ng/L		124	60 - 135	15	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	48.8		ng/L		122	60 - 135	10	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	45.5		ng/L		114	60 - 135	12	30
Perfluorobutanesulfonic acid (PFBS)			35.4	32.6		ng/L		92	60 - 135	2	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	34.6		ng/L		92	60 - 135	12	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	39.1		ng/L		107	60 - 135	7	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	46.5		ng/L		122	60 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)			37.1	39.6		ng/L		107	60 - 135	2	30
Perfluorononanesulfonic acid (PFNS)			38.4	37.9		ng/L		99	60 - 135	3	30
Perfluorodecanesulfonic acid (PFDS)			38.6	45.5		ng/L		118	60 - 135	6	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	44.6		ng/L		115	60 - 135	5	30
Perfluorooctanesulfonamide (FOSA)			40.0	39.6		ng/L		99	60 - 135	1	30
NEtFOSA			40.0	40.4		ng/L		101	60 - 135	1	30
NMeFOSA			40.0	36.6		ng/L		91	60 - 135	0	30
NMeFOSAA			40.0	40.2		ng/L		100	60 - 135	4	30

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

Lab Sample ID: LCSD 320-518052/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 518575
Prep Batch: 518052

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	37.5		ng/L		94	60 - 135	14	30
NMeFOSE			40.0	42.8		ng/L		107	60 - 135	9	30
NEtFOSE			40.0	43.2		ng/L		108	60 - 135	4	30
4:2 FTS			37.4	42.6		ng/L		114	60 - 135	10	30
6:2 FTS			37.9	36.9		ng/L		97	60 - 135	16	30
8:2 FTS			38.3	40.0		ng/L		104	60 - 135	3	30
10:2 FTS			38.6	34.3		ng/L		89	60 - 135	15	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	47.8		ng/L		127	60 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	41.6		ng/L		104	60 - 135	9	30
F-53B Major			37.3	41.0		ng/L		110	60 - 135	4	30
F-53B Minor			37.7	45.3		ng/L		120	60 - 135	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*97*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*126*		*25 - 150*
13C4 PFHpA	*110*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*80*		*25 - 150*
13C2 PFDA	*103*		*25 - 150*
13C2 PFUnA	*100*		*25 - 150*
13C2 PFDoA	*98*		*25 - 150*
13C2 PFTeDA	*84*		*25 - 150*
13C2 PFHxDA	*72*		*25 - 150*
13C3 PFBS	*124*		*25 - 150*
18O2 PFHxS	*98*		*25 - 150*
13C4 PFOS	*92*		*25 - 150*
13C8 FOSA	*93*		*10 - 150*
d3-NMeFOSAA	*107*		*25 - 150*
d5-NEtFOSAA	*108*		*25 - 150*
d-N-MeFOSA-M	*82*		*10 - 150*
d-N-EtFOSA-M	*88*		*10 - 150*
d7-N-MeFOSE-M	*86*		*10 - 150*
d9-N-EtFOSE-M	*80*		*10 - 150*
M2-4:2 FTS	*86*		*25 - 150*
M2-6:2 FTS	*78*		*25 - 150*
M2-8:2 FTS	*81*		*25 - 150*
13C3 HFPO-DA	*108*		*25 - 150*
13C2 10:2 FTS	*107*		*25 - 150*

LCMS

Prep Batch: 518052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77781-1	V-200-A	Total/NA	Water	3535	
320-77781-2	V-900-A	Total/NA	Water	3535	
MB 320-518052/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-518052/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-518052/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 518455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77781-1	V-200-A	Total/NA	Water	537 (modified)	518052
320-77781-2	V-900-A	Total/NA	Water	537 (modified)	518052
MB 320-518052/1-A	Method Blank	Total/NA	Water	537 (modified)	518052

Analysis Batch: 518575

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-518052/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	518052
LCSD 320-518052/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	518052

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-77781-1
Date Collected: 08/18/21 10:00
Matrix: Water
Date Received: 08/19/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			280.8 mL	10.0 mL	518052	08/19/21 19:22	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			518455	08/20/21 15:22	S1M	TAL SAC

Client Sample ID: V-900-A
Lab Sample ID: 320-77781-2
Date Collected: 08/18/21 10:05
Matrix: Water
Date Received: 08/19/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			290.7 mL	10.0 mL	518052	08/19/21 19:22	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			518455	08/20/21 15:59	S1M	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

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

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-77781-1	V-200-A	Water	08/18/21 10:00	08/19/21 09:45
320-77781-2	V-900-A	Water	08/18/21 10:05	08/19/21 09:45

Eurofins TestAmerica, Sacramento
880 Riverside Park

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

eurofins

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Ramingor	Date: 8-18-21	COC No: 1
Arcadis U.S., Inc.	Tel/Fax: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Email: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time: ☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only: Walk-in Client: Lab Sampling:
Phone	TAT if different from Below: ☐ 2 weeks ☑ 1 week ☐ 2 days ☐ 1 day			Lab Project Number: 50015522
FAX				
Project Name: Marinette, WI				
Site: Marinette, WI				
P O # 30015296.00014 (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 (36 Compounds)	Sample Specific Notes:
V-200-A	8-18-21	10:00	G	W	2	N	N	X	System Influent
V-900-A	↓	10:05	G	W	2	N	N	X	System Effluent

320-77781 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 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

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

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1445071	Cooler Temp. (°C): Obs'd: 1.3 Corr'd: 1.5	Therm ID No.: 2-05

Relinquished by: Jacob Ramingor	Company: Barley Excavating	Date/Time: 8-18-21/10:30	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: EASAC	Date/Time: 8-18-21/09:45
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

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Sacramento
Sample Receiving Notes

320-77781 Field Sheet

Job: _____

Tracking # : 5117 0014 0511

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: C-05 Corr. Factor: (+ / -) N/A °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1445071

Cooler ID: —

Temp Observed: 1.3 °C Corrected: 1.3 °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: NC Date: 8-18-21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☒	☐	☐
Samples compromised/tampered with?	☐	☒	☐
Sample containers have legible labels?	☒	☐	☐
Sample custody seal?	☐	☐	☒
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided?	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
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: 8/19/21

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: 8/19/21


ORIGIN ID:PHDA (906) 863-9373
JOE BARLEY
BARLEY EXCAVATING INC
1824 10TH AVE
MENOMINEE, MI 49858
UNITED STATES US
SHIP DATE: 26JUL21
ACTWGT: 5.75 LB
CAD: 0574282/CAFE3409
10
EUROFINS TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY
WEST SACRAMENTO CA 956051500
916) 373-5600
REF:
DEPT:
FedEx Express
5117 0014 0511
THU - 19 AUG AA
PRIORITY OVERNIGHT
NH BLUA
95605
CA-US
SMF
4008576 18Aug2021 GRBA 560G1/BAF3/1823
Custody Seal
DATE
SIGNATURE
eurofins
Environment Testing
TestAmerica
1445071

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc. Job Number: 320-77781-1

Login Number: 77781 **List Source: Eurofins TestAmerica, Sacramento**
List Number: 1
Creator: Oropeza, Salvador

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	1445071
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	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-77781-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES
Revision: 1

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

Attn: Lisa Rutkowski

Sandra Fredrick

Authorized for release by:
9/7/2021 12:44:36 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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.
¤	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

Job ID: 320-77781-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-77781-1

Comments
No additional comments.

Revision
The report being provided is a revision of the original report sent on 8/24/2021. The report (revision 1) is being revised due to: REVISED REPORT: Client updated sample IDs - mislabeled in field..

Receipt
The samples were received on 8/19/2021 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 1.3º C.

Receipt Exceptions
REVISED REPORT: Client updated sample IDs - mislabeled in field.

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 320-518052. 320-518052 Method: PFC_IDA_WI Matrix: Water

Method 3535: The following sample is yellow prior to extraction: 320-77781-1. 320-518052 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.

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77781-1

Client Sample ID: V-900-A
Date Collected: 08/18/21 10:00
Date Received: 08/19/21 09:45

Lab Sample ID: 320-77781-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**24**		4.5	2.1	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoropentanoic acid (PFPeA)	**14**		1.8	0.44	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorohexanoic acid (PFHxA)	**2.5**		1.8	0.52	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoroheptanoic acid (PFHpA)	**0.37**	**J**	1.8	0.22	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorooctanoic acid (PFOA)	**2.9**		1.8	0.76	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoroundecanoic acid (PFUnA)	<0.98		1.8	0.98	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorotetradecanoic acid (PFTeA)	<0.65		1.8	0.65	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.79		1.8	0.79	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.84		1.8	0.84	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorohexanesulfonic acid (PFHxS)	<0.51		1.8	0.51	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.17		1.8	0.17	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorooctanesulfonic acid (PFOS)	<0.48		1.8	0.48	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorododecanesulfonic acid (PFDoS)	<0.86		1.8	0.86	ng/L		08/19/21 19:22	08/20/21 15:22	1
Perfluorooctanesulfonamide (FOSA)	<0.87		1.8	0.87	ng/L		08/19/21 19:22	08/20/21 15:22	1
NEtFOSA	<0.77		1.8	0.77	ng/L		08/19/21 19:22	08/20/21 15:22	1
NMeFOSA	<0.38		1.8	0.38	ng/L		08/19/21 19:22	08/20/21 15:22	1
NMeFOSAA	<1.1		4.5	1.1	ng/L		08/19/21 19:22	08/20/21 15:22	1
NEtFOSAA	<1.2		4.5	1.2	ng/L		08/19/21 19:22	08/20/21 15:22	1
NMeFOSE	<1.2		3.6	1.2	ng/L		08/19/21 19:22	08/20/21 15:22	1
NEtFOSE	<0.76		1.8	0.76	ng/L		08/19/21 19:22	08/20/21 15:22	1
4:2 FTS	<0.21		1.8	0.21	ng/L		08/19/21 19:22	08/20/21 15:22	1
6:2 FTS	<2.2		4.5	2.2	ng/L		08/19/21 19:22	08/20/21 15:22	1
8:2 FTS	<0.41		1.8	0.41	ng/L		08/19/21 19:22	08/20/21 15:22	1
10:2 FTS	<0.60		1.8	0.60	ng/L		08/19/21 19:22	08/20/21 15:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		08/19/21 19:22	08/20/21 15:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.6	1.3	ng/L		08/19/21 19:22	08/20/21 15:22	1
F-53B Major	<0.21		1.8	0.21	ng/L		08/19/21 19:22	08/20/21 15:22	1
F-53B Minor	<0.28		1.8	0.28	ng/L		08/19/21 19:22	08/20/21 15:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*92*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C5 PFPeA	*101*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C2 PFHxA	*98*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C4 PFHpA	*110*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C4 PFOA	*105*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C5 PFNA	*81*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*
13C2 PFDA	*110*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77781-1

Client Sample ID: V-900-A
Date Collected: 08/18/21 10:00
Date Received: 08/19/21 09:45

Lab Sample ID: 320-77781-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	111		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C2 PFDoA	96		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C2 PFTeDA	107		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C2 PFHxDA	115		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C3 PFBS	113		25 - 150	08/19/21 19:22	08/20/21 15:22	1
18O2 PFHxS	100		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C4 PFOS	99		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C8 FOSA	107		10 - 150	08/19/21 19:22	08/20/21 15:22	1
d3-NMeFOSAA	84		25 - 150	08/19/21 19:22	08/20/21 15:22	1
d5-NEtFOSAA	91		25 - 150	08/19/21 19:22	08/20/21 15:22	1
d-N-MeFOSA-M	90		10 - 150	08/19/21 19:22	08/20/21 15:22	1
d-N-EtFOSA-M	87		10 - 150	08/19/21 19:22	08/20/21 15:22	1
d7-N-MeFOSE-M	97		10 - 150	08/19/21 19:22	08/20/21 15:22	1
d9-N-EtFOSE-M	100		10 - 150	08/19/21 19:22	08/20/21 15:22	1
M2-4:2 FTS	112		25 - 150	08/19/21 19:22	08/20/21 15:22	1
M2-6:2 FTS	114		25 - 150	08/19/21 19:22	08/20/21 15:22	1
M2-8:2 FTS	123		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C3 HFPO-DA	102		25 - 150	08/19/21 19:22	08/20/21 15:22	1
13C2 10:2 FTS	117		25 - 150	08/19/21 19:22	08/20/21 15:22	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77781-1

Client Sample ID: V-200-A
Date Collected: 08/18/21 10:05
Date Received: 08/19/21 09:45

Lab Sample ID: 320-77781-2
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.6**		4.3	2.1	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoropentanoic acid (PFPeA)	**9.7**		1.7	0.42	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorohexanoic acid (PFHxA)	**6.5**		1.7	0.50	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoroheptanoic acid (PFHpA)	**5.3**		1.7	0.21	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorooctanoic acid (PFOA)	**20**		1.7	0.73	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorononanoic acid (PFNA)	**3.4**		1.7	0.23	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorodecanoic acid (PFDA)	**1.3**	**J**	1.7	0.27	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoroundecanoic acid (PFUnA)	**1.4**	**J**	1.7	0.95	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorododecanoic acid (PFDoA)	<0.47		1.7	0.47	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorotetradecanoic acid (PFTeA)	<0.63		1.7	0.63	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.77		1.7	0.77	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.81		1.7	0.81	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.7	0.26	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorohexanesulfonic acid (PFHxS)	**1.6**	**J**	1.7	0.49	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.16		1.7	0.16	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorooctanesulfonic acid (PFOS)	**13**		1.7	0.46	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.7	0.28	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorododecanesulfonic acid (PFDoS)	<0.83		1.7	0.83	ng/L		08/19/21 19:22	08/20/21 15:59	1
Perfluorooctanesulfonamide (FOSA)	<0.84		1.7	0.84	ng/L		08/19/21 19:22	08/20/21 15:59	1
NEtFOSA	<0.75		1.7	0.75	ng/L		08/19/21 19:22	08/20/21 15:59	1
NMeFOSA	<0.37		1.7	0.37	ng/L		08/19/21 19:22	08/20/21 15:59	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		08/19/21 19:22	08/20/21 15:59	1
NEtFOSAA	<1.1		4.3	1.1	ng/L		08/19/21 19:22	08/20/21 15:59	1
NMeFOSE	<1.2		3.4	1.2	ng/L		08/19/21 19:22	08/20/21 15:59	1
NEtFOSE	<0.73		1.7	0.73	ng/L		08/19/21 19:22	08/20/21 15:59	1
4:2 FTS	<0.21		1.7	0.21	ng/L		08/19/21 19:22	08/20/21 15:59	1
6:2 FTS	**17**		4.3	2.1	ng/L		08/19/21 19:22	08/20/21 15:59	1
8:2 FTS	**30**		1.7	0.40	ng/L		08/19/21 19:22	08/20/21 15:59	1
10:2 FTS	**4.8**		1.7	0.58	ng/L		08/19/21 19:22	08/20/21 15:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		08/19/21 19:22	08/20/21 15:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		08/19/21 19:22	08/20/21 15:59	1
F-53B Major	<0.21		1.7	0.21	ng/L		08/19/21 19:22	08/20/21 15:59	1
F-53B Minor	<0.28		1.7	0.28	ng/L		08/19/21 19:22	08/20/21 15:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*87*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:59*	*1*
13C5 PFPeA	*85*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:59*	*1*
13C2 PFHxA	*91*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:59*	*1*
13C4 PFHpA	*92*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:59*	*1*
13C4 PFOA	*93*		*25 - 150*	*08/19/21 19:22*	*08/20/21 15:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-77781-1

Client Sample ID: V-200-A
Date Collected: 08/18/21 10:05
Date Received: 08/19/21 09:45

Lab Sample ID: 320-77781-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	73		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 PFDA	99		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 PFUnA	96		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 PFDoA	90		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 PFTeDA	96		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 PFHxDA	106		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C3 PFBS	105		25 - 150	08/19/21 19:22	08/20/21 15:59	1
18O2 PFHxS	90		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C4 PFOS	90		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C8 FOSA	94		10 - 150	08/19/21 19:22	08/20/21 15:59	1
d3-NMeFOSAA	76		25 - 150	08/19/21 19:22	08/20/21 15:59	1
d5-NEtFOSAA	81		25 - 150	08/19/21 19:22	08/20/21 15:59	1
d-N-MeFOSA-M	81		10 - 150	08/19/21 19:22	08/20/21 15:59	1
d-N-EtFOSA-M	79		10 - 150	08/19/21 19:22	08/20/21 15:59	1
d7-N-MeFOSE-M	79		10 - 150	08/19/21 19:22	08/20/21 15:59	1
d9-N-EtFOSE-M	96		10 - 150	08/19/21 19:22	08/20/21 15:59	1
M2-4:2 FTS	89		25 - 150	08/19/21 19:22	08/20/21 15:59	1
M2-6:2 FTS	107		25 - 150	08/19/21 19:22	08/20/21 15:59	1
M2-8:2 FTS	104		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C3 HFPO-DA	93		25 - 150	08/19/21 19:22	08/20/21 15:59	1
13C2 10:2 FTS	107		25 - 150	08/19/21 19:22	08/20/21 15:59	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
320-77781-1	V-900-A	92	101	98	110	105	81	110	111
320-77781-2	V-200-A	87	85	91	92	93	73	99	96
LCS 320-518052/2-A	Lab Control Sample	96	97	119	105	98	73	94	94
LCSD 320-518052/3-A	Lab Control Sample Dup	97	95	126	110	100	80	103	100
MB 320-518052/1-A	Method Blank	88	88	91	97	96	78	101	103

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	PFTDA	PFHxDA	C3PFBS	PFHxS	PFOS	PFOSA	d3NMFOS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(10-150)	(25-150)
320-77781-1	V-900-A	96	107	115	113	100	99	107	84
320-77781-2	V-200-A	90	96	106	105	90	90	94	76
LCS 320-518052/2-A	Lab Control Sample	84	92	70	126	96	86	86	95
LCSD 320-518052/3-A	Lab Control Sample Dup	98	84	72	124	98	92	93	107
MB 320-518052/1-A	Method Blank	107	112	125	107	92	91	96	84

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		d5NEFOS	dMeFOSA	dEtFOSA	NMFM	NEFM	M242FTS	M262FTS	M282FTS
Lab Sample ID	Client Sample ID	(25-150)	(10-150)	(10-150)	(10-150)	(10-150)	(25-150)	(25-150)	(25-150)
320-77781-1	V-900-A	91	90	87	97	100	112	114	123
320-77781-2	V-200-A	81	81	79	79	96	89	107	104
LCS 320-518052/2-A	Lab Control Sample	95	80	82	78	71	87	80	92
LCSD 320-518052/3-A	Lab Control Sample Dup	108	82	88	86	80	86	78	81
MB 320-518052/1-A	Method Blank	93	83	85	97	103	96	113	108

		Percent Isotope Dilution Recovery (Acceptance Limits)	
		HFPODA	M102FTS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)
320-77781-1	V-900-A	102	117
320-77781-2	V-200-A	93	107
LCS 320-518052/2-A	Lab Control Sample	111	92
LCSD 320-518052/3-A	Lab Control Sample Dup	108	107
MB 320-518052/1-A	Method Blank	94	120

Surrogate Legend

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

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-518052/1-A
Matrix: Water
Analysis Batch: 518455

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 518052

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		08/19/21 19:22	08/20/21 14:00	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		08/19/21 19:22	08/20/21 14:00	1
NEtFOSA	<0.87		2.0	0.87	ng/L		08/19/21 19:22	08/20/21 14:00	1
NMeFOSA	<0.43		2.0	0.43	ng/L		08/19/21 19:22	08/20/21 14:00	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		08/19/21 19:22	08/20/21 14:00	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		08/19/21 19:22	08/20/21 14:00	1
NMeFOSE	<1.4		4.0	1.4	ng/L		08/19/21 19:22	08/20/21 14:00	1
NEtFOSE	<0.85		2.0	0.85	ng/L		08/19/21 19:22	08/20/21 14:00	1
4:2 FTS	<0.24		2.0	0.24	ng/L		08/19/21 19:22	08/20/21 14:00	1
6:2 FTS	<2.5		5.0	2.5	ng/L		08/19/21 19:22	08/20/21 14:00	1
8:2 FTS	<0.46		2.0	0.46	ng/L		08/19/21 19:22	08/20/21 14:00	1
10:2 FTS	<0.67		2.0	0.67	ng/L		08/19/21 19:22	08/20/21 14:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		08/19/21 19:22	08/20/21 14:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		08/19/21 19:22	08/20/21 14:00	1
F-53B Major	<0.24		2.0	0.24	ng/L		08/19/21 19:22	08/20/21 14:00	1
F-53B Minor	<0.32		2.0	0.32	ng/L		08/19/21 19:22	08/20/21 14:00	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*25 - 150*	*08/19/21 19:22*	*08/20/21 14:00*	*1*
13C5 PFPeA	*88*		*25 - 150*	*08/19/21 19:22*	*08/20/21 14:00*	*1*
13C2 PFHxA	*91*		*25 - 150*	*08/19/21 19:22*	*08/20/21 14:00*	*1*
13C4 PFHpA	*97*		*25 - 150*	*08/19/21 19:22*	*08/20/21 14:00*	*1*
13C4 PFOA	*96*		*25 - 150*	*08/19/21 19:22*	*08/20/21 14:00*	*1*

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

Lab Sample ID: MB 320-518052/1-A
Matrix: Water
Analysis Batch: 518455

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 518052

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	78		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 PFDA	101		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 PFUnA	103		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 PFDoA	107		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 PFTeDA	112		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 PFHxDA	125		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C3 PFBS	107		25 - 150	08/19/21 19:22	08/20/21 14:00	1
18O2 PFHxS	92		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C4 PFOS	91		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C8 FOSA	96		10 - 150	08/19/21 19:22	08/20/21 14:00	1
d3-NMeFOSAA	84		25 - 150	08/19/21 19:22	08/20/21 14:00	1
d5-NEtFOSAA	93		25 - 150	08/19/21 19:22	08/20/21 14:00	1
d-N-MeFOSA-M	83		10 - 150	08/19/21 19:22	08/20/21 14:00	1
d-N-EtFOSA-M	85		10 - 150	08/19/21 19:22	08/20/21 14:00	1
d7-N-MeFOSE-M	97		10 - 150	08/19/21 19:22	08/20/21 14:00	1
d9-N-EtFOSE-M	103		10 - 150	08/19/21 19:22	08/20/21 14:00	1
M2-4:2 FTS	96		25 - 150	08/19/21 19:22	08/20/21 14:00	1
M2-6:2 FTS	113		25 - 150	08/19/21 19:22	08/20/21 14:00	1
M2-8:2 FTS	108		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C3 HFPO-DA	94		25 - 150	08/19/21 19:22	08/20/21 14:00	1
13C2 10:2 FTS	120		25 - 150	08/19/21 19:22	08/20/21 14:00	1

Lab Sample ID: LCS 320-518052/2-A
Matrix: Water
Analysis Batch: 518575

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 518052

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	43.2		ng/L		108	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	41.9		ng/L		105	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	39.3		ng/L		98	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	41.9		ng/L		105	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	39.1		ng/L		98	60 - 135
Perfluorononanoic acid (PFNA)	40.0	52.7		ng/L		132	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	38.7		ng/L		97	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	40.7		ng/L		102	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.7		ng/L		109	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	44.0		ng/L		110	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	43.0		ng/L		107	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	44.1		ng/L		110	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	40.4		ng/L		101	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	32.0		ng/L		91	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	30.7		ng/L		82	60 - 135

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

Lab Sample ID: LCS 320-518052/2-A
Matrix: Water
Analysis Batch: 518575

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 518052

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.5		ng/L		100	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	46.2		ng/L		121	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	40.4		ng/L		109	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	36.8		ng/L		96	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	42.7		ng/L		111	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	42.6		ng/L		110	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	40.1		ng/L		100	60 - 135
NEtFOSA	40.0	40.0		ng/L		100	60 - 135
NMeFOSA	40.0	36.5		ng/L		91	60 - 135
NMeFOSAA	40.0	41.7		ng/L		104	60 - 135
NEtFOSAA	40.0	43.3		ng/L		108	60 - 135
NMeFOSE	40.0	39.1		ng/L		98	60 - 135
NEtFOSE	40.0	44.7		ng/L		112	60 - 135
4:2 FTS	37.4	38.5		ng/L		103	60 - 135
6:2 FTS	37.9	31.4		ng/L		83	60 - 135
8:2 FTS	38.3	38.6		ng/L		101	60 - 135
10:2 FTS	38.6	39.7		ng/L		103	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	48.2		ng/L		128	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.2		ng/L		95	60 - 135
F-53B Major	37.3	39.5		ng/L		106	60 - 135
F-53B Minor	37.7	43.4		ng/L		115	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*97*		*25 - 150*
13C2 PFHxA	*119*		*25 - 150*
13C4 PFHpA	*105*		*25 - 150*
13C4 PFOA	*98*		*25 - 150*
13C5 PFNA	*73*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
13C2 PFDoA	*84*		*25 - 150*
13C2 PFTeDA	*92*		*25 - 150*
13C2 PFHxDA	*70*		*25 - 150*
13C3 PFBS	*126*		*25 - 150*
18O2 PFHxS	*96*		*25 - 150*
13C4 PFOS	*86*		*25 - 150*
13C8 FOSA	*86*		*10 - 150*
d3-NMeFOSAA	*95*		*25 - 150*
d5-NEtFOSAA	*95*		*25 - 150*
d-N-MeFOSA-M	*80*		*10 - 150*
d-N-EtFOSA-M	*82*		*10 - 150*

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

Lab Sample ID: LCS 320-518052/2-A
Matrix: Water
Analysis Batch: 518575

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 518052

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*78*		*10 - 150*
d9-N-EtFOSE-M	*71*		*10 - 150*
M2-4:2 FTS	*87*		*25 - 150*
M2-6:2 FTS	*80*		*25 - 150*
M2-8:2 FTS	*92*		*25 - 150*
13C3 HFPO-DA	*111*		*25 - 150*
13C2 10:2 FTS	*92*		*25 - 150*

Lab Sample ID: LCSD 320-518052/3-A
Matrix: Water
Analysis Batch: 518575

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 518052

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	47.7		ng/L		119	60 - 135	10	30
Perfluoropentanoic acid (PFPeA)			40.0	43.6		ng/L		109	60 - 135	4	30
Perfluorohexanoic acid (PFHxA)			40.0	40.6		ng/L		102	60 - 135	3	30
Perfluoroheptanoic acid (PFHpA)			40.0	43.0		ng/L		107	60 - 135	2	30
Perfluorooctanoic acid (PFOA)			40.0	41.0		ng/L		103	60 - 135	5	30
Perfluorononanoic acid (PFNA)			40.0	50.8		ng/L		127	60 - 135	4	30
Perfluorodecanoic acid (PFDA)			40.0	37.6		ng/L		94	60 - 135	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	42.5		ng/L		106	60 - 135	4	30
Perfluorododecanoic acid (PFDoA)			40.0	39.3		ng/L		98	60 - 135	11	30
Perfluorotridecanoic acid (PFTriA)			40.0	39.2		ng/L		98	60 - 135	11	30
Perfluorotetradecanoic acid (PFTeA)			40.0	49.8		ng/L		124	60 - 135	15	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	48.8		ng/L		122	60 - 135	10	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	45.5		ng/L		114	60 - 135	12	30
Perfluorobutanesulfonic acid (PFBS)			35.4	32.6		ng/L		92	60 - 135	2	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	34.6		ng/L		92	60 - 135	12	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	39.1		ng/L		107	60 - 135	7	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	46.5		ng/L		122	60 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)			37.1	39.6		ng/L		107	60 - 135	2	30
Perfluorononanesulfonic acid (PFNS)			38.4	37.9		ng/L		99	60 - 135	3	30
Perfluorodecanesulfonic acid (PFDS)			38.6	45.5		ng/L		118	60 - 135	6	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	44.6		ng/L		115	60 - 135	5	30
Perfluorooctanesulfonamide (FOSA)			40.0	39.6		ng/L		99	60 - 135	1	30
NEtFOSA			40.0	40.4		ng/L		101	60 - 135	1	30
NMeFOSA			40.0	36.6		ng/L		91	60 - 135	0	30
NMeFOSAA			40.0	40.2		ng/L		100	60 - 135	4	30

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

Lab Sample ID: LCSD 320-518052/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 518575
Prep Batch: 518052

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	37.5		ng/L		94	60 - 135	14	30
NMeFOSE			40.0	42.8		ng/L		107	60 - 135	9	30
NEtFOSE			40.0	43.2		ng/L		108	60 - 135	4	30
4:2 FTS			37.4	42.6		ng/L		114	60 - 135	10	30
6:2 FTS			37.9	36.9		ng/L		97	60 - 135	16	30
8:2 FTS			38.3	40.0		ng/L		104	60 - 135	3	30
10:2 FTS			38.6	34.3		ng/L		89	60 - 135	15	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	47.8		ng/L		127	60 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	41.6		ng/L		104	60 - 135	9	30
F-53B Major			37.3	41.0		ng/L		110	60 - 135	4	30
F-53B Minor			37.7	45.3		ng/L		120	60 - 135	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*97*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*126*		*25 - 150*
13C4 PFHpA	*110*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*80*		*25 - 150*
13C2 PFDA	*103*		*25 - 150*
13C2 PFUnA	*100*		*25 - 150*
13C2 PFDoA	*98*		*25 - 150*
13C2 PFTeDA	*84*		*25 - 150*
13C2 PFHxDA	*72*		*25 - 150*
13C3 PFBS	*124*		*25 - 150*
18O2 PFHxS	*98*		*25 - 150*
13C4 PFOS	*92*		*25 - 150*
13C8 FOSA	*93*		*10 - 150*
d3-NMeFOSAA	*107*		*25 - 150*
d5-NEtFOSAA	*108*		*25 - 150*
d-N-MeFOSA-M	*82*		*10 - 150*
d-N-EtFOSA-M	*88*		*10 - 150*
d7-N-MeFOSE-M	*86*		*10 - 150*
d9-N-EtFOSE-M	*80*		*10 - 150*
M2-4:2 FTS	*86*		*25 - 150*
M2-6:2 FTS	*78*		*25 - 150*
M2-8:2 FTS	*81*		*25 - 150*
13C3 HFPO-DA	*108*		*25 - 150*
13C2 10:2 FTS	*107*		*25 - 150*

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

LCMS

Prep Batch: 518052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77781-1	V-900-A	Total/NA	Water	3535	
320-77781-2	V-200-A	Total/NA	Water	3535	
MB 320-518052/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-518052/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-518052/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 518455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77781-1	V-900-A	Total/NA	Water	537 (modified)	518052
320-77781-2	V-200-A	Total/NA	Water	537 (modified)	518052
MB 320-518052/1-A	Method Blank	Total/NA	Water	537 (modified)	518052

Analysis Batch: 518575

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-518052/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	518052
LCSD 320-518052/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	518052

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-900-A
Lab Sample ID: 320-77781-1
Date Collected: 08/18/21 10:00
Matrix: Water
Date Received: 08/19/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			280.8 mL	10.0 mL	518052	08/19/21 19:22	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			518455	08/20/21 15:22	S1M	TAL SAC

Client Sample ID: V-200-A
Lab Sample ID: 320-77781-2
Date Collected: 08/18/21 10:05
Matrix: Water
Date Received: 08/19/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			290.7 mL	10.0 mL	518052	08/19/21 19:22	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			518455	08/20/21 15:59	S1M	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

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

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77781-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-77781-1	V-900-A	Water	08/18/21 10:00	08/19/21 09:45
320-77781-2	V-200-A	Water	08/18/21 10:05	08/19/21 09:45

Eurofins Test[illegible]rica, Sacramento
880 Riverside Park[illegible]

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chai[illegible]f Custody Record

eurofi[illegible]

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Ramingar	Date: 8-18-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time			For Lab Use Only:
Phone	☑ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
FAX	TAT if different from Below _____			Lab Sampling:
Project Name: Marinette, WI	☐ 2 weeks			Lab Project Number
Site: Marinette, WI	☑ 1 week			50015522
P O # 30015296.00014 (WPDES)	☐ 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)	Sample Specific Notes:
V-200-A	8-18-21	10:00	G	W	2	N	N	X	System Influent
V-900-A	↓	10:05	G	W	2	N	N	X	System Effluent

320-77781 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 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

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1445071		Cooler Temp. (°C): Obs'd: 1.3 Corr'd: 1.5		Therm ID No.: 2-05
Relinquished by: Jacob Ramingar	Company: Barley Excavating	Date/Time: 8-18-21/10:30	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: EAS AC	Date/Time: 8-18-21/09:45
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

9/7/2021 (Rev. 1)

Fredrick, Sandie

From: Wheeler, Allison <Allison.Wheeler@arcadis.com>
Sent: Friday, September 3, 2021 12:19 PM
To: Fredrick, Sandie; Rutkowski, Lisa
Cc: Silvers, Kira; Yuen, Jeff; Ahmad, Mushtaque; Ziska, Jim
Subject: RE: Eurofins TestAmerica report and EDD files from 320-77781-1 Marinette, WI 30015296.00014 WPDES

EXTERNAL EMAIL*

Hi Sandie,

We have discussed and determined that the labels were indeed mislabeled in the field. Could you please switch the samples IDs and reissue the reports for this job?

Let me know if you have any questions, thank you and have a wonderful long weekend!
Allison

From: Fredrick, Sandie <Sandra.Fredrick@Eurofinset.com>
Sent: Wednesday, August 25, 2021 1:21 PM
To: Rutkowski, Lisa <Lisa.Rutkowski@arcadis.com>
Cc: Silvers, Kira <Kira.Silvers@arcadis.com>; Wheeler, Allison <Allison.Wheeler@arcadis.com>
Subject: RE: Eurofins TestAmerica report and EDD files from 320-77781-1 Marinette, WI 30015296.00014 WPDES

Hi Ladies,
Please see attached and below.
Thanks,
Sandie

Just checked. Samples were labeled correctly. Image attached. Image IMG_0124 show client label and on container lid our small label showing which sample the container belongs with. The second image is of our large label that match the container cap labels.

We are thankful for your business and hope that you have a wonderful day!

Sandie Fredrick
Project Manager

How are we doing? Let us know!

Eurofins TestAmerica
2417 Bond Street
University Park, IL 60484 USA

Phone: 920-261-1660

E-mail: sandra.fredrick@eurofinset.com

www.EurofinsUS.com | www.TestAmericainc.com | Facebook | LinkedIn

---

From: Rutkowski, Lisa <Lisa.Rutkowski@arcadis.com>
Sent: Tuesday, August 24, 2021 4:18 PM
To: Fredrick, Sandie <Sandra.Fredrick@Eurofinset.com>
Cc: Silvers, Kira <Kira.Silvers@arcadis.com>; Wheeler, Allison <Allison.Wheeler@arcadis.com>
Subject: RE: Eurofins TestAmerica report and EDD files from 320-77781-1 Marinette, WI 30015296.00014 WPDES
Importance: High

EXTERNAL EMAIL*

Hi Sandie,

Can you check with the lab to see if these samples were switched?

Thanks,
Lisa

From: Sandie Fredrick <sandra.fredrick@eurofinset.com>
Sent: Tuesday, August 24, 2021 2:55 PM
To: Wheeler, Allison <Allison.Wheeler@arcadis.com>; Rutkowski, Lisa <Lisa.Rutkowski@arcadis.com>; Ahmad, Mushtaque <Mushtaque.Ahmad@arcadis.com>
Subject: Eurofins TestAmerica report and EDD files from 320-77781-1 Marinette, WI 30015296.00014 WPDES

Hello All,

Attached please find the report and EDD files for job 320-77781-1; Marinette, WI 30015296.00014 WPDES

Please feel free to contact me if you have any questions.

Thank you.

Sandie Fredrick
Project Manager

Eurofins TestAmerica, Chicago
Phone: 920-261-1660

E-mail: sandra.fredrick@eurofinset.com
www.eurofinsus.com/env

Reference: [500-611727]
Attachments: 3

> > Bank information has changed, please refer to remittance information on invoice. < <

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Sacramento
Sample Receiving Notes

320-77781 Field Sheet

Job: _____

Tracking # : 5117 0014 0511

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: C-05 Corr. Factor: (+ / -) N/A °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1445071

Cooler ID: —

Temp Observed: 1.3 °C Corrected: 1.3 °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: NC Date: 8-18-21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☒	☐	☐
Samples compromised/tampered with?	☐	☒	☐
Sample containers have legible labels?	☒	☐	☐
Sample custody seal?	☐	☐	☒
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided?	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
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: 8/19/21

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: 8/19/21


ORIGIN ID:PHDA (906) 863-9373
JOE BARLEY
BARLEY EXCAVATING INC
1824 10TH AVE
MENOMINEE, MI 49858
UNITED STATES US
SHIP DATE: 26JUL21
ACTWGT: 5.75 LB
CAD: 0574282/CAFE3409
10
EUROFINS TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY
WEST SACRAMENTO CA 956051500
916) 373-5600
REF:
DEPT:
FedEx Express
5117 0014 0511
THU - 19 AUG AA
PRIORITY OVERNIGHT
NH BLUA
95605
CA-US
SMF
4008576 18Aug2021 GRBA 560G1/BAF3/1823
Custody Seal
DATE
SIGNATURE
eurofins
Environment Testing
TestAmerica
1445071

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc. Job Number: 320-77781-1

Login Number: 77781 **List Source: Eurofins TestAmerica, Sacramento**
List Number: 1
Creator: Oropeza, Salvador

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	1445071
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	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-78227-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
9/3/2021 1:06:56 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-78227-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
C	See Case Narrative
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.
¤	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

Job ID: 320-78227-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-78227-1

Comments
No additional comments.

Receipt
The samples were received on 8/28/2021 9:05 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 1.1º C.

LCMS
Method 537 (modified): The concentration of analytes associated with the following sample exceeded the instrument calibration range: 320-78227-1. 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): The transition mass ratio was outside of the established ratio limit for Perfluorohexanoic acid (PFHxA) in CCVL 320-521006/2 associated to this data set. This is indicated by the "R" flag in the raw data. As the flagged data is in control in the CCVL, there is no adverse impact to the data.

Method 537 (modified): The transition mass ratio for the indicated analytes were outside of the established ratio limits. The qualitative identification of the analytes have some degree of uncertainty, and the reported values may have some high bias. However, analyst judgment was used to positively identify the analytes: 320-78227-1.

Method 537 (modified): Results for sample 320-78227-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte 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 86% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The transition mass ratio for the indicated analyte was outside of 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 judgement was used to positively identify the analyte. CCB 320-522221/2

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: 320-78227-1. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.This sample was re-analyzed at dilution with improved IDA recoveries. Both sets of data are reported.

Method 537 (modified): The following sample has chromatographic interferences that could adversely impact the identification and quantitation of target analytes: 320-78227-1 These interferences could cause false positive.

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 samples were light brown prior to extraction: 320-78227-1 and 320-78227-2. preparation batch 320-520846 Method: 3535_PFC_28D Matrix: Water

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-520846. Method: 3535_PFC_28D Matrix: Water 320-520846

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

Client Sample ID: V-200-A
Date Collected: 08/27/21 11:00
Date Received: 08/28/21 09:05

Lab Sample ID: 320-78227-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**91**		4.4	2.1	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluoropentanoic acid (PFPeA)	**300**		1.8	0.43	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorohexanoic acid (PFHxA)	**200**		1.8	0.51	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluoroheptanoic acid (PFHpA)	**190**		1.8	0.22	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorooctanoic acid (PFOA)	**620**	**E**	1.8	0.75	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorononanoic acid (PFNA)	**110**		1.8	0.24	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorodecanoic acid (PFDA)	**86**		1.8	0.27	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluoroundecanoic acid (PFUnA)	**88**		1.8	0.97	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorododecanoic acid (PFDoA)	**8.0**		1.8	0.48	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorotridecanoic acid (PFTriA)	**7.6**	**C**	1.8	1.1	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.8	0.64	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.78		1.8	0.78	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.83		1.8	0.83	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorobutanesulfonic acid (PFBS)	**10**		1.8	0.18	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluoropentanesulfonic acid (PFPeS)	**1.8**		1.8	0.26	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorohexanesulfonic acid (PFHxS)	**49**		1.8	0.50	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	**4.1**		1.8	0.17	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorooctanesulfonic acid (PFOS)	**680**	**E**	1.8	0.47	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorononanesulfonic acid (PFNS)	**2.3**	**C**	1.8	0.33	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorodecanesulfonic acid (PFDS)	**0.74**	**J**	1.8	0.28	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorododecanesulfonic acid (PFDoS)	<0.85		1.8	0.85	ng/L		08/29/21 19:23	08/30/21 17:32	1
Perfluorooctanesulfonamide (FOSA)	**22**		1.8	0.86	ng/L		08/29/21 19:23	08/30/21 17:32	1
NEtFOSA	<0.76		1.8	0.76	ng/L		08/29/21 19:23	08/30/21 17:32	1
NMeFOSA	<0.38		1.8	0.38	ng/L		08/29/21 19:23	08/30/21 17:32	1
NMeFOSAA	**1.1**	**J C**	4.4	1.1	ng/L		08/29/21 19:23	08/30/21 17:32	1
NEtFOSAA	**21**		4.4	1.1	ng/L		08/29/21 19:23	08/30/21 17:32	1
NMeFOSE	<1.2		3.5	1.2	ng/L		08/29/21 19:23	08/30/21 17:32	1
NEtFOSE	<0.75		1.8	0.75	ng/L		08/29/21 19:23	08/30/21 17:32	1
4:2 FTS	**1.7**	**J**	1.8	0.21	ng/L		08/29/21 19:23	08/30/21 17:32	1
6:2 FTS	**480**	**E**	4.4	2.2	ng/L		08/29/21 19:23	08/30/21 17:32	1
8:2 FTS	**1200**	**E**	1.8	0.40	ng/L		08/29/21 19:23	08/30/21 17:32	1
10:2 FTS	**190**		1.8	0.59	ng/L		08/29/21 19:23	08/30/21 17:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		08/29/21 19:23	08/30/21 17:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		08/29/21 19:23	08/30/21 17:32	1
F-53B Major	<0.21		1.8	0.21	ng/L		08/29/21 19:23	08/30/21 17:32	1
F-53B Minor	<0.28		1.8	0.28	ng/L		08/29/21 19:23	08/30/21 17:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79*		*25 - 150*	*08/29/21 19:23*	*08/30/21 17:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-78227-1

Client Sample ID: V-200-A

Date Collected: 08/27/21 11:00
Date Received: 08/28/21 09:05

Lab Sample ID: 320-78227-1

Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	93		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C2 PFHxA	90		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C4 PFHpA	105		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C4 PFOA	99		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C5 PFNA	97		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C2 PFDA	100		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C2 PFUnA	105		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C2 PFDoA	108		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C2 PFTeDA	107		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C2 PFHxDA	89		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C3 PFBS	98		25 - 150	08/29/21 19:23	08/30/21 17:32	1
18O2 PFHxS	105		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C4 PFOS	86		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C8 FOSA	93		10 - 150	08/29/21 19:23	08/30/21 17:32	1
d3-NMeFOSAA	92		25 - 150	08/29/21 19:23	08/30/21 17:32	1
d5-NEtFOSAA	100		25 - 150	08/29/21 19:23	08/30/21 17:32	1
d-N-MeFOSA-M	86		10 - 150	08/29/21 19:23	08/30/21 17:32	1
d-N-EtFOSA-M	72		10 - 150	08/29/21 19:23	08/30/21 17:32	1
d7-N-MeFOSE-M	103		10 - 150	08/29/21 19:23	08/30/21 17:32	1
d9-N-EtFOSE-M	92		10 - 150	08/29/21 19:23	08/30/21 17:32	1
M2-4:2 FTS	244	*	25 - 150	08/29/21 19:23	08/30/21 17:32	1
M2-6:2 FTS	153	*	25 - 150	08/29/21 19:23	08/30/21 17:32	1
M2-8:2 FTS	139		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C3 HFPO-DA	88		25 - 150	08/29/21 19:23	08/30/21 17:32	1
13C2 10:2 FTS	137		25 - 150	08/29/21 19:23	08/30/21 17:32	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**91**		22	11	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluoropentanoic acid (PFPeA)	**330**		8.8	2.2	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorohexanoic acid (PFHxA)	**180**		8.8	2.5	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluoroheptanoic acid (PFHpA)	**160**		8.8	1.1	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorooctanoic acid (PFOA)	**520**		8.8	3.7	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorononanoic acid (PFNA)	**120**		8.8	1.2	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorodecanoic acid (PFDA)	**74**		8.8	1.4	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluoroundecanoic acid (PFUnA)	**89**		8.8	4.8	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorododecanoic acid (PFDoA)	**6.9**	**J**	8.8	2.4	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorotridecanoic acid (PFTriA)	<5.7		8.8	5.7	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorotetradecanoic acid (PFTeA)	<3.2		8.8	3.2	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluoro-n-hexadecanoic acid (PFHxDA)	<3.9		8.8	3.9	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluoro-n-octadecanoic acid (PFODA)	<4.1		8.8	4.1	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorobutanesulfonic acid (PFBS)	**12**		8.8	0.88	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluoropentanesulfonic acid (PFPeS)	**2.0**	**J**	8.8	1.3	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorohexanesulfonic acid (PFHxS)	**47**		8.8	2.5	ng/L		08/29/21 19:23	09/03/21 01:15	5

Client Sample ID: V-200-A
Lab Sample ID: 320-78227-1
Date Collected: 08/27/21 11:00
Matrix: Water
Date Received: 08/28/21 09:05

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	**3.3**	**J**	8.8	0.83	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorooctanesulfonic acid (PFOS)	**700**		8.8	2.4	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorononanesulfonic acid (PFNS)	**1.6**	**J**	8.8	1.6	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorodecanesulfonic acid (PFDS)	<1.4		8.8	1.4	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorododecanesulfonic acid (PFDoS)	<4.3		8.8	4.3	ng/L		08/29/21 19:23	09/03/21 01:15	5
Perfluorooctanesulfonamide (FOSA)	**22**		8.8	4.3	ng/L		08/29/21 19:23	09/03/21 01:15	5
NEtFOSA	<3.8		8.8	3.8	ng/L		08/29/21 19:23	09/03/21 01:15	5
NMeFOSA	<1.9		8.8	1.9	ng/L		08/29/21 19:23	09/03/21 01:15	5
NMeFOSAA	<5.3		22	5.3	ng/L		08/29/21 19:23	09/03/21 01:15	5
NEtFOSAA	**19**	**J**	22	5.7	ng/L		08/29/21 19:23	09/03/21 01:15	5
NMeFOSE	<6.1		18	6.1	ng/L		08/29/21 19:23	09/03/21 01:15	5
NEtFOSE	<3.7		8.8	3.7	ng/L		08/29/21 19:23	09/03/21 01:15	5
4:2 FTS	<1.1		8.8	1.1	ng/L		08/29/21 19:23	09/03/21 01:15	5
6:2 FTS	**440**		22	11	ng/L		08/29/21 19:23	09/03/21 01:15	5
8:2 FTS	**1200**		8.8	2.0	ng/L		08/29/21 19:23	09/03/21 01:15	5
10:2 FTS	**160**		8.8	2.9	ng/L		08/29/21 19:23	09/03/21 01:15	5
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		8.8	1.8	ng/L		08/29/21 19:23	09/03/21 01:15	5
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<6.6		18	6.6	ng/L		08/29/21 19:23	09/03/21 01:15	5
F-53B Major	<1.1		8.8	1.1	ng/L		08/29/21 19:23	09/03/21 01:15	5
F-53B Minor	<1.4		8.8	1.4	ng/L		08/29/21 19:23	09/03/21 01:15	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*94*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C5 PFPeA	*77*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C2 PFHxA	*97*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C4 PFHpA	*95*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C4 PFOA	*107*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C5 PFNA	*87*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C2 PFDA	*103*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C2 PFUnA	*92*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C2 PFDoA	*104*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C2 PFTeDA	*85*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C2 PFHxDA	*72*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C3 PFBS	*87*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
18O2 PFHxS	*101*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C4 PFOS	*90*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
13C8 FOSA	*87*		*10 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
d3-NMeFOSAA	*91*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
d5-NEtFOSAA	*110*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
d-N-MeFOSA-M	*83*		*10 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
d-N-EtFOSA-M	*82*		*10 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
d7-N-MeFOSE-M	*70*		*10 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
d9-N-EtFOSE-M	*82*		*10 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
M2-4:2 FTS	*132*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*
M2-6:2 FTS	*127*		*25 - 150*	*08/29/21 19:23*	*09/03/21 01:15*	*5*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-78227-1

Client Sample ID: V-200-A
Date Collected: 08/27/21 11:00
Date Received: 08/28/21 09:05

Lab Sample ID: 320-78227-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2 FTS	136		25 - 150	08/29/21 19:23	09/03/21 01:15	5
13C3 HFPO-DA	95		25 - 150	08/29/21 19:23	09/03/21 01:15	5
13C2 10:2 FTS	131		25 - 150	08/29/21 19:23	09/03/21 01:15	5

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-78227-1

Client Sample ID: V-900-A

Date Collected: 08/27/21 11:05
Date Received: 08/28/21 09:05

Lab Sample ID: 320-78227-2

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**10**		4.4	2.1	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluoropentanoic acid (PFPeA)	**0.78**	**J**	1.7	0.43	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorohexanoic acid (PFHxA)	<0.51		1.7	0.51	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.7	0.22	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorooctanoic acid (PFOA)	<0.74		1.7	0.74	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorononanoic acid (PFNA)	<0.24		1.7	0.24	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorodecanoic acid (PFDA)	<0.27		1.7	0.27	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluoroundecanoic acid (PFUnA)	<0.96		1.7	0.96	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorododecanoic acid (PFDoA)	<0.48		1.7	0.48	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.7	0.64	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.78		1.7	0.78	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.82		1.7	0.82	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.7	0.26	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorohexanesulfonic acid (PFHxS)	<0.50		1.7	0.50	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.17		1.7	0.17	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorooctanesulfonic acid (PFOS)	<0.47		1.7	0.47	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.7	0.28	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorododecanesulfonic acid (PFDoS)	<0.84		1.7	0.84	ng/L		08/29/21 19:23	08/31/21 09:40	1
Perfluorooctanesulfonamide (FOSA)	<0.85		1.7	0.85	ng/L		08/29/21 19:23	08/31/21 09:40	1
NEtFOSA	<0.76		1.7	0.76	ng/L		08/29/21 19:23	08/31/21 09:40	1
NMeFOSA	<0.37		1.7	0.37	ng/L		08/29/21 19:23	08/31/21 09:40	1
NMeFOSAA	<1.0		4.4	1.0	ng/L		08/29/21 19:23	08/31/21 09:40	1
NEtFOSAA	<1.1		4.4	1.1	ng/L		08/29/21 19:23	08/31/21 09:40	1
NMeFOSE	<1.2		3.5	1.2	ng/L		08/29/21 19:23	08/31/21 09:40	1
NEtFOSE	<0.74		1.7	0.74	ng/L		08/29/21 19:23	08/31/21 09:40	1
4:2 FTS	<0.21		1.7	0.21	ng/L		08/29/21 19:23	08/31/21 09:40	1
6:2 FTS	<2.2		4.4	2.2	ng/L		08/29/21 19:23	08/31/21 09:40	1
8:2 FTS	**1.4**	**J**	1.7	0.40	ng/L		08/29/21 19:23	08/31/21 09:40	1
10:2 FTS	**5.7**		1.7	0.58	ng/L		08/29/21 19:23	08/31/21 09:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.7	0.35	ng/L		08/29/21 19:23	08/31/21 09:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		08/29/21 19:23	08/31/21 09:40	1
F-53B Major	<0.21		1.7	0.21	ng/L		08/29/21 19:23	08/31/21 09:40	1
F-53B Minor	<0.28		1.7	0.28	ng/L		08/29/21 19:23	08/31/21 09:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*90*		*25 - 150*	*08/29/21 19:23*	*08/31/21 09:40*	*1*
13C5 PFPeA	*92*		*25 - 150*	*08/29/21 19:23*	*08/31/21 09:40*	*1*
13C2 PFHxA	*91*		*25 - 150*	*08/29/21 19:23*	*08/31/21 09:40*	*1*
13C4 PFHpA	*100*		*25 - 150*	*08/29/21 19:23*	*08/31/21 09:40*	*1*
13C4 PFOA	*97*		*25 - 150*	*08/29/21 19:23*	*08/31/21 09:40*	*1*
13C5 PFNA	*92*		*25 - 150*	*08/29/21 19:23*	*08/31/21 09:40*	*1*
13C2 PFDA	*88*		*25 - 150*	*08/29/21 19:23*	*08/31/21 09:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-78227-1

Client Sample ID: V-900-A
Date Collected: 08/27/21 11:05
Date Received: 08/28/21 09:05

Lab Sample ID: 320-78227-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	85		25 - 150	08/29/21 19:23	08/31/21 09:40	1
13C2 PFDoA	74		25 - 150	08/29/21 19:23	08/31/21 09:40	1
13C2 PFTeDA	60		25 - 150	08/29/21 19:23	08/31/21 09:40	1
13C2 PFHxDA	42		25 - 150	08/29/21 19:23	08/31/21 09:40	1
13C3 PFBS	85		25 - 150	08/29/21 19:23	08/31/21 09:40	1
18O2 PFHxS	83		25 - 150	08/29/21 19:23	08/31/21 09:40	1
13C4 PFOS	85		25 - 150	08/29/21 19:23	08/31/21 09:40	1
13C8 FOSA	84		10 - 150	08/29/21 19:23	08/31/21 09:40	1
d3-NMeFOSAA	83		25 - 150	08/29/21 19:23	08/31/21 09:40	1
d5-NEtFOSAA	94		25 - 150	08/29/21 19:23	08/31/21 09:40	1
d-N-MeFOSA-M	69		10 - 150	08/29/21 19:23	08/31/21 09:40	1
d-N-EtFOSA-M	64		10 - 150	08/29/21 19:23	08/31/21 09:40	1
d7-N-MeFOSE-M	70		10 - 150	08/29/21 19:23	08/31/21 09:40	1
d9-N-EtFOSE-M	72		10 - 150	08/29/21 19:23	08/31/21 09:40	1
M2-4:2 FTS	114		25 - 150	08/29/21 19:23	08/31/21 09:40	1
M2-6:2 FTS	118		25 - 150	08/29/21 19:23	08/31/21 09:40	1
M2-8:2 FTS	128		25 - 150	08/29/21 19:23	08/31/21 09:40	1
13C3 HFPO-DA	90		25 - 150	08/29/21 19:23	08/31/21 09:40	1
13C2 10:2 FTS	106		25 - 150	08/29/21 19:23	08/31/21 09:40	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-78227-1

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)
320-78227-1	V-200-A	79	93	90	105	99	97	100	105
320-78227-1 - DL	V-200-A	94	77	97	95	107	87	103	92
320-78227-2	V-900-A	90	92	91	100	97	92	88	85
LCS 320-520846/2-A	Lab Control Sample	83	81	84	107	96	84	102	104
LCSD 320-520846/3-A	Lab Control Sample Dup	87	84	88	98	108	104	102	103
MB 320-520846/1-A	Method Blank	78	88	80	94	103	100	107	92

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
320-78227-1	V-200-A	108	107	89	98	105	86	93	92
320-78227-1 - DL	V-200-A	104	85	72	87	101	90	87	91
320-78227-2	V-900-A	74	60	42	85	83	85	84	83
LCS 320-520846/2-A	Lab Control Sample	96	107	113	73	84	79	79	78
LCSD 320-520846/3-A	Lab Control Sample Dup	114	119	117	93	96	92	93	80
MB 320-520846/1-A	Method Blank	111	119	109	80	87	83	80	78

		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)
320-78227-1	V-200-A	100	86	72	103	92	244 *	153 *	139
320-78227-1 - DL	V-200-A	110	83	82	70	82	132	127	136
320-78227-2	V-900-A	94	69	64	70	72	114	118	128
LCS 320-520846/2-A	Lab Control Sample	97	76	68	103	103	83	94	111
LCSD 320-520846/3-A	Lab Control Sample Dup	83	78	72	109	106	81	100	118
MB 320-520846/1-A	Method Blank	96	73	69	109	104	88	96	110

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
320-78227-1	V-200-A	88	137
320-78227-1 - DL	V-200-A	95	131
320-78227-2	V-900-A	90	106
LCS 320-520846/2-A	Lab Control Sample	73	120
LCSD 320-520846/3-A	Lab Control Sample Dup	86	148
MB 320-520846/1-A	Method Blank	75	141

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxDA = 13C2 PFHxDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78227-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-520846/1-A
Matrix: Water
Analysis Batch: 521137

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 520846

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		08/27/21 04:41	08/30/21 16:56	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		08/27/21 04:41	08/30/21 16:56	1
NEtFOSA	<0.87		2.0	0.87	ng/L		08/27/21 04:41	08/30/21 16:56	1
NMeFOSA	<0.43		2.0	0.43	ng/L		08/27/21 04:41	08/30/21 16:56	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		08/27/21 04:41	08/30/21 16:56	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		08/27/21 04:41	08/30/21 16:56	1
NMeFOSE	<1.4		4.0	1.4	ng/L		08/27/21 04:41	08/30/21 16:56	1
NEtFOSE	<0.85		2.0	0.85	ng/L		08/27/21 04:41	08/30/21 16:56	1
4:2 FTS	<0.24		2.0	0.24	ng/L		08/27/21 04:41	08/30/21 16:56	1
6:2 FTS	<2.5		5.0	2.5	ng/L		08/27/21 04:41	08/30/21 16:56	1
8:2 FTS	<0.46		2.0	0.46	ng/L		08/27/21 04:41	08/30/21 16:56	1
10:2 FTS	<0.67		2.0	0.67	ng/L		08/27/21 04:41	08/30/21 16:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		08/27/21 04:41	08/30/21 16:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		08/27/21 04:41	08/30/21 16:56	1
F-53B Major	<0.24		2.0	0.24	ng/L		08/27/21 04:41	08/30/21 16:56	1
F-53B Minor	<0.32		2.0	0.32	ng/L		08/27/21 04:41	08/30/21 16:56	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*78*		*25 - 150*	*08/27/21 04:41*	*08/30/21 16:56*	*1*
13C5 PFPeA	*88*		*25 - 150*	*08/27/21 04:41*	*08/30/21 16:56*	*1*
13C2 PFHxA	*80*		*25 - 150*	*08/27/21 04:41*	*08/30/21 16:56*	*1*
13C4 PFHpA	*94*		*25 - 150*	*08/27/21 04:41*	*08/30/21 16:56*	*1*
13C4 PFOA	*103*		*25 - 150*	*08/27/21 04:41*	*08/30/21 16:56*	*1*

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

Lab Sample ID: MB 320-520846/1-A
Matrix: Water
Analysis Batch: 521137

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 520846

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	100		25 - 150	08/27/21 04:41	08/30/21 16:56	1
13C2 PFDA	107		25 - 150	08/27/21 04:41	08/30/21 16:56	1
13C2 PFUnA	92		25 - 150	08/27/21 04:41	08/30/21 16:56	1
13C2 PFDoA	111		25 - 150	08/27/21 04:41	08/30/21 16:56	1
13C2 PFTeDA	119		25 - 150	08/27/21 04:41	08/30/21 16:56	1
13C2 PFHxDA	109		25 - 150	08/27/21 04:41	08/30/21 16:56	1
13C3 PFBS	80		25 - 150	08/27/21 04:41	08/30/21 16:56	1
18O2 PFHxS	87		25 - 150	08/27/21 04:41	08/30/21 16:56	1
13C4 PFOS	83		25 - 150	08/27/21 04:41	08/30/21 16:56	1
13C8 FOSA	80		10 - 150	08/27/21 04:41	08/30/21 16:56	1
d3-NMeFOSAA	78		25 - 150	08/27/21 04:41	08/30/21 16:56	1
d5-NEtFOSAA	96		25 - 150	08/27/21 04:41	08/30/21 16:56	1
d-N-MeFOSA-M	73		10 - 150	08/27/21 04:41	08/30/21 16:56	1
d-N-EtFOSA-M	69		10 - 150	08/27/21 04:41	08/30/21 16:56	1
d7-N-MeFOSE-M	109		10 - 150	08/27/21 04:41	08/30/21 16:56	1
d9-N-EtFOSE-M	104		10 - 150	08/27/21 04:41	08/30/21 16:56	1
M2-4:2 FTS	88		25 - 150	08/27/21 04:41	08/30/21 16:56	1
M2-6:2 FTS	96		25 - 150	08/27/21 04:41	08/30/21 16:56	1
M2-8:2 FTS	110		25 - 150	08/27/21 04:41	08/30/21 16:56	1
13C3 HFPO-DA	75		25 - 150	08/27/21 04:41	08/30/21 16:56	1
13C2 10:2 FTS	141		25 - 150	08/27/21 04:41	08/30/21 16:56	1

Lab Sample ID: LCS 320-520846/2-A
Matrix: Water
Analysis Batch: 521137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 520846

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.9		ng/L		107	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	39.3		ng/L		98	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	41.6		ng/L		104	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	42.7		ng/L		107	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	45.8		ng/L		115	60 - 135
Perfluorononanoic acid (PFNA)	40.0	48.4		ng/L		121	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	42.1		ng/L		105	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	39.7		ng/L		99	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	45.6		ng/L		114	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	49.4		ng/L		124	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	42.2		ng/L		105	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	46.5		ng/L		116	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	48.6		ng/L		121	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	32.3		ng/L		91	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	43.0		ng/L		115	60 - 135

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

Lab Sample ID: LCS 320-520846/2-A
Matrix: Water
Analysis Batch: 521137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 520846

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	41.0		ng/L		113	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	51.2		ng/L		135	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	40.5		ng/L		109	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	43.3		ng/L		113	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	43.4		ng/L		113	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	45.5		ng/L		118	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.4		ng/L		106	60 - 135
NEtFOSA	40.0	44.0		ng/L		110	60 - 135
NMeFOSA	40.0	42.7		ng/L		107	60 - 135
NMeFOSAA	40.0	48.9		ng/L		122	60 - 135
NEtFOSAA	40.0	41.9		ng/L		105	60 - 135
NMeFOSE	40.0	37.9		ng/L		95	60 - 135
NEtFOSE	40.0	35.9		ng/L		90	60 - 135
4:2 FTS	37.4	40.4		ng/L		108	60 - 135
6:2 FTS	37.9	35.0		ng/L		92	60 - 135
8:2 FTS	38.3	35.4		ng/L		92	60 - 135
10:2 FTS	38.6	36.7		ng/L		95	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	47.2		ng/L		125	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.7		ng/L		112	60 - 135
F-53B Major	37.3	39.4		ng/L		106	60 - 135
F-53B Minor	37.7	39.9		ng/L		106	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*83*		*25 - 150*
13C5 PFPeA	*81*		*25 - 150*
13C2 PFHxA	*84*		*25 - 150*
13C4 PFHpA	*107*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*84*		*25 - 150*
13C2 PFDA	*102*		*25 - 150*
13C2 PFUnA	*104*		*25 - 150*
13C2 PFDoA	*96*		*25 - 150*
13C2 PFTeDA	*107*		*25 - 150*
13C2 PFHxDA	*113*		*25 - 150*
13C3 PFBS	*73*		*25 - 150*
18O2 PFHxS	*84*		*25 - 150*
13C4 PFOS	*79*		*25 - 150*
13C8 FOSA	*79*		*10 - 150*
d3-NMeFOSAA	*78*		*25 - 150*
d5-NEtFOSAA	*97*		*25 - 150*
d-N-MeFOSA-M	*76*		*10 - 150*
d-N-EtFOSA-M	*68*		*10 - 150*

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

Lab Sample ID: LCS 320-520846/2-A
Matrix: Water
Analysis Batch: 521137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 520846

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*103*		*10 - 150*
d9-N-EtFOSE-M	*103*		*10 - 150*
M2-4:2 FTS	*83*		*25 - 150*
M2-6:2 FTS	*94*		*25 - 150*
M2-8:2 FTS	*111*		*25 - 150*
13C3 HFPO-DA	*73*		*25 - 150*
13C2 10:2 FTS	*120*		*25 - 150*

Lab Sample ID: LCSD 320-520846/3-A
Matrix: Water
Analysis Batch: 521137

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 520846

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	44.2		ng/L		111	60 - 135	3	30
Perfluoropentanoic acid (PFPeA)			40.0	47.4		ng/L		118	60 - 135	19	30
Perfluorohexanoic acid (PFHxA)			40.0	46.5		ng/L		116	60 - 135	11	30
Perfluoroheptanoic acid (PFHpA)			40.0	46.4		ng/L		116	60 - 135	8	30
Perfluorooctanoic acid (PFOA)			40.0	42.7		ng/L		107	60 - 135	7	30
Perfluorononanoic acid (PFNA)			40.0	41.5		ng/L		104	60 - 135	15	30
Perfluorodecanoic acid (PFDA)			40.0	43.8		ng/L		109	60 - 135	4	30
Perfluoroundecanoic acid (PFUnA)			40.0	40.3		ng/L		101	60 - 135	2	30
Perfluorododecanoic acid (PFDoA)			40.0	40.4		ng/L		101	60 - 135	12	30
Perfluorotridecanoic acid (PFTriA)			40.0	39.6		ng/L		99	60 - 135	22	30
Perfluorotetradecanoic acid (PFTeA)			40.0	42.3		ng/L		106	60 - 135	0	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	45.8		ng/L		115	60 - 135	1	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	51.4		ng/L		129	60 - 135	6	30
Perfluorobutanesulfonic acid (PFBS)			35.4	31.9		ng/L		90	60 - 135	1	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	39.5		ng/L		105	60 - 135	9	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	38.9		ng/L		107	60 - 135	5	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	42.1		ng/L		110	60 - 135	20	30
Perfluorooctanesulfonic acid (PFOS)			37.1	39.5		ng/L		106	60 - 135	2	30
Perfluorononanesulfonic acid (PFNS)			38.4	38.3		ng/L		100	60 - 135	12	30
Perfluorodecanesulfonic acid (PFDS)			38.6	39.2		ng/L		102	60 - 135	10	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	42.0		ng/L		108	60 - 135	8	30
Perfluorooctanesulfonamide (FOSA)			40.0	38.9		ng/L		97	60 - 135	9	30
NEtFOSA			40.0	45.9		ng/L		115	60 - 135	4	30
NMeFOSA			40.0	41.3		ng/L		103	60 - 135	3	30
NMeFOSAA			40.0	48.4		ng/L		121	60 - 135	1	30

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

Lab Sample ID: LCSD 320-520846/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 521137
Prep Batch: 520846

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	41.4		ng/L		103	60 - 135	1	30
NMeFOSE			40.0	41.7		ng/L		104	60 - 135	10	30
NEtFOSE			40.0	36.4		ng/L		91	60 - 135	2	30
4:2 FTS			37.4	41.7		ng/L		112	60 - 135	3	30
6:2 FTS			37.9	37.9		ng/L		100	60 - 135	8	30
8:2 FTS			38.3	40.6		ng/L		106	60 - 135	14	30
10:2 FTS			38.6	37.3		ng/L		97	60 - 135	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	43.4		ng/L		115	60 - 135	8	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	40.6		ng/L		101	60 - 135	10	30
F-53B Major			37.3	41.0		ng/L		110	60 - 135	4	30
F-53B Minor			37.7	39.3		ng/L		104	60 - 135	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*87*		*25 - 150*
13C5 PFPeA	*84*		*25 - 150*
13C2 PFHxA	*88*		*25 - 150*
13C4 PFHpA	*98*		*25 - 150*
13C4 PFOA	*108*		*25 - 150*
13C5 PFNA	*104*		*25 - 150*
13C2 PFDA	*102*		*25 - 150*
13C2 PFUnA	*103*		*25 - 150*
13C2 PFDoA	*114*		*25 - 150*
13C2 PFTeDA	*119*		*25 - 150*
13C2 PFHxDA	*117*		*25 - 150*
13C3 PFBS	*93*		*25 - 150*
18O2 PFHxS	*96*		*25 - 150*
13C4 PFOS	*92*		*25 - 150*
13C8 FOSA	*93*		*10 - 150*
d3-NMeFOSAA	*80*		*25 - 150*
d5-NEtFOSAA	*83*		*25 - 150*
d-N-MeFOSA-M	*78*		*10 - 150*
d-N-EtFOSA-M	*72*		*10 - 150*
d7-N-MeFOSE-M	*109*		*10 - 150*
d9-N-EtFOSE-M	*106*		*10 - 150*
M2-4:2 FTS	*81*		*25 - 150*
M2-6:2 FTS	*100*		*25 - 150*
M2-8:2 FTS	*118*		*25 - 150*
13C3 HFPO-DA	*86*		*25 - 150*
13C2 10:2 FTS	*148*		*25 - 150*

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78227-1
Project/Site: Marinette, WI 30015296.00014 WPDES

LCMS

Prep Batch: 520846

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78227-1 - DL	V-200-A	Total/NA	Water	3535	
320-78227-1	V-200-A	Total/NA	Water	3535	
320-78227-2	V-900-A	Total/NA	Water	3535	
MB 320-520846/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-520846/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-520846/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 521137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78227-1	V-200-A	Total/NA	Water	537 (modified)	520846
MB 320-520846/1-A	Method Blank	Total/NA	Water	537 (modified)	520846
LCS 320-520846/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	520846
LCSD 320-520846/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	520846

Analysis Batch: 521230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78227-2	V-900-A	Total/NA	Water	537 (modified)	520846

Analysis Batch: 522221

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78227-1 - DL	V-200-A	Total/NA	Water	537 (modified)	520846

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-78227-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-78227-1
Date Collected: 08/27/21 11:00
Matrix: Water
Date Received: 08/28/21 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		284.6 mL	10.0 mL	520846	08/29/21 19:23	PV	TAL SAC
Total/NA	Analysis	537 (modified)	DL	5			522221	09/03/21 01:15	S1M	TAL SAC
Total/NA	Prep	3535			284.6 mL	10.0 mL	520846	08/29/21 19:23	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			521137	08/30/21 17:32	S1M	TAL SAC

Client Sample ID: V-900-A
Lab Sample ID: 320-78227-2
Date Collected: 08/27/21 11:05
Matrix: Water
Date Received: 08/28/21 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287 mL	10.0 mL	520846	08/29/21 19:23	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			521230	08/31/21 09:40	K1S	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78227-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

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

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78227-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78227-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-78227-1	V-200-A	Water	08/27/21 11:00	08/28/21 09:05
320-78227-2	V-900-A	Water	08/27/21 11:05	08/28/21 09:05

Eurofins TestAmerica, Sacramento
880 Riverside Park

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

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Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Ramirez	Date: 8-27-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time: ☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only: Walk-in Client: Lab Sampling:
Phone	TAT if different from Below ____ ☐ 2 weeks ☑ 1 week ☐ 2 days ☐ 1 day			Lab Project Number: 50015522
FAX				
Project Name: Marinette, WI				
Site: Marinette, WI				
P O # 30015296.00014 (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 (36 Compounds)	Sample Specific Notes:
V-200-A	8-27-21	11:00	G	W	2	N	N	X	System Influent
V-900-A	↓	11:05	G	W	2	N	N	X	System Effluent

320-78227 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.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No | Custody Seal No.: 168107 | Cooler Temp. (°C): Obs'd: 1.1 Corr'd: 1.5 | Therm ID No.: 2-04

Relinquished by: Jacob Ramirez	Company: Barley Excavating	Date/Time: 8-27-21 / 11:30	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: ETASAC	Date/Time: 8-28-21 / 09:05
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

9/8/2021

15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

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Sacramento Sample Receiving Notes

320-78227 Field Sheet

Tracking # : 7125 4944 8985

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-04 Corr. Factor: (+ / -) N/A °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1681076

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?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
Frozen samples show signs of thaw?	☐	☐	☑

Initials: NC Date: 8-28-21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
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: 8/28/21

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: 8/28/21

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

MONOMINEE, MI 49858
UNITED STATES US

SHIP DATE: 16JUL21
ACTWGT: 25.00 LB MAN
CAD: 525155/CAFE3406

TO

TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY

WEST SACRAMENTO CA 95605-1500
(916) 373-5600 REF:
INV:
PO: DEPT:

RMA:

FedEx Express

SATURDAY 12:00P
PRIORITY OVERNIGHT

FedEx
TRK# 7125 4944 8985
0221

95605
CA-US
SMF

X0 BLUA

4008576 27Aug2021 GRBA 56DG1/BAF3/1B23

Custody Seal
DATE
SIGNATURE

8-27-21

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TestAmerica

1681076

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc. Job Number: 320-78227-1

Login Number: 78227 **List Source: Eurofins TestAmerica, Sacramento**
List Number: 1
Creator: Oropeza, Salvador

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	1681076
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	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-78572-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
9/13/2021 5:31:28 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-78572-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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.
¤	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

Job ID: 320-78572-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-78572-1

Comments
No additional comments.

Receipt
The samples were received on 9/8/2021 9:27 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 3.7º 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 320-523689. 320-523689 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.

Client Sample ID: V-200-A
Date Collected: 09/02/21 09:00
Date Received: 09/08/21 09:27

Lab Sample ID: 320-78572-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**10**		4.4	2.1	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluoropentanoic acid (PFPeA)	**5.8**		1.8	0.43	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorohexanoic acid (PFHxA)	**3.5**		1.8	0.51	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluoroheptanoic acid (PFHpA)	**2.8**		1.8	0.22	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorooctanoic acid (PFOA)	**8.8**		1.8	0.75	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorononanoic acid (PFNA)	**1.4**	**J**	1.8	0.24	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorodecanoic acid (PFDA)	**0.93**	**J**	1.8	0.28	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluoroundecanoic acid (PFUnA)	<0.98		1.8	0.98	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorotetradecanoic acid (PFTeA)	<0.65		1.8	0.65	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.79		1.8	0.79	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.83		1.8	0.83	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorohexanesulfonic acid (PFHxS)	**0.94**	**J**	1.8	0.51	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.17		1.8	0.17	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorooctanesulfonic acid (PFOS)	**8.2**		1.8	0.48	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorododecanesulfonic acid (PFDoS)	<0.86		1.8	0.86	ng/L		09/09/21 19:27	09/11/21 00:14	1
Perfluorooctanesulfonamide (FOSA)	<0.87		1.8	0.87	ng/L		09/09/21 19:27	09/11/21 00:14	1
NEtFOSA	<0.77		1.8	0.77	ng/L		09/09/21 19:27	09/11/21 00:14	1
NMeFOSA	<0.38		1.8	0.38	ng/L		09/09/21 19:27	09/11/21 00:14	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		09/09/21 19:27	09/11/21 00:14	1
NEtFOSAA	<1.2		4.4	1.2	ng/L		09/09/21 19:27	09/11/21 00:14	1
NMeFOSE	<1.2		3.5	1.2	ng/L		09/09/21 19:27	09/11/21 00:14	1
NEtFOSE	<0.75		1.8	0.75	ng/L		09/09/21 19:27	09/11/21 00:14	1
4:2 FTS	<0.21		1.8	0.21	ng/L		09/09/21 19:27	09/11/21 00:14	1
6:2 FTS	**9.4**		4.4	2.2	ng/L		09/09/21 19:27	09/11/21 00:14	1
8:2 FTS	**17**		1.8	0.41	ng/L		09/09/21 19:27	09/11/21 00:14	1
10:2 FTS	**2.6**		1.8	0.59	ng/L		09/09/21 19:27	09/11/21 00:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		09/09/21 19:27	09/11/21 00:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		09/09/21 19:27	09/11/21 00:14	1
F-53B Major	<0.21		1.8	0.21	ng/L		09/09/21 19:27	09/11/21 00:14	1
F-53B Minor	<0.28		1.8	0.28	ng/L		09/09/21 19:27	09/11/21 00:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*99*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:14*	*1*
13C5 PFPeA	*101*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:14*	*1*
13C2 PFHxA	*102*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:14*	*1*
13C4 PFHpA	*99*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:14*	*1*
13C4 PFOA	*96*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-78572-1

Client Sample ID: V-200-A
Date Collected: 09/02/21 09:00
Date Received: 09/08/21 09:27

Lab Sample ID: 320-78572-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	91		25 - 150	09/09/21 19:27	09/11/21 00:14	1
13C2 PFDA	89		25 - 150	09/09/21 19:27	09/11/21 00:14	1
13C2 PFUnA	81		25 - 150	09/09/21 19:27	09/11/21 00:14	1
13C2 PFDoA	81		25 - 150	09/09/21 19:27	09/11/21 00:14	1
13C2 PFTeDA	79		25 - 150	09/09/21 19:27	09/11/21 00:14	1
13C2 PFHxDA	89		25 - 150	09/09/21 19:27	09/11/21 00:14	1
13C3 PFBS	95		25 - 150	09/09/21 19:27	09/11/21 00:14	1
18O2 PFHxS	105		25 - 150	09/09/21 19:27	09/11/21 00:14	1
13C4 PFOS	88		25 - 150	09/09/21 19:27	09/11/21 00:14	1
13C8 FOSA	94		10 - 150	09/09/21 19:27	09/11/21 00:14	1
d3-NMeFOSAA	87		25 - 150	09/09/21 19:27	09/11/21 00:14	1
d5-NEtFOSAA	87		25 - 150	09/09/21 19:27	09/11/21 00:14	1
d-N-MeFOSA-M	74		10 - 150	09/09/21 19:27	09/11/21 00:14	1
d-N-EtFOSA-M	76		10 - 150	09/09/21 19:27	09/11/21 00:14	1
d7-N-MeFOSE-M	73		10 - 150	09/09/21 19:27	09/11/21 00:14	1
d9-N-EtFOSE-M	76		10 - 150	09/09/21 19:27	09/11/21 00:14	1
M2-4:2 FTS	99		25 - 150	09/09/21 19:27	09/11/21 00:14	1
M2-6:2 FTS	96		25 - 150	09/09/21 19:27	09/11/21 00:14	1
M2-8:2 FTS	103		25 - 150	09/09/21 19:27	09/11/21 00:14	1
13C3 HFPO-DA	95		25 - 150	09/09/21 19:27	09/11/21 00:14	1
13C2 10:2 FTS	101		25 - 150	09/09/21 19:27	09/11/21 00:14	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-78572-1

Client Sample ID: V-900-A
Date Collected: 09/02/21 09:05
Date Received: 09/08/21 09:27

Lab Sample ID: 320-78572-2
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.1**		4.4	2.1	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluoropentanoic acid (PFPeA)	**1.5**	**J**	1.8	0.44	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorohexanoic acid (PFHxA)	<0.52		1.8	0.52	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.8	0.22	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorooctanoic acid (PFOA)	<0.76		1.8	0.76	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluoroundecanoic acid (PFUnA)	<0.98		1.8	0.98	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorotetradecanoic acid (PFTeA)	<0.65		1.8	0.65	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.79		1.8	0.79	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.84		1.8	0.84	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorohexanesulfonic acid (PFHxS)	<0.51		1.8	0.51	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.17		1.8	0.17	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorooctanesulfonic acid (PFOS)	<0.48		1.8	0.48	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorododecanesulfonic acid (PFDoS)	<0.86		1.8	0.86	ng/L		09/09/21 19:27	09/11/21 00:50	1
Perfluorooctanesulfonamide (FOSA)	<0.87		1.8	0.87	ng/L		09/09/21 19:27	09/11/21 00:50	1
NEtFOSA	<0.77		1.8	0.77	ng/L		09/09/21 19:27	09/11/21 00:50	1
NMeFOSA	<0.38		1.8	0.38	ng/L		09/09/21 19:27	09/11/21 00:50	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		09/09/21 19:27	09/11/21 00:50	1
NEtFOSAA	<1.2		4.4	1.2	ng/L		09/09/21 19:27	09/11/21 00:50	1
NMeFOSE	<1.2		3.6	1.2	ng/L		09/09/21 19:27	09/11/21 00:50	1
NEtFOSE	<0.76		1.8	0.76	ng/L		09/09/21 19:27	09/11/21 00:50	1
4:2 FTS	<0.21		1.8	0.21	ng/L		09/09/21 19:27	09/11/21 00:50	1
6:2 FTS	<2.2		4.4	2.2	ng/L		09/09/21 19:27	09/11/21 00:50	1
8:2 FTS	<0.41		1.8	0.41	ng/L		09/09/21 19:27	09/11/21 00:50	1
10:2 FTS	<0.60		1.8	0.60	ng/L		09/09/21 19:27	09/11/21 00:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		09/09/21 19:27	09/11/21 00:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.6	1.3	ng/L		09/09/21 19:27	09/11/21 00:50	1
F-53B Major	<0.21		1.8	0.21	ng/L		09/09/21 19:27	09/11/21 00:50	1
F-53B Minor	<0.28		1.8	0.28	ng/L		09/09/21 19:27	09/11/21 00:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*93*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:50*	*1*
13C5 PFPeA	*101*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:50*	*1*
13C2 PFHxA	*93*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:50*	*1*
13C4 PFHpA	*99*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:50*	*1*
13C4 PFOA	*97*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:50*	*1*
13C5 PFNA	*85*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:50*	*1*
13C2 PFDA	*88*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:50*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-78572-1

Client Sample ID: V-900-A
Date Collected: 09/02/21 09:05
Date Received: 09/08/21 09:27

Lab Sample ID: 320-78572-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	79		25 - 150	09/09/21 19:27	09/11/21 00:50	1
13C2 PFDoA	76		25 - 150	09/09/21 19:27	09/11/21 00:50	1
13C2 PFTeDA	75		25 - 150	09/09/21 19:27	09/11/21 00:50	1
13C2 PFHxDA	80		25 - 150	09/09/21 19:27	09/11/21 00:50	1
13C3 PFBS	94		25 - 150	09/09/21 19:27	09/11/21 00:50	1
18O2 PFHxS	99		25 - 150	09/09/21 19:27	09/11/21 00:50	1
13C4 PFOS	85		25 - 150	09/09/21 19:27	09/11/21 00:50	1
13C8 FOSA	89		10 - 150	09/09/21 19:27	09/11/21 00:50	1
d3-NMeFOSAA	82		25 - 150	09/09/21 19:27	09/11/21 00:50	1
d5-NEtFOSAA	88		25 - 150	09/09/21 19:27	09/11/21 00:50	1
d-N-MeFOSA-M	66		10 - 150	09/09/21 19:27	09/11/21 00:50	1
d-N-EtFOSA-M	72		10 - 150	09/09/21 19:27	09/11/21 00:50	1
d7-N-MeFOSE-M	71		10 - 150	09/09/21 19:27	09/11/21 00:50	1
d9-N-EtFOSE-M	74		10 - 150	09/09/21 19:27	09/11/21 00:50	1
M2-4:2 FTS	101		25 - 150	09/09/21 19:27	09/11/21 00:50	1
M2-6:2 FTS	99		25 - 150	09/09/21 19:27	09/11/21 00:50	1
M2-8:2 FTS	101		25 - 150	09/09/21 19:27	09/11/21 00:50	1
13C3 HFPO-DA	98		25 - 150	09/09/21 19:27	09/11/21 00:50	1
13C2 10:2 FTS	96		25 - 150	09/09/21 19:27	09/11/21 00:50	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-78572-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
320-78572-1	V-200-A	99	101	102	99	96	91	89	81
320-78572-2	V-900-A	93	101	93	99	97	85	88	79
LCS 320-523689/2-A	Lab Control Sample	99	96	96	101	96	94	94	97
LCSD 320-523689/3-A	Lab Control Sample Dup	89	96	91	98	94	85	93	85
MB 320-523689/1-A	Method Blank	93	98	92	96	96	91	98	96

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	PFTDA	PFHxDA	C3PFBS	PFHxS	PFOS	PFOSA	d3NMFOS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(10-150)	(25-150)
320-78572-1	V-200-A	81	79	89	95	105	88	94	87
320-78572-2	V-900-A	76	75	80	94	99	85	89	82
LCS 320-523689/2-A	Lab Control Sample	91	89	89	87	96	93	85	91
LCSD 320-523689/3-A	Lab Control Sample Dup	90	91	84	90	95	90	87	91
MB 320-523689/1-A	Method Blank	96	79	88	92	96	94	89	93

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		d5NEFOS	dMeFOSA	dEtFOSA	NMFM	NEFM	M242FTS	M262FTS	M282FTS
Lab Sample ID	Client Sample ID	(25-150)	(10-150)	(10-150)	(10-150)	(10-150)	(25-150)	(25-150)	(25-150)
320-78572-1	V-200-A	87	74	76	73	76	99	96	103
320-78572-2	V-900-A	88	66	72	71	74	101	99	101
LCS 320-523689/2-A	Lab Control Sample	93	78	73	82	87	108	113	111
LCSD 320-523689/3-A	Lab Control Sample Dup	90	74	75	82	85	107	104	111
MB 320-523689/1-A	Method Blank	99	78	80	85	87	113	111	118

		Percent Isotope Dilution Recovery (Acceptance Limits)	
		HFPODA	M102FTS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)
320-78572-1	V-200-A	95	101
320-78572-2	V-900-A	98	96
LCS 320-523689/2-A	Lab Control Sample	96	113
LCSD 320-523689/3-A	Lab Control Sample Dup	94	107
MB 320-523689/1-A	Method Blank	99	118

Surrogate Legend

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

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78572-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-523689/1-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 523689

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		09/09/21 19:27	09/10/21 22:52	1
NEtFOSA	<0.87		2.0	0.87	ng/L		09/09/21 19:27	09/10/21 22:52	1
NMeFOSA	<0.43		2.0	0.43	ng/L		09/09/21 19:27	09/10/21 22:52	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		09/09/21 19:27	09/10/21 22:52	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		09/09/21 19:27	09/10/21 22:52	1
NMeFOSE	<1.4		4.0	1.4	ng/L		09/09/21 19:27	09/10/21 22:52	1
NEtFOSE	<0.85		2.0	0.85	ng/L		09/09/21 19:27	09/10/21 22:52	1
4:2 FTS	<0.24		2.0	0.24	ng/L		09/09/21 19:27	09/10/21 22:52	1
6:2 FTS	<2.5		5.0	2.5	ng/L		09/09/21 19:27	09/10/21 22:52	1
8:2 FTS	<0.46		2.0	0.46	ng/L		09/09/21 19:27	09/10/21 22:52	1
10:2 FTS	<0.67		2.0	0.67	ng/L		09/09/21 19:27	09/10/21 22:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		09/09/21 19:27	09/10/21 22:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		09/09/21 19:27	09/10/21 22:52	1
F-53B Major	<0.24		2.0	0.24	ng/L		09/09/21 19:27	09/10/21 22:52	1
F-53B Minor	<0.32		2.0	0.32	ng/L		09/09/21 19:27	09/10/21 22:52	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*93*		*25 - 150*	*09/09/21 19:27*	*09/10/21 22:52*	*1*
13C5 PFPeA	*98*		*25 - 150*	*09/09/21 19:27*	*09/10/21 22:52*	*1*
13C2 PFHxA	*92*		*25 - 150*	*09/09/21 19:27*	*09/10/21 22:52*	*1*
13C4 PFHpA	*96*		*25 - 150*	*09/09/21 19:27*	*09/10/21 22:52*	*1*
13C4 PFOA	*96*		*25 - 150*	*09/09/21 19:27*	*09/10/21 22:52*	*1*

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

Lab Sample ID: MB 320-523689/1-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 523689

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	91		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 PFDA	98		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 PFUnA	96		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 PFDoA	96		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 PFTeDA	79		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 PFHxDA	88		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C3 PFBS	92		25 - 150	09/09/21 19:27	09/10/21 22:52	1
18O2 PFHxS	96		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C4 PFOS	94		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C8 FOSA	89		10 - 150	09/09/21 19:27	09/10/21 22:52	1
d3-NMeFOSAA	93		25 - 150	09/09/21 19:27	09/10/21 22:52	1
d5-NEtFOSAA	99		25 - 150	09/09/21 19:27	09/10/21 22:52	1
d-N-MeFOSA-M	78		10 - 150	09/09/21 19:27	09/10/21 22:52	1
d-N-EtFOSA-M	80		10 - 150	09/09/21 19:27	09/10/21 22:52	1
d7-N-MeFOSE-M	85		10 - 150	09/09/21 19:27	09/10/21 22:52	1
d9-N-EtFOSE-M	87		10 - 150	09/09/21 19:27	09/10/21 22:52	1
M2-4:2 FTS	113		25 - 150	09/09/21 19:27	09/10/21 22:52	1
M2-6:2 FTS	111		25 - 150	09/09/21 19:27	09/10/21 22:52	1
M2-8:2 FTS	118		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C3 HFPO-DA	99		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 10:2 FTS	118		25 - 150	09/09/21 19:27	09/10/21 22:52	1

Lab Sample ID: LCS 320-523689/2-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 523689

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	39.6		ng/L		99	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	38.5		ng/L		96	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	38.8		ng/L		97	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	38.6		ng/L		97	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	43.7		ng/L		109	60 - 135
Perfluorononanoic acid (PFNA)	40.0	46.5		ng/L		116	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	41.0		ng/L		102	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	41.4		ng/L		103	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	42.1		ng/L		105	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	41.2		ng/L		103	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	42.8		ng/L		107	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.6		ng/L		106	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	43.0		ng/L		108	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	40.5		ng/L		115	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	44.2		ng/L		118	60 - 135

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

Lab Sample ID: LCS 320-523689/2-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 523689

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.7		ng/L		95	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.5		ng/L		106	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	41.8		ng/L		113	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	41.9		ng/L		109	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	39.7		ng/L		103	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	34.4		ng/L		89	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	41.8		ng/L		105	60 - 135
NEtFOSA	40.0	37.1		ng/L		93	60 - 135
NMeFOSA	40.0	44.9		ng/L		112	60 - 135
NMeFOSAA	40.0	41.5		ng/L		104	60 - 135
NEtFOSAA	40.0	40.2		ng/L		101	60 - 135
NMeFOSE	40.0	47.2		ng/L		118	60 - 135
NEtFOSE	40.0	43.0		ng/L		108	60 - 135
4:2 FTS	37.4	38.0		ng/L		102	60 - 135
6:2 FTS	37.9	38.9		ng/L		103	60 - 135
8:2 FTS	38.3	39.5		ng/L		103	60 - 135
10:2 FTS	38.6	35.1		ng/L		91	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.4		ng/L		115	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.3		ng/L		111	60 - 135
F-53B Major	37.3	38.6		ng/L		104	60 - 135
F-53B Minor	37.7	37.7		ng/L		100	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*99*		*25 - 150*
13C5 PFPeA	*96*		*25 - 150*
13C2 PFHxA	*96*		*25 - 150*
13C4 PFHpA	*101*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*94*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*97*		*25 - 150*
13C2 PFDoA	*91*		*25 - 150*
13C2 PFTeDA	*89*		*25 - 150*
13C2 PFHxDA	*89*		*25 - 150*
13C3 PFBS	*87*		*25 - 150*
18O2 PFHxS	*96*		*25 - 150*
13C4 PFOS	*93*		*25 - 150*
13C8 FOSA	*85*		*10 - 150*
d3-NMeFOSAA	*91*		*25 - 150*
d5-NEtFOSAA	*93*		*25 - 150*
d-N-MeFOSA-M	*78*		*10 - 150*
d-N-EtFOSA-M	*73*		*10 - 150*

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

Lab Sample ID: LCS 320-523689/2-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 523689

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*82*		*10 - 150*
d9-N-EtFOSE-M	*87*		*10 - 150*
M2-4:2 FTS	*108*		*25 - 150*
M2-6:2 FTS	*113*		*25 - 150*
M2-8:2 FTS	*111*		*25 - 150*
13C3 HFPO-DA	*96*		*25 - 150*
13C2 10:2 FTS	*113*		*25 - 150*

Lab Sample ID: LCSD 320-523689/3-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 523689

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	41.2		ng/L		103	60 - 135	4	30
Perfluoropentanoic acid (PFPeA)			40.0	37.2		ng/L		93	60 - 135	3	30
Perfluorohexanoic acid (PFHxA)			40.0	38.3		ng/L		96	60 - 135	1	30
Perfluoroheptanoic acid (PFHpA)			40.0	39.8		ng/L		100	60 - 135	3	30
Perfluorooctanoic acid (PFOA)			40.0	42.9		ng/L		107	60 - 135	2	30
Perfluorononanoic acid (PFNA)			40.0	48.2		ng/L		120	60 - 135	3	30
Perfluorodecanoic acid (PFDA)			40.0	39.6		ng/L		99	60 - 135	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	46.4		ng/L		116	60 - 135	11	30
Perfluorododecanoic acid (PFDoA)			40.0	41.6		ng/L		104	60 - 135	1	30
Perfluorotridecanoic acid (PFTriA)			40.0	38.5		ng/L		96	60 - 135	7	30
Perfluorotetradecanoic acid (PFTeA)			40.0	36.7		ng/L		92	60 - 135	15	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	38.6		ng/L		96	60 - 135	10	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	37.2		ng/L		93	60 - 135	14	30
Perfluorobutanesulfonic acid (PFBS)			35.4	35.5		ng/L		100	60 - 135	13	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	39.7		ng/L		106	60 - 135	11	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	35.7		ng/L		98	60 - 135	3	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	41.3		ng/L		108	60 - 135	2	30
Perfluorooctanesulfonic acid (PFOS)			37.1	43.5		ng/L		117	60 - 135	4	30
Perfluorononanesulfonic acid (PFNS)			38.4	42.9		ng/L		112	60 - 135	2	30
Perfluorodecanesulfonic acid (PFDS)			38.6	39.2		ng/L		102	60 - 135	1	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	34.9		ng/L		90	60 - 135	2	30
Perfluorooctanesulfonamide (FOSA)			40.0	37.8		ng/L		95	60 - 135	10	30
NEtFOSA			40.0	35.2		ng/L		88	60 - 135	5	30
NMeFOSA			40.0	42.5		ng/L		106	60 - 135	5	30
NMeFOSAA			40.0	39.6		ng/L		99	60 - 135	5	30

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

Lab Sample ID: LCSD 320-523689/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 523943
Prep Batch: 523689

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	38.1		ng/L		95	60 - 135	5	30
NMeFOSE			40.0	39.9		ng/L		100	60 - 135	17	30
NEtFOSE			40.0	37.7		ng/L		94	60 - 135	13	30
4:2 FTS			37.4	36.2		ng/L		97	60 - 135	5	30
6:2 FTS			37.9	41.4		ng/L		109	60 - 135	6	30
8:2 FTS			38.3	41.1		ng/L		107	60 - 135	4	30
10:2 FTS			38.6	36.6		ng/L		95	60 - 135	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	42.6		ng/L		113	60 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	43.7		ng/L		109	60 - 135	1	30
F-53B Major			37.3	39.7		ng/L		106	60 - 135	3	30
F-53B Minor			37.7	37.7		ng/L		100	60 - 135	0	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*89*		*25 - 150*
13C5 PFPeA	*96*		*25 - 150*
13C2 PFHxA	*91*		*25 - 150*
13C4 PFHpA	*98*		*25 - 150*
13C4 PFOA	*94*		*25 - 150*
13C5 PFNA	*85*		*25 - 150*
13C2 PFDA	*93*		*25 - 150*
13C2 PFUnA	*85*		*25 - 150*
13C2 PFDoA	*90*		*25 - 150*
13C2 PFTeDA	*91*		*25 - 150*
13C2 PFHxDA	*84*		*25 - 150*
13C3 PFBS	*90*		*25 - 150*
18O2 PFHxS	*95*		*25 - 150*
13C4 PFOS	*90*		*25 - 150*
13C8 FOSA	*87*		*10 - 150*
d3-NMeFOSAA	*91*		*25 - 150*
d5-NEtFOSAA	*90*		*25 - 150*
d-N-MeFOSA-M	*74*		*10 - 150*
d-N-EtFOSA-M	*75*		*10 - 150*
d7-N-MeFOSE-M	*82*		*10 - 150*
d9-N-EtFOSE-M	*85*		*10 - 150*
M2-4:2 FTS	*107*		*25 - 150*
M2-6:2 FTS	*104*		*25 - 150*
M2-8:2 FTS	*111*		*25 - 150*
13C3 HFPO-DA	*94*		*25 - 150*
13C2 10:2 FTS	*107*		*25 - 150*

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78572-1
Project/Site: Marinette, WI 30015296.00014 WPDES

LCMS

Prep Batch: 523689

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78572-1	V-200-A	Total/NA	Water	3535	
320-78572-2	V-900-A	Total/NA	Water	3535	
MB 320-523689/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-523689/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-523689/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 523943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78572-1	V-200-A	Total/NA	Water	537 (modified)	523689
320-78572-2	V-900-A	Total/NA	Water	537 (modified)	523689
MB 320-523689/1-A	Method Blank	Total/NA	Water	537 (modified)	523689
LCS 320-523689/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	523689
LCSD 320-523689/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	523689

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-78572-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-78572-1
Date Collected: 09/02/21 09:00
Matrix: Water
Date Received: 09/08/21 09:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.8 mL	10.0 mL	523689	09/09/21 19:27	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			523943	09/11/21 00:14	K1S	TAL SAC

Client Sample ID: V-900-A
Lab Sample ID: 320-78572-2
Date Collected: 09/02/21 09:05
Matrix: Water
Date Received: 09/08/21 09:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.2 mL	10.0 mL	523689	09/09/21 19:27	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			523943	09/11/21 00:50	K1S	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78572-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

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

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78572-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78572-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-78572-1	V-200-A	Water	09/02/21 09:00	09/08/21 09:27
320-78572-2	V-900-A	Water	09/02/21 09:05	09/08/21 09:27

Eurofins TestAmerica, Sacramento
880 Riverside Park

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

eurofins
Environment Testing
TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Ramingor	Date: 9-2-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time: ☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only: Walk-in Client: Lab Sampling:
Phone	TAT if different from Below: ☐ 2 weeks ☑ 1 week ☐ 2 days ☐ 1 day			Lab Project Number: 50015522
FAX				
Project Name: Marinette, WI				
Site: Marinette, WI				
P O # 30015296.00014 (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 (36 Compounds)	Sample Specific Notes:
V-200-A	9-2-21	9:00	G	W	2	N	N	X	System Influent
V-900-A	↓	9:05	G	W	2	N	N	X	System Effluent

320-78572 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 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

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

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1749583		Cooler Temp. (°C): Obs'd: 3.7	Corr'd: 3.7	Therm ID No.: L-37	
Relinquished by: Jacob Ramingor	Company: Barley Excavating	Date/Time: 9-2-21/9:30	Received by: Fed Ex	Company:	Date/Time:	
Relinquished by:	Company:	Date/Time:	Received by:	Company: ETASAL	Date/Time: 9-8-21 / 09:27	
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:	

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

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Sacramento Sample Receiving Notes

320-78572 Field Sheet

Tracking # : 5174 1264 6528

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-07 Corr. Factor: (+ / -) N/A °C

Ice ✓ Wet ✓ Gel ___ Other ___

Cooler Custody Seal: 1749583

Cooler ID: ✓

Temp Observed: 3.7 °C Corrected: 3.7 °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: NC Date: 9-8-21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
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: 9/8/21

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: 9/8/21

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

MENOMINEE, MI 49858
UNITED STATES US

SHIP DATE: 25AUG21
ACTWGT: 10.00 LB MAN
CAD: 0562071/CAFE3504

TO

EUROFINS TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY

WEST SACRAMENTO CA 956051500
6) 373 - 5600
EF: 8600-87043

FedEx Express

E

FedEx
5174 1264 6528

WED - 08 SEP AA
PRIORITY OVERNIGHT

NH BLUA

95605
CA-US
SMF

3926153 07Sep2021 GRBA 56DG3/169A/1B23

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1749583

Custody Seal
DATE 9-7-21
SIGNATURE

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1749583

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc. Job Number: 320-78572-1

Login Number: 78572 **List Source: Eurofins TestAmerica, Sacramento**
List Number: 1
Creator: Oropeza, Salvador

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	1749583
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	
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	

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-83218-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
12/30/2021 11:57:27 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-83218-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
^c	CCV Recovery is outside acceptance limits.
B	Compound was found in the blank and sample.
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.
¤	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

Job ID: 320-83218-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-83218-1

Comments
No additional comments.

Receipt
The samples were received on 12/21/2021 11:20 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 3.0º C.

LCMS
Method 537 (modified): The concentration of one or more analytes associated with the following sample exceeded the instrument calibration range: 320-83218-1. These analytes have been qualified; however, the peak(s) 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 320-83218-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte 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 50X analysis is 111.72% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The concentration of Perfluorooctanoic Acid associated with the following sample exceeded the instrument calibration range: 320-83218-1. This analyte has been qualified; however, the peak did not saturate the instrument detector. Sample was re-analyzed at a dilution with improved data. Per client request, all sets of data have been reported.

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-554451 recovered above the upper control limit for Perfluoro-n-octadecanoic acid (PFODA). The sample associated with this CCV was non-detects for the affected analyte; therefore, the data have been reported. The associated samples is impacted: 320-83218-1 and CCV 320-554451/8.

Method 537 (modified): Results for sample 320-83218-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were above acceptance limits. The percent recovery for the internal standard in the 20X analysis is 153.63% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The transition mass ratio was outside of the established ratio limit for Perfluorotetradecanoic acid (PFTeDA) in ICB 320-553898/8 associated to this data set. This is indicated by the "R" flag in the raw data. ICB 320-553898/8

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: 320-83218-1. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries. The sample was re-analyzed at a dilution with improved data. Per client request, all runs 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 320-553159. Method code: 3535_PFC_28D Matrix: Aqueous

Method 3535: The following samples were yellow and contain a thin layer of sediment at the bottom of the bottle prior to extraction: 320-83218-1. preparation batch 320-553159. Method code: 3535_PFC_28D Matrix: Aqueous

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

Client Sample ID: V-200-A
Date Collected: 12/20/21 10:25
Date Received: 12/21/21 11:20

Lab Sample ID: 320-83218-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**190**		4.9	2.4	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluoropentanoic acid (PFPeA)	**430**	**E**	2.0	0.48	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorohexanoic acid (PFHxA)	**900**	**E**	2.0	0.57	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluoroheptanoic acid (PFHpA)	**580**	**E**	2.0	0.25	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorooctanoic acid (PFOA)	**6600**	**E**	2.0	0.84	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorononanoic acid (PFNA)	**290**		2.0	0.27	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorodecanoic acid (PFDA)	**9.7**		2.0	0.31	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluoroundecanoic acid (PFUnA)	**4.1**		2.0	1.1	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorododecanoic acid (PFDoA)	**0.58**	**J**	2.0	0.54	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorotetradecanoic acid (PFTeA)	<0.72		2.0	0.72	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.88		2.0	0.88	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.93		2.0	0.93	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorobutanesulfonic acid (PFBS)	**15**		2.0	0.20	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluoropentanesulfonic acid (PFPeS)	**20**		2.0	0.30	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorohexanesulfonic acid (PFHxS)	**160**		2.0	0.56	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	**5.2**		2.0	0.19	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorooctanesulfonic acid (PFOS)	**200**	**B**	2.0	0.53	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorononanesulfonic acid (PFNS)	<0.36		2.0	0.36	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorododecanesulfonic acid (PFDoS)	<0.96		2.0	0.96	ng/L		12/22/21 12:46	12/24/21 03:06	1
Perfluorooctanesulfonamide (FOSA)	**3.8**		2.0	0.97	ng/L		12/22/21 12:46	12/24/21 03:06	1
NEtFOSA	<0.86		2.0	0.86	ng/L		12/22/21 12:46	12/24/21 03:06	1
NMeFOSA	<0.42		2.0	0.42	ng/L		12/22/21 12:46	12/24/21 03:06	1
NMeFOSAA	<1.2		4.9	1.2	ng/L		12/22/21 12:46	12/24/21 03:06	1
NEtFOSAA	<1.3		4.9	1.3	ng/L		12/22/21 12:46	12/24/21 03:06	1
NMeFOSE	<1.4		3.9	1.4	ng/L		12/22/21 12:46	12/24/21 03:06	1
NEtFOSE	<0.84		2.0	0.84	ng/L		12/22/21 12:46	12/24/21 03:06	1
4:2 FTS	**110**		2.0	0.24	ng/L		12/22/21 12:46	12/24/21 03:06	1
6:2 FTS	**1700**	**E**	4.9	2.5	ng/L		12/22/21 12:46	12/24/21 03:06	1
8:2 FTS	**93**		2.0	0.45	ng/L		12/22/21 12:46	12/24/21 03:06	1
10:2 FTS	**14**		2.0	0.66	ng/L		12/22/21 12:46	12/24/21 03:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.39		2.0	0.39	ng/L		12/22/21 12:46	12/24/21 03:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		3.9	1.5	ng/L		12/22/21 12:46	12/24/21 03:06	1
F-53B Major	<0.24		2.0	0.24	ng/L		12/22/21 12:46	12/24/21 03:06	1
F-53B Minor	<0.32		2.0	0.32	ng/L		12/22/21 12:46	12/24/21 03:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*151*	*	*25 - 150*	*12/22/21 12:46*	*12/24/21 03:06*	*1*
13C5 PFPeA	*162*	*	*25 - 150*	*12/22/21 12:46*	*12/24/21 03:06*	*1*

Client Sample ID: V-200-A
Date Collected: 12/20/21 10:25
Date Received: 12/21/21 11:20

Lab Sample ID: 320-83218-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	143		25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C4 PFHpA	173	*	25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C4 PFOA	78		25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C5 PFNA	148		25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C2 PFDA	142		25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C2 PFUnA	128		25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C2 PFDoA	137		25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C2 PFTeDA	122		25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C2 PFHxDA	106		25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C3 PFBS	170	*	25 - 150	12/22/21 12:46	12/24/21 03:06	1
18O2 PFHxS	162	*	25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C4 PFOS	134		25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C8 FOSA	105		10 - 150	12/22/21 12:46	12/24/21 03:06	1
d3-NMeFOSAA	112		25 - 150	12/22/21 12:46	12/24/21 03:06	1
d5-NEtFOSAA	138		25 - 150	12/22/21 12:46	12/24/21 03:06	1
d-N-MeFOSA-M	102		10 - 150	12/22/21 12:46	12/24/21 03:06	1
d-N-EtFOSA-M	97		10 - 150	12/22/21 12:46	12/24/21 03:06	1
d7-N-MeFOSE-M	118		10 - 150	12/22/21 12:46	12/24/21 03:06	1
d9-N-EtFOSE-M	114		10 - 150	12/22/21 12:46	12/24/21 03:06	1
M2-4:2 FTS	189	*	25 - 150	12/22/21 12:46	12/24/21 03:06	1
M2-6:2 FTS	91		25 - 150	12/22/21 12:46	12/24/21 03:06	1
M2-8:2 FTS	144		25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C3 HFPO-DA	148		25 - 150	12/22/21 12:46	12/24/21 03:06	1
13C2 10:2 FTS	159	*	25 - 150	12/22/21 12:46	12/24/21 03:06	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**180**	**J**	250	120	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluoropentanoic acid (PFPeA)	**420**		99	24	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorohexanoic acid (PFHxA)	**930**		99	29	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluoroheptanoic acid (PFHpA)	**590**		99	12	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorooctanoic acid (PFOA)	**12000**		99	42	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorononanoic acid (PFNA)	**330**		99	13	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorodecanoic acid (PFDA)	<15		99	15	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluoroundecanoic acid (PFUnA)	<54		99	54	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorododecanoic acid (PFDoA)	<27		99	27	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorotridecanoic acid (PFTriA)	<64		99	64	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorotetradecanoic acid (PFTeA)	<36		99	36	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluoro-n-hexadecanoic acid (PFHxDA)	<44		99	44	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluoro-n-octadecanoic acid (PFODA)	<46	^c	99	46	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorobutanesulfonic acid (PFBS)	**14**	**J**	99	9.9	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluoropentanesulfonic acid (PFPeS)	**17**	**J**	99	15	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorohexanesulfonic acid (PFHxS)	**140**		99	28	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluoroheptanesulfonic Acid (PFHpS)	<9.4		99	9.4	ng/L		12/22/21 12:46	12/29/21 09:02	50

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-83218-1

Client Sample ID: V-200-A
Date Collected: 12/20/21 10:25
Date Received: 12/21/21 11:20

Lab Sample ID: 320-83218-1
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**200**	**B**	99	27	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorononanesulfonic acid (PFNS)	<18		99	18	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorodecanesulfonic acid (PFDS)	<16		99	16	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorododecanesulfonic acid (PFDoS)	<48		99	48	ng/L		12/22/21 12:46	12/29/21 09:02	50
Perfluorooctanesulfonamide (FOSA)	<48		99	48	ng/L		12/22/21 12:46	12/29/21 09:02	50
NEtFOSA	<43		99	43	ng/L		12/22/21 12:46	12/29/21 09:02	50
NMeFOSA	<21		99	21	ng/L		12/22/21 12:46	12/29/21 09:02	50
NMeFOSAA	<59		250	59	ng/L		12/22/21 12:46	12/29/21 09:02	50
NEtFOSAA	<64		250	64	ng/L		12/22/21 12:46	12/29/21 09:02	50
NMeFOSE	<69		200	69	ng/L		12/22/21 12:46	12/29/21 09:02	50
NEtFOSE	<42		99	42	ng/L		12/22/21 12:46	12/29/21 09:02	50
4:2 FTS	**150**		99	12	ng/L		12/22/21 12:46	12/29/21 09:02	50
6:2 FTS	**1800**		250	120	ng/L		12/22/21 12:46	12/29/21 09:02	50
8:2 FTS	**95**	**J**	99	23	ng/L		12/22/21 12:46	12/29/21 09:02	50
10:2 FTS	<33		99	33	ng/L		12/22/21 12:46	12/29/21 09:02	50
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<20		99	20	ng/L		12/22/21 12:46	12/29/21 09:02	50
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<74		200	74	ng/L		12/22/21 12:46	12/29/21 09:02	50
F-53B Major	<12		99	12	ng/L		12/22/21 12:46	12/29/21 09:02	50
F-53B Minor	<16		99	16	ng/L		12/22/21 12:46	12/29/21 09:02	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*90*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C5 PFPeA	*100*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C2 PFHxA	*95*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C4 PFHpA	*93*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C4 PFOA	*93*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C5 PFNA	*75*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C2 PFDA	*75*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C2 PFUnA	*75*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C2 PFDoA	*81*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C2 PFTeDA	*70*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C2 PFHxDA	*98*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C3 PFBS	*94*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
18O2 PFHxS	*88*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C4 PFOS	*78*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C8 FOSA	*65*		*10 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
d3-NMeFOSAA	*65*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
d5-NEtFOSAA	*78*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
d-N-MeFOSA-M	*61*		*10 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
d-N-EtFOSA-M	*52*		*10 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
d7-N-MeFOSE-M	*89*		*10 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
d9-N-EtFOSE-M	*58*		*10 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
M2-4:2 FTS	*63*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
M2-6:2 FTS	*99*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
M2-8:2 FTS	*86*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C3 HFPO-DA	*86*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*
13C2 10:2 FTS	*69*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:02*	*50*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-83218-1

Client Sample ID: V-200-A
Date Collected: 12/20/21 10:25
Date Received: 12/21/21 11:20

Lab Sample ID: 320-83218-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances - DL2

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**180**		99	47	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluoropentanoic acid (PFPeA)	**480**		39	9.7	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorohexanoic acid (PFHxA)	**1000**		39	11	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluoroheptanoic acid (PFHpA)	**590**		39	4.9	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorooctanoic acid (PFOA)	**9900**	**E**	39	17	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorononanoic acid (PFNA)	**290**		39	5.3	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorodecanoic acid (PFDA)	**8.4**	**J**	39	6.1	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluoroundecanoic acid (PFUnA)	<22		39	22	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorododecanoic acid (PFDoA)	<11		39	11	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorotridecanoic acid (PFTriA)	<26		39	26	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorotetradecanoic acid (PFTeA)	<14		39	14	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluoro-n-hexadecanoic acid (PFHxDA)	<18		39	18	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluoro-n-octadecanoic acid (PFODA)	<19	^c	39	19	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorobutanesulfonic acid (PFBS)	**17**	**J**	39	3.9	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluoropentanesulfonic acid (PFPeS)	**17**	**J**	39	5.9	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorohexanesulfonic acid (PFHxS)	**130**		39	11	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluoroheptanesulfonic Acid (PFHpS)	**7.4**	**J**	39	3.7	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorooctanesulfonic acid (PFOS)	**190**	**B**	39	11	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorononanesulfonic acid (PFNS)	<7.3		39	7.3	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorodecanesulfonic acid (PFDS)	<6.3		39	6.3	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorododecanesulfonic acid (PFDoS)	<19		39	19	ng/L		12/22/21 12:46	12/29/21 09:12	20
Perfluorooctanesulfonamide (FOSA)	<19		39	19	ng/L		12/22/21 12:46	12/29/21 09:12	20
NEtFOSA	<17		39	17	ng/L		12/22/21 12:46	12/29/21 09:12	20
NMeFOSA	<8.5		39	8.5	ng/L		12/22/21 12:46	12/29/21 09:12	20
NMeFOSAA	<24		99	24	ng/L		12/22/21 12:46	12/29/21 09:12	20
NEtFOSAA	<26		99	26	ng/L		12/22/21 12:46	12/29/21 09:12	20
NMeFOSE	<28		79	28	ng/L		12/22/21 12:46	12/29/21 09:12	20
NEtFOSE	<17		39	17	ng/L		12/22/21 12:46	12/29/21 09:12	20
4:2 FTS	**120**		39	4.7	ng/L		12/22/21 12:46	12/29/21 09:12	20
6:2 FTS	**1900**		99	49	ng/L		12/22/21 12:46	12/29/21 09:12	20
8:2 FTS	**110**		39	9.1	ng/L		12/22/21 12:46	12/29/21 09:12	20
10:2 FTS	**19**	**J**	39	13	ng/L		12/22/21 12:46	12/29/21 09:12	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<7.9		39	7.9	ng/L		12/22/21 12:46	12/29/21 09:12	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<30		79	30	ng/L		12/22/21 12:46	12/29/21 09:12	20
F-53B Major	<4.7		39	4.7	ng/L		12/22/21 12:46	12/29/21 09:12	20
F-53B Minor	<6.3		39	6.3	ng/L		12/22/21 12:46	12/29/21 09:12	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*81*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:12*	*20*
13C5 PFPeA	*78*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:12*	*20*
13C2 PFHxA	*76*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:12*	*20*
13C4 PFHpA	*83*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:12*	*20*
13C4 PFOA	*90*		*25 - 150*	*12/22/21 12:46*	*12/29/21 09:12*	*20*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-83218-1

Client Sample ID: V-200-A
Date Collected: 12/20/21 10:25
Date Received: 12/21/21 11:20

Lab Sample ID: 320-83218-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances - DL2 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	76		25 - 150	12/22/21 12:46	12/29/21 09:12	20
13C2 PFDA	74		25 - 150	12/22/21 12:46	12/29/21 09:12	20
13C2 PFUnA	59		25 - 150	12/22/21 12:46	12/29/21 09:12	20
13C2 PFDoA	65		25 - 150	12/22/21 12:46	12/29/21 09:12	20
13C2 PFTeDA	70		25 - 150	12/22/21 12:46	12/29/21 09:12	20
13C2 PFHxDA	79		25 - 150	12/22/21 12:46	12/29/21 09:12	20
13C3 PFBS	85		25 - 150	12/22/21 12:46	12/29/21 09:12	20
18O2 PFHxS	83		25 - 150	12/22/21 12:46	12/29/21 09:12	20
13C4 PFOS	72		25 - 150	12/22/21 12:46	12/29/21 09:12	20
13C8 FOSA	63		10 - 150	12/22/21 12:46	12/29/21 09:12	20
d3-NMeFOSAA	63		25 - 150	12/22/21 12:46	12/29/21 09:12	20
d5-NEtFOSAA	71		25 - 150	12/22/21 12:46	12/29/21 09:12	20
d-N-MeFOSA-M	64		10 - 150	12/22/21 12:46	12/29/21 09:12	20
d-N-EtFOSA-M	57		10 - 150	12/22/21 12:46	12/29/21 09:12	20
d7-N-MeFOSE-M	58		10 - 150	12/22/21 12:46	12/29/21 09:12	20
d9-N-EtFOSE-M	66		10 - 150	12/22/21 12:46	12/29/21 09:12	20
M2-4:2 FTS	69		25 - 150	12/22/21 12:46	12/29/21 09:12	20
M2-6:2 FTS	82		25 - 150	12/22/21 12:46	12/29/21 09:12	20
M2-8:2 FTS	72		25 - 150	12/22/21 12:46	12/29/21 09:12	20
13C3 HFPO-DA	68		25 - 150	12/22/21 12:46	12/29/21 09:12	20
13C2 10:2 FTS	51		25 - 150	12/22/21 12:46	12/29/21 09:12	20

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-83218-1

Client Sample ID: V-900-A
Date Collected: 12/20/21 10:50
Date Received: 12/21/21 11:20

Lab Sample ID: 320-83218-2
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.3		4.8	2.3	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluoropentanoic acid (PFPeA)	<0.47		1.9	0.47	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorohexanoic acid (PFHxA)	<0.56		1.9	0.56	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorooctanoic acid (PFOA)	**1.3**	**J**	1.9	0.81	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorodecanoic acid (PFDA)	<0.30		1.9	0.30	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluoroundecanoic acid (PFUnA)	<1.1		1.9	1.1	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorododecanoic acid (PFDoA)	<0.53		1.9	0.53	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorotetradecanoic acid (PFTeA)	<0.70		1.9	0.70	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.85		1.9	0.85	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.90		1.9	0.90	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluoropentanesulfonic acid (PFPeS)	<0.29		1.9	0.29	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorohexanesulfonic acid (PFHxS)	<0.55		1.9	0.55	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.18		1.9	0.18	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorooctanesulfonic acid (PFOS)	**1.2**	**J B**	1.9	0.52	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorononanesulfonic acid (PFNS)	<0.35		1.9	0.35	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorodecanesulfonic acid (PFDS)	<0.31		1.9	0.31	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorododecanesulfonic acid (PFDoS)	<0.93		1.9	0.93	ng/L		12/22/21 12:46	12/24/21 03:17	1
Perfluorooctanesulfonamide (FOSA)	<0.94		1.9	0.94	ng/L		12/22/21 12:46	12/24/21 03:17	1
NEtFOSA	<0.83		1.9	0.83	ng/L		12/22/21 12:46	12/24/21 03:17	1
NMeFOSA	<0.41		1.9	0.41	ng/L		12/22/21 12:46	12/24/21 03:17	1
NMeFOSAA	<1.1		4.8	1.1	ng/L		12/22/21 12:46	12/24/21 03:17	1
NEtFOSAA	<1.2		4.8	1.2	ng/L		12/22/21 12:46	12/24/21 03:17	1
NMeFOSE	<1.3		3.8	1.3	ng/L		12/22/21 12:46	12/24/21 03:17	1
NEtFOSE	<0.81		1.9	0.81	ng/L		12/22/21 12:46	12/24/21 03:17	1
4:2 FTS	<0.23		1.9	0.23	ng/L		12/22/21 12:46	12/24/21 03:17	1
6:2 FTS	<2.4		4.8	2.4	ng/L		12/22/21 12:46	12/24/21 03:17	1
8:2 FTS	<0.44		1.9	0.44	ng/L		12/22/21 12:46	12/24/21 03:17	1
10:2 FTS	<0.64		1.9	0.64	ng/L		12/22/21 12:46	12/24/21 03:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		12/22/21 12:46	12/24/21 03:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.8	1.4	ng/L		12/22/21 12:46	12/24/21 03:17	1
F-53B Major	<0.23		1.9	0.23	ng/L		12/22/21 12:46	12/24/21 03:17	1
F-53B Minor	<0.31		1.9	0.31	ng/L		12/22/21 12:46	12/24/21 03:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*104*		*25 - 150*	*12/22/21 12:46*	*12/24/21 03:17*	*1*
13C5 PFPeA	*109*		*25 - 150*	*12/22/21 12:46*	*12/24/21 03:17*	*1*
13C2 PFHxA	*101*		*25 - 150*	*12/22/21 12:46*	*12/24/21 03:17*	*1*
13C4 PFHpA	*121*		*25 - 150*	*12/22/21 12:46*	*12/24/21 03:17*	*1*
13C4 PFOA	*105*		*25 - 150*	*12/22/21 12:46*	*12/24/21 03:17*	*1*
13C5 PFNA	*90*		*25 - 150*	*12/22/21 12:46*	*12/24/21 03:17*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-83218-1

Client Sample ID: V-900-A
Date Collected: 12/20/21 10:50
Date Received: 12/21/21 11:20

Lab Sample ID: 320-83218-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	86		25 - 150	12/22/21 12:46	12/24/21 03:17	1
13C2 PFUnA	92		25 - 150	12/22/21 12:46	12/24/21 03:17	1
13C2 PFDoA	100		25 - 150	12/22/21 12:46	12/24/21 03:17	1
13C2 PFTeDA	80		25 - 150	12/22/21 12:46	12/24/21 03:17	1
13C2 PFHxDA	73		25 - 150	12/22/21 12:46	12/24/21 03:17	1
13C3 PFBS	103		25 - 150	12/22/21 12:46	12/24/21 03:17	1
18O2 PFHxS	105		25 - 150	12/22/21 12:46	12/24/21 03:17	1
13C4 PFOS	92		25 - 150	12/22/21 12:46	12/24/21 03:17	1
13C8 FOSA	67		10 - 150	12/22/21 12:46	12/24/21 03:17	1
d3-NMeFOSAA	80		25 - 150	12/22/21 12:46	12/24/21 03:17	1
d5-NEtFOSAA	91		25 - 150	12/22/21 12:46	12/24/21 03:17	1
d-N-MeFOSA-M	64		10 - 150	12/22/21 12:46	12/24/21 03:17	1
d-N-EtFOSA-M	65		10 - 150	12/22/21 12:46	12/24/21 03:17	1
d7-N-MeFOSE-M	93		10 - 150	12/22/21 12:46	12/24/21 03:17	1
d9-N-EtFOSE-M	87		10 - 150	12/22/21 12:46	12/24/21 03:17	1
M2-4:2 FTS	105		25 - 150	12/22/21 12:46	12/24/21 03:17	1
M2-6:2 FTS	86		25 - 150	12/22/21 12:46	12/24/21 03:17	1
M2-8:2 FTS	77		25 - 150	12/22/21 12:46	12/24/21 03:17	1
13C3 HFPO-DA	92		25 - 150	12/22/21 12:46	12/24/21 03:17	1
13C2 10:2 FTS	99		25 - 150	12/22/21 12:46	12/24/21 03:17	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 320-83218-1

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)
320-83218-1	V-200-A	151 *	162 *	143	173 *	78	148	142	128
320-83218-1 - DL	V-200-A	90	100	95	93	93	75	75	75
320-83218-1 - DL2	V-200-A	81	78	76	83	90	76	74	59
320-83218-2	V-900-A	104	109	101	121	105	90	86	92
LCS 320-553159/2-A	Lab Control Sample	97	98	94	107	101	89	84	96
LCSD 320-553159/3-A	Lab Control Sample Dup	101	116	93	110	103	93	84	90
MB 320-553159/1-A	Method Blank	95	110	104	115	107	87	92	100

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
320-83218-1	V-200-A	137	122	106	170 *	162 *	134	105	112
320-83218-1 - DL	V-200-A	81	70	98	94	88	78	65	65
320-83218-1 - DL2	V-200-A	65	70	79	85	83	72	63	63
320-83218-2	V-900-A	100	80	73	103	105	92	67	80
LCS 320-553159/2-A	Lab Control Sample	94	79	66	93	102	84	64	84
LCSD 320-553159/3-A	Lab Control Sample Dup	96	80	65	94	102	84	60	76
MB 320-553159/1-A	Method Blank	101	92	70	94	100	89	63	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)
320-83218-1	V-200-A	138	102	97	118	114	189 *	91	144
320-83218-1 - DL	V-200-A	78	61	52	89	58	63	99	86
320-83218-1 - DL2	V-200-A	71	64	57	58	66	69	82	72
320-83218-2	V-900-A	91	64	65	93	87	105	86	77
LCS 320-553159/2-A	Lab Control Sample	88	62	64	89	85	111	95	85
LCSD 320-553159/3-A	Lab Control Sample Dup	88	59	57	89	82	101	80	80
MB 320-553159/1-A	Method Blank	97	62	61	96	87	108	100	84

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
320-83218-1	V-200-A	148	159 *
320-83218-1 - DL	V-200-A	86	69
320-83218-1 - DL2	V-200-A	68	51
320-83218-2	V-900-A	92	99
LCS 320-553159/2-A	Lab Control Sample	82	99
LCSD 320-553159/3-A	Lab Control Sample Dup	87	99
MB 320-553159/1-A	Method Blank	88	104

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-83218-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-553159/1-A
Matrix: Water
Analysis Batch: 553654

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 553159

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorooctanesulfonic acid (PFOS)	0.803	J	2.0	0.54	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		12/22/21 12:46	12/24/21 02:35	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		12/22/21 12:46	12/24/21 02:35	1
NEtFOSA	<0.87		2.0	0.87	ng/L		12/22/21 12:46	12/24/21 02:35	1
NMeFOSA	<0.43		2.0	0.43	ng/L		12/22/21 12:46	12/24/21 02:35	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		12/22/21 12:46	12/24/21 02:35	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		12/22/21 12:46	12/24/21 02:35	1
NMeFOSE	<1.4		4.0	1.4	ng/L		12/22/21 12:46	12/24/21 02:35	1
NEtFOSE	<0.85		2.0	0.85	ng/L		12/22/21 12:46	12/24/21 02:35	1
4:2 FTS	<0.24		2.0	0.24	ng/L		12/22/21 12:46	12/24/21 02:35	1
6:2 FTS	<2.5		5.0	2.5	ng/L		12/22/21 12:46	12/24/21 02:35	1
8:2 FTS	<0.46		2.0	0.46	ng/L		12/22/21 12:46	12/24/21 02:35	1
10:2 FTS	<0.67		2.0	0.67	ng/L		12/22/21 12:46	12/24/21 02:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		12/22/21 12:46	12/24/21 02:35	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		12/22/21 12:46	12/24/21 02:35	1
F-53B Major	<0.24		2.0	0.24	ng/L		12/22/21 12:46	12/24/21 02:35	1
F-53B Minor	<0.32		2.0	0.32	ng/L		12/22/21 12:46	12/24/21 02:35	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*95*		*25 - 150*	*12/22/21 12:46*	*12/24/21 02:35*	*1*
13C5 PFPeA	*110*		*25 - 150*	*12/22/21 12:46*	*12/24/21 02:35*	*1*
13C2 PFHxA	*104*		*25 - 150*	*12/22/21 12:46*	*12/24/21 02:35*	*1*
13C4 PFHpA	*115*		*25 - 150*	*12/22/21 12:46*	*12/24/21 02:35*	*1*
13C4 PFOA	*107*		*25 - 150*	*12/22/21 12:46*	*12/24/21 02:35*	*1*

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

Lab Sample ID: MB 320-553159/1-A
Matrix: Water
Analysis Batch: 553654

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 553159

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	87		25 - 150	12/22/21 12:46	12/24/21 02:35	1
13C2 PFDA	92		25 - 150	12/22/21 12:46	12/24/21 02:35	1
13C2 PFUnA	100		25 - 150	12/22/21 12:46	12/24/21 02:35	1
13C2 PFDoA	101		25 - 150	12/22/21 12:46	12/24/21 02:35	1
13C2 PFTeDA	92		25 - 150	12/22/21 12:46	12/24/21 02:35	1
13C2 PFHxDA	70		25 - 150	12/22/21 12:46	12/24/21 02:35	1
13C3 PFBS	94		25 - 150	12/22/21 12:46	12/24/21 02:35	1
18O2 PFHxS	100		25 - 150	12/22/21 12:46	12/24/21 02:35	1
13C4 PFOS	89		25 - 150	12/22/21 12:46	12/24/21 02:35	1
13C8 FOSA	63		10 - 150	12/22/21 12:46	12/24/21 02:35	1
d3-NMeFOSAA	87		25 - 150	12/22/21 12:46	12/24/21 02:35	1
d5-NEtFOSAA	97		25 - 150	12/22/21 12:46	12/24/21 02:35	1
d-N-MeFOSA-M	62		10 - 150	12/22/21 12:46	12/24/21 02:35	1
d-N-EtFOSA-M	61		10 - 150	12/22/21 12:46	12/24/21 02:35	1
d7-N-MeFOSE-M	96		10 - 150	12/22/21 12:46	12/24/21 02:35	1
d9-N-EtFOSE-M	87		10 - 150	12/22/21 12:46	12/24/21 02:35	1
M2-4:2 FTS	108		25 - 150	12/22/21 12:46	12/24/21 02:35	1
M2-6:2 FTS	100		25 - 150	12/22/21 12:46	12/24/21 02:35	1
M2-8:2 FTS	84		25 - 150	12/22/21 12:46	12/24/21 02:35	1
13C3 HFPO-DA	88		25 - 150	12/22/21 12:46	12/24/21 02:35	1
13C2 10:2 FTS	104		25 - 150	12/22/21 12:46	12/24/21 02:35	1

Lab Sample ID: LCS 320-553159/2-A
Matrix: Water
Analysis Batch: 553654

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 553159

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.4		ng/L		101	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	33.7		ng/L		84	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	35.9		ng/L		90	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	35.2		ng/L		88	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	34.6		ng/L		86	60 - 135
Perfluorononanoic acid (PFNA)	40.0	34.7		ng/L		87	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	37.1		ng/L		93	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	36.0		ng/L		90	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	35.5		ng/L		89	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	30.6		ng/L		77	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	34.0		ng/L		85	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	34.2		ng/L		85	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	41.2		ng/L		103	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	28.8		ng/L		81	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	34.1		ng/L		91	60 - 135

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

Lab Sample ID: LCS 320-553159/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 553654
Prep Batch: 553159

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.2		ng/L		97	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	38.4		ng/L		101	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	36.6		ng/L		99	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	37.4		ng/L		97	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	39.3		ng/L		102	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	28.6		ng/L		74	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.8		ng/L		107	60 - 135
NEtFOSA	40.0	37.8		ng/L		95	60 - 135
NMeFOSA	40.0	41.9		ng/L		105	60 - 135
NMeFOSAA	40.0	34.2		ng/L		85	60 - 135
NEtFOSAA	40.0	31.8		ng/L		79	60 - 135
NMeFOSE	40.0	34.7		ng/L		87	60 - 135
NEtFOSE	40.0	35.4		ng/L		88	60 - 135
4:2 FTS	37.4	30.6		ng/L		82	60 - 135
6:2 FTS	37.9	30.8		ng/L		81	60 - 135
8:2 FTS	38.3	29.3		ng/L		77	60 - 135
10:2 FTS	38.6	29.8		ng/L		77	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.6		ng/L		116	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	36.3		ng/L		91	60 - 135
F-53B Major	37.3	32.4		ng/L		87	60 - 135
F-53B Minor	37.7	33.9		ng/L		90	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*97*		*25 - 150*
13C5 PFPeA	*98*		*25 - 150*
13C2 PFHxA	*94*		*25 - 150*
13C4 PFHpA	*107*		*25 - 150*
13C4 PFOA	*101*		*25 - 150*
13C5 PFNA	*89*		*25 - 150*
13C2 PFDA	*84*		*25 - 150*
13C2 PFUnA	*96*		*25 - 150*
13C2 PFDoA	*94*		*25 - 150*
13C2 PFTeDA	*79*		*25 - 150*
13C2 PFHxDA	*66*		*25 - 150*
13C3 PFBS	*93*		*25 - 150*
18O2 PFHxS	*102*		*25 - 150*
13C4 PFOS	*84*		*25 - 150*
13C8 FOSA	*64*		*10 - 150*
d3-NMeFOSAA	*84*		*25 - 150*
d5-NEtFOSAA	*88*		*25 - 150*
d-N-MeFOSA-M	*62*		*10 - 150*
d-N-EtFOSA-M	*64*		*10 - 150*

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

Lab Sample ID: LCS 320-553159/2-A
Matrix: Water
Analysis Batch: 553654

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 553159

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*89*		*10 - 150*
d9-N-EtFOSE-M	*85*		*10 - 150*
M2-4:2 FTS	*111*		*25 - 150*
M2-6:2 FTS	*95*		*25 - 150*
M2-8:2 FTS	*85*		*25 - 150*
13C3 HFPO-DA	*82*		*25 - 150*
13C2 10:2 FTS	*99*		*25 - 150*

Lab Sample ID: LCSD 320-553159/3-A
Matrix: Water
Analysis Batch: 553654

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 553159

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	43.0		ng/L		108	60 - 135	6	30
Perfluoropentanoic acid (PFPeA)			40.0	31.5		ng/L		79	60 - 135	7	30
Perfluorohexanoic acid (PFHxA)			40.0	37.3		ng/L		93	60 - 135	4	30
Perfluoroheptanoic acid (PFHpA)			40.0	36.2		ng/L		90	60 - 135	3	30
Perfluorooctanoic acid (PFOA)			40.0	34.3		ng/L		86	60 - 135	1	30
Perfluorononanoic acid (PFNA)			40.0	36.0		ng/L		90	60 - 135	4	30
Perfluorodecanoic acid (PFDA)			40.0	38.6		ng/L		96	60 - 135	4	30
Perfluoroundecanoic acid (PFUnA)			40.0	36.8		ng/L		92	60 - 135	2	30
Perfluorododecanoic acid (PFDoA)			40.0	37.9		ng/L		95	60 - 135	7	30
Perfluorotridecanoic acid (PFTriA)			40.0	30.1		ng/L		75	60 - 135	2	30
Perfluorotetradecanoic acid (PFTeA)			40.0	35.9		ng/L		90	60 - 135	6	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	37.1		ng/L		93	60 - 135	8	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	42.1		ng/L		105	60 - 135	2	30
Perfluorobutanesulfonic acid (PFBS)			35.4	32.2		ng/L		91	60 - 135	11	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	38.2		ng/L		102	60 - 135	11	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	37.5		ng/L		103	60 - 135	6	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	39.2		ng/L		103	60 - 135	2	30
Perfluorooctanesulfonic acid (PFOS)			37.1	36.5		ng/L		98	60 - 135	0	30
Perfluorononanesulfonic acid (PFNS)			38.4	37.1		ng/L		97	60 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)			38.6	42.9		ng/L		111	60 - 135	9	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	27.9		ng/L		72	60 - 135	2	30
Perfluorooctanesulfonamide (FOSA)			40.0	47.8		ng/L		120	60 - 135	11	30
NEtFOSA			40.0	42.8		ng/L		107	60 - 135	12	30
NMeFOSA			40.0	47.6		ng/L		119	60 - 135	13	30
NMeFOSAA			40.0	38.0		ng/L		95	60 - 135	11	30

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

Lab Sample ID: LCSD 320-553159/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 553654
Prep Batch: 553159

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	34.1		ng/L		85	60 - 135	7	30
NMeFOSE			40.0	36.6		ng/L		91	60 - 135	5	30
NEtFOSE			40.0	38.1		ng/L		95	60 - 135	7	30
4:2 FTS			37.4	35.1		ng/L		94	60 - 135	14	30
6:2 FTS			37.9	37.4		ng/L		99	60 - 135	19	30
8:2 FTS			38.3	34.5		ng/L		90	60 - 135	16	30
10:2 FTS			38.6	31.0		ng/L		80	60 - 135	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	44.6		ng/L		118	60 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	37.2		ng/L		93	60 - 135	2	30
F-53B Major			37.3	35.1		ng/L		94	60 - 135	8	30
F-53B Minor			37.7	35.4		ng/L		94	60 - 135	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*101*		*25 - 150*
13C5 PFPeA	*116*		*25 - 150*
13C2 PFHxA	*93*		*25 - 150*
13C4 PFHpA	*110*		*25 - 150*
13C4 PFOA	*103*		*25 - 150*
13C5 PFNA	*93*		*25 - 150*
13C2 PFDA	*84*		*25 - 150*
13C2 PFUnA	*90*		*25 - 150*
13C2 PFDoA	*96*		*25 - 150*
13C2 PFTeDA	*80*		*25 - 150*
13C2 PFHxDA	*65*		*25 - 150*
13C3 PFBS	*94*		*25 - 150*
18O2 PFHxS	*102*		*25 - 150*
13C4 PFOS	*84*		*25 - 150*
13C8 FOSA	*60*		*10 - 150*
d3-NMeFOSAA	*76*		*25 - 150*
d5-NEtFOSAA	*88*		*25 - 150*
d-N-MeFOSA-M	*59*		*10 - 150*
d-N-EtFOSA-M	*57*		*10 - 150*
d7-N-MeFOSE-M	*89*		*10 - 150*
d9-N-EtFOSE-M	*82*		*10 - 150*
M2-4:2 FTS	*101*		*25 - 150*
M2-6:2 FTS	*80*		*25 - 150*
M2-8:2 FTS	*80*		*25 - 150*
13C3 HFPO-DA	*87*		*25 - 150*
13C2 10:2 FTS	*99*		*25 - 150*

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-83218-1
Project/Site: Marinette, WI 30015296.00014 WPDES

LCMS

Prep Batch: 553159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-83218-1 - DL	V-200-A	Total/NA	Water	3535	
320-83218-1	V-200-A	Total/NA	Water	3535	
320-83218-1 - DL2	V-200-A	Total/NA	Water	3535	
320-83218-2	V-900-A	Total/NA	Water	3535	
MB 320-553159/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-553159/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-553159/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 553654

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-83218-1	V-200-A	Total/NA	Water	537 (modified)	553159
320-83218-2	V-900-A	Total/NA	Water	537 (modified)	553159
MB 320-553159/1-A	Method Blank	Total/NA	Water	537 (modified)	553159
LCS 320-553159/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	553159
LCSD 320-553159/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	553159

Analysis Batch: 554451

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-83218-1 - DL	V-200-A	Total/NA	Water	537 (modified)	553159
320-83218-1 - DL2	V-200-A	Total/NA	Water	537 (modified)	553159

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-83218-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 320-83218-1
Date Collected: 12/20/21 10:25
Matrix: Water
Date Received: 12/21/21 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			253.5 mL	10.0 mL	553159	12/22/21 12:46	KJW	TAL SAC
Total/NA	Analysis	537 (modified)		1			553654	12/24/21 03:06	RS1	TAL SAC
Total/NA	Prep	3535	DL		253.5 mL	10.0 mL	553159	12/22/21 12:46	KJW	TAL SAC
Total/NA	Analysis	537 (modified)	DL	50			554451	12/29/21 09:02	MYV	TAL SAC
Total/NA	Prep	3535	DL2		253.5 mL	10.0 mL	553159	12/22/21 12:46	KJW	TAL SAC
Total/NA	Analysis	537 (modified)	DL2	20			554451	12/29/21 09:12	MYV	TAL SAC

Client Sample ID: V-900-A
Lab Sample ID: 320-83218-2
Date Collected: 12/20/21 10:50
Matrix: Water
Date Received: 12/21/21 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261.2 mL	10.0 mL	553159	12/22/21 12:46	KJW	TAL SAC
Total/NA	Analysis	537 (modified)		1			553654	12/24/21 03:17	RS1	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-83218-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Sacramento

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

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

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-83218-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-83218-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-83218-1	V-200-A	Water	12/20/21 10:25	12/21/21 11:20
320-83218-2	V-900-A	Water	12/20/21 10:50	12/21/21 11:20

Eurofins TestAmerica, Sacramento
880 Riverside Park

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Raminge	Date: 12-20-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	**Analysis Turnaround Time**			**For Lab Use Only:**
Phone	☑ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
FAX	TAT if different from Below ___			Lab Sampling:
Project Name: Marinette, WI	☐ 2 weeks			
Site: Marinette, WI	☑ 1 week			**Lab Project Number**
P O # 30015296.00014 (WPDES)	☐ 2 days / ☐ 1 day			50015522

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)	Sample Specific Notes:
V-200-A	12-20-21	10:25	G	W	2	N	N	X	System Influent
V-900-A	↓	10:50	G	W	2	N	N	X	System Effluent

320-83218 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.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for ___ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☒ Yes ☐ No	Custody Seal No.: 16471		Cooler Temp. (°C): Obs'd: 3.0 Corr'd: 5.0		Therm ID No.: L-04
Relinquished by: Jacob Raminge	Company: Barley Excavating	Date/Time: 12-20-21/11:00	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by: [signature]	Company: ETA	Date/Time: 12/21/21 1120
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

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Sacramento Sample Receiving Notes

320-83218 Field Sheet

Job: _____

Tracking # : 5120 6570 6885

SO / EO / 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-04 Corr. Factor: (+ / -) _____ °C

Ice x Wet x Gel _____ Other _____

Cooler Custody Seal: 160147

Cooler ID: _____

Temp Observed: _____ °C Corrected: _____ °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: DH Date: 12/21/21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
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: NC Date: 12-21-21

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: NC Date: 12-21-21

WR3-14E

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ORIGIN ID:BLUA (916) 373-5600
ATTN: JOE BARLEY
BARLEY EXCAVATING INC
1824 10TH AVE

MARINETTE, WI 54143
UNITED STATES US

SHIP DATE: 01NOV21
ACTWGT: 10.00 LB MAN
CAD: 0575888/CAFE3507

TO SAMPLE RECEIVING
TESTAMERICA WEST SACRAMENTO
880 RIVERSIDE PARKWAY

WEST SACRAMENTO CA 95605
(916) 373-5600
REF: 2508-94694

FedEx Express E

FedEx
TRK# 0221 5120 6510 6885

TUE - 21 DEC AA
PRIORITY OVERNIGHT

XW BLUA

95605
CA-US
SMF

eurofins Environment Testing TestAmerica
1601471

Custody Seal
12-02-21
DATE
SIGNATURE

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-83218-1

Login Number: 83218
List Number: 1
Creator: Her, David A

List Source: Eurofins TestAmerica, Sacramento

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	1601471
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	
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.	True	

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ANALYTICAL REPORT

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

Laboratory Job ID: 500-201802-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Authorized for release by:
7/12/2021 5:06:37 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Job ID: 500-201802-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative
500-201802-1

Comments
No additional comments.

Receipt
The samples were received on 7/2/2021 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 2.9º C.

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

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

General Chemistry
No analytical or quality issues were noted, other than those described 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.
Job ID: 500-201802-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 500-201802-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-201802-1	V-200-A	Water	07/01/21 11:00	07/02/21 09:45	
500-201802-2	V-900-A	Water	07/01/21 11:25	07/02/21 09:45	
500-201802-3	Trip Blank (7-1-21)A	Water	07/01/21 00:00	07/02/21 09:45	

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 500-201802-1

Client Sample ID: V-200-A

Date Collected: 07/01/21 11:00
Date Received: 07/02/21 09:45

Lab Sample ID: 500-201802-1

Matrix: Water

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			07/09/21 03:12	1
Toluene	<0.15		0.50	0.15	ug/L			07/09/21 03:12	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/09/21 03:12	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/09/21 03:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*75 - 120*		*07/09/21 03:12*	*1*
4-Bromofluorobenzene (Surr)	*102*		*71 - 120*		*07/09/21 03:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*71 - 127*		*07/09/21 03:12*	*1*
Dibromofluoromethane (Surr)	*97*		*70 - 120*		*07/09/21 03:12*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.10		0.82	0.10	ug/L		07/07/21 06:59	07/08/21 14:42	1
Acenaphthylene	<0.11		0.82	0.11	ug/L		07/07/21 06:59	07/08/21 14:42	1
Anthracene	<0.15		0.82	0.15	ug/L		07/07/21 06:59	07/08/21 14:42	1
Benzo[a]anthracene	<0.053		0.82	0.053	ug/L		07/07/21 06:59	07/08/21 14:42	1
Benzo[a]pyrene	<0.062		0.82	0.062	ug/L		07/07/21 06:59	07/08/21 14:42	1
Benzo[b]fluoranthene	<0.067		0.82	0.067	ug/L		07/07/21 06:59	07/08/21 14:42	1
Benzo[g,h,i]perylene	<0.39		0.82	0.39	ug/L		07/07/21 06:59	07/08/21 14:42	1
Benzo[k]fluoranthene	<0.14		0.82	0.14	ug/L		07/07/21 06:59	07/08/21 14:42	1
Chrysene	<0.076		0.82	0.076	ug/L		07/07/21 06:59	07/08/21 14:42	1
Dibenz(a,h)anthracene	<0.093		0.82	0.093	ug/L		07/07/21 06:59	07/08/21 14:42	1
Fluoranthene	<0.17		0.82	0.17	ug/L		07/07/21 06:59	07/08/21 14:42	1
Fluorene	<0.14		0.82	0.14	ug/L		07/07/21 06:59	07/08/21 14:42	1
Indeno[1,2,3-cd]pyrene	<0.063		0.82	0.063	ug/L		07/07/21 06:59	07/08/21 14:42	1
Naphthalene	<0.13		0.82	0.13	ug/L		07/07/21 06:59	07/08/21 14:42	1
Phenanthrene	<0.17		0.82	0.17	ug/L		07/07/21 06:59	07/08/21 14:42	1
Pyrene	<0.19		0.82	0.19	ug/L		07/07/21 06:59	07/08/21 14:42	1
1-Methylnaphthalene	<0.25		1.6	0.25	ug/L		07/07/21 06:59	07/08/21 14:42	1
2-Methylnaphthalene	<0.069		1.6	0.069	ug/L		07/07/21 06:59	07/08/21 14:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*46*		*36 - 120*	*07/07/21 06:59*	*07/08/21 14:42*	*1*
Terphenyl-d14	*97*		*40 - 145*	*07/07/21 06:59*	*07/08/21 14:42*	*1*
2-Fluorobiphenyl	*45*		*34 - 110*	*07/07/21 06:59*	*07/08/21 14:42*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.4		5.2	1.4	mg/L		07/09/21 14:49	07/09/21 14:51	1
Total Suspended Solids	**3.4**	**J**	5.0	1.9	mg/L			07/08/21 11:11	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 500-201802-1

Client Sample ID: V-900-A

Date Collected: 07/01/21 11:25
Date Received: 07/02/21 09:45

Lab Sample ID: 500-201802-2

Matrix: Water

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			07/09/21 03:37	1
Toluene	<0.15		0.50	0.15	ug/L			07/09/21 03:37	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/09/21 03:37	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/09/21 03:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*75 - 120*		*07/09/21 03:37*	*1*
4-Bromofluorobenzene (Surr)	*98*		*71 - 120*		*07/09/21 03:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*71 - 127*		*07/09/21 03:37*	*1*
Dibromofluoromethane (Surr)	*97*		*70 - 120*		*07/09/21 03:37*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.097		0.79	0.097	ug/L		07/07/21 06:59	07/08/21 23:47	1
Acenaphthylene	<0.11		0.79	0.11	ug/L		07/07/21 06:59	07/08/21 23:47	1
Anthracene	<0.15		0.79	0.15	ug/L		07/07/21 06:59	07/08/21 23:47	1
Benzo[a]anthracene	<0.051		0.79	0.051	ug/L		07/07/21 06:59	07/08/21 23:47	1
Benzo[a]pyrene	<0.060		0.79	0.060	ug/L		07/07/21 06:59	07/08/21 23:47	1
Benzo[b]fluoranthene	<0.064		0.79	0.064	ug/L		07/07/21 06:59	07/08/21 23:47	1
Benzo[g,h,i]perylene	<0.38		0.79	0.38	ug/L		07/07/21 06:59	07/08/21 23:47	1
Benzo[k]fluoranthene	<0.13		0.79	0.13	ug/L		07/07/21 06:59	07/08/21 23:47	1
Chrysene	<0.074		0.79	0.074	ug/L		07/07/21 06:59	07/08/21 23:47	1
Dibenz(a,h)anthracene	<0.089		0.79	0.089	ug/L		07/07/21 06:59	07/08/21 23:47	1
Fluoranthene	<0.16		0.79	0.16	ug/L		07/07/21 06:59	07/08/21 23:47	1
Fluorene	<0.13		0.79	0.13	ug/L		07/07/21 06:59	07/08/21 23:47	1
Indeno[1,2,3-cd]pyrene	<0.060		0.79	0.060	ug/L		07/07/21 06:59	07/08/21 23:47	1
Naphthalene	<0.12		0.79	0.12	ug/L		07/07/21 06:59	07/08/21 23:47	1
Phenanthrene	<0.17		0.79	0.17	ug/L		07/07/21 06:59	07/08/21 23:47	1
Pyrene	<0.18		0.79	0.18	ug/L		07/07/21 06:59	07/08/21 23:47	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		07/07/21 06:59	07/08/21 23:47	1
2-Methylnaphthalene	<0.066		1.6	0.066	ug/L		07/07/21 06:59	07/08/21 23:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*53*		*36 - 120*	*07/07/21 06:59*	*07/08/21 23:47*	*1*
Terphenyl-d14	*91*		*40 - 145*	*07/07/21 06:59*	*07/08/21 23:47*	*1*
2-Fluorobiphenyl	*49*		*34 - 110*	*07/07/21 06:59*	*07/08/21 23:47*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.4		5.3	1.4	mg/L		07/09/21 14:49	07/09/21 14:51	1
Total Suspended Solids	<1.9		5.0	1.9	mg/L			07/08/21 11:13	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 500-201802-1

Client Sample ID: Trip Blank (7-1-21)A

Lab Sample ID: 500-201802-3

Date Collected: 07/01/21 00:00
Date Received: 07/02/21 09:45

Matrix: Water

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			07/09/21 04:02	1
Toluene	<0.15		0.50	0.15	ug/L			07/09/21 04:02	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/09/21 04:02	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/09/21 04:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*75 - 120*		*07/09/21 04:02*	*1*
4-Bromofluorobenzene (Surr)	*100*		*71 - 120*		*07/09/21 04:02*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*71 - 127*		*07/09/21 04:02*	*1*
Dibromofluoromethane (Surr)	*97*		*70 - 120*		*07/09/21 04:02*	*1*

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 500-201802-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Qualifiers

GC/MS Semi VOA

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

General Chemistry

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.
¤	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 30015296.00014 WPDES

Job ID: 500-201802-1

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	BFB	DCA	DBFM
Lab Sample ID	Client Sample ID	(75-120)	(71-120)	(71-127)	(70-120)
500-201802-1	V-200-A	104	102	101	97
500-201802-2	V-900-A	102	98	102	97
500-201802-3	Trip Blank (7-1-21)A	104	100	101	97
LCS 500-608300/30	Lab Control Sample	103	98	103	101
MB 500-608300/34	Method Blank	104	97	103	97

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)		
		NBZ	TPHL	FBP
Lab Sample ID	Client Sample ID	(36-120)	(40-145)	(34-110)
500-201802-1	V-200-A	46	97	45
500-201802-2	V-900-A	53	91	49
LCS 500-608008/2-A	Lab Control Sample	64	100	55
MB 500-608008/1-A	Method Blank	73	104	60

Surrogate Legend

NBZ = Nitrobenzene-d5
TPHL = Terphenyl-d14
FBP = 2-Fluorobiphenyl

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

Lab Sample ID: MB 500-608300/34
Matrix: Water
Analysis Batch: 608300

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			07/08/21 22:05	1
Toluene	<0.15		0.50	0.15	ug/L			07/08/21 22:05	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/08/21 22:05	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/08/21 22:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*75 - 120*		*07/08/21 22:05*	*1*
4-Bromofluorobenzene (Surr)	*97*		*71 - 120*		*07/08/21 22:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*71 - 127*		*07/08/21 22:05*	*1*
Dibromofluoromethane (Surr)	*97*		*70 - 120*		*07/08/21 22:05*	*1*

Lab Sample ID: LCS 500-608300/30
Matrix: Water
Analysis Batch: 608300

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	50.0		ug/L		100	37 - 151
Toluene	50.0	52.1		ug/L		104	47 - 150
Ethylbenzene	50.0	51.1		ug/L		102	37 - 162

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*75 - 120*
4-Bromofluorobenzene (Surr)	*98*		*71 - 120*
1,2-Dichloroethane-d4 (Surr)	*103*		*71 - 127*
Dibromofluoromethane (Surr)	*101*		*70 - 120*

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

Lab Sample ID: MB 500-608008/1-A
Matrix: Water
Analysis Batch: 608330

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 608008

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.099		0.80	0.099	ug/L		07/07/21 06:59	07/08/21 13:57	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		07/07/21 06:59	07/08/21 13:57	1
Anthracene	<0.15		0.80	0.15	ug/L		07/07/21 06:59	07/08/21 13:57	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		07/07/21 06:59	07/08/21 13:57	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		07/07/21 06:59	07/08/21 13:57	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		07/07/21 06:59	07/08/21 13:57	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		07/07/21 06:59	07/08/21 13:57	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		07/07/21 06:59	07/08/21 13:57	1
Chrysene	<0.075		0.80	0.075	ug/L		07/07/21 06:59	07/08/21 13:57	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		07/07/21 06:59	07/08/21 13:57	1
Fluoranthene	<0.16		0.80	0.16	ug/L		07/07/21 06:59	07/08/21 13:57	1
Fluorene	<0.13		0.80	0.13	ug/L		07/07/21 06:59	07/08/21 13:57	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		07/07/21 06:59	07/08/21 13:57	1
Naphthalene	<0.12		0.80	0.12	ug/L		07/07/21 06:59	07/08/21 13:57	1
Phenanthrene	0.195	J	0.80	0.17	ug/L		07/07/21 06:59	07/08/21 13:57	1

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

Lab Sample ID: MB 500-608008/1-A
Matrix: Water
Analysis Batch: 608330

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 608008

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<0.18		0.80	0.18	ug/L		07/07/21 06:59	07/08/21 13:57	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		07/07/21 06:59	07/08/21 13:57	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		07/07/21 06:59	07/08/21 13:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*73*		*36 - 120*	*07/07/21 06:59*	*07/08/21 13:57*	*1*
Terphenyl-d14	*104*		*40 - 145*	*07/07/21 06:59*	*07/08/21 13:57*	*1*
2-Fluorobiphenyl	*60*		*34 - 110*	*07/07/21 06:59*	*07/08/21 13:57*	*1*

Lab Sample ID: LCS 500-608008/2-A
Matrix: Water
Analysis Batch: 608330

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 608008

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	32.0	19.0		ug/L		59	47 - 145
Acenaphthylene	32.0	19.7		ug/L		62	33 - 145
Anthracene	32.0	24.6		ug/L		77	27 - 133
Benzo[a]anthracene	32.0	31.6		ug/L		99	33 - 143
Benzo[a]pyrene	32.0	35.6		ug/L		111	17 - 163
Benzo[b]fluoranthene	32.0	32.0		ug/L		100	24 - 159
Benzo[g,h,i]perylene	32.0	31.7		ug/L		99	10 - 219
Benzo[k]fluoranthene	32.0	28.9		ug/L		90	11 - 162
Chrysene	32.0	29.9		ug/L		93	17 - 168
Dibenz(a,h)anthracene	32.0	33.7		ug/L		105	10 - 227
Fluoranthene	32.0	28.3		ug/L		88	26 - 137
Fluorene	32.0	21.3		ug/L		66	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	32.3		ug/L		101	10 - 171
Naphthalene	32.0	14.7		ug/L		46	21 - 133
Phenanthrene	32.0	28.2		ug/L		88	54 - 120
Pyrene	32.0	29.5		ug/L		92	52 - 115
1-Methylnaphthalene	32.0	15.3		ug/L		48	
2-Methylnaphthalene	32.0	14.8		ug/L		46	34 - 110

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5	*64*		*36 - 120*
Terphenyl-d14	*100*		*40 - 145*
2-Fluorobiphenyl	*55*		*34 - 110*

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-608645/16-A
Matrix: Water
Analysis Batch: 608647

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 608645

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		07/09/21 14:49	07/09/21 14:51	1

Method: 1664B - HEM and SGT-HEM (Continued)

Lab Sample ID: LCS 500-608645/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 608647
Prep Batch: 608645

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	36.90		mg/L		92	78 - 114

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

Lab Sample ID: MB 500-608380/1
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 608380

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<1.9		5.0	1.9	mg/L			07/08/21 10:55	1

Lab Sample ID: LCS 500-608380/2
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 608380

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	200	181.5		mg/L		91	80 - 120

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 500-201802-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 500-201802-1
Date Collected: 07/01/21 11:00
Matrix: Water
Date Received: 07/02/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	608300	07/09/21 03:12	JDD	TAL CHI
Total/NA	Prep	625			608008	07/07/21 06:59	SB	TAL CHI
Total/NA	Analysis	625		1	608330	07/08/21 14:42	AJD	TAL CHI
Total/NA	Prep	1664B			608645	07/09/21 14:49	JSB	TAL CHI
Total/NA	Analysis	1664B		1	608647	07/09/21 14:51	JSB	TAL CHI
Total/NA	Analysis	SM 2540D		1	608380		SMO	TAL CHI
						(Start) 07/08/21 11:11		
						(End) 07/08/21 11:13		

Client Sample ID: V-900-A
Lab Sample ID: 500-201802-2
Date Collected: 07/01/21 11:25
Matrix: Water
Date Received: 07/02/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	608300	07/09/21 03:37	JDD	TAL CHI
Total/NA	Prep	625			608008	07/07/21 06:59	SB	TAL CHI
Total/NA	Analysis	625		1	608330	07/08/21 23:47	AJD	TAL CHI
Total/NA	Prep	1664B			608645	07/09/21 14:49	JSB	TAL CHI
Total/NA	Analysis	1664B		1	608647	07/09/21 14:51	JSB	TAL CHI
Total/NA	Analysis	SM 2540D		1	608380		SMO	TAL CHI
						(Start) 07/08/21 11:13		
						(End) 07/08/21 11:14		

Client Sample ID: Trip Blank (7-1-21)A
Lab Sample ID: 500-201802-3
Date Collected: 07/01/21 00:00
Matrix: Water
Date Received: 07/02/21 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	608300	07/09/21 04:02	JDD	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 500-201802-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-21

Eurofins TestA[illegible]rica, Chicago
2417 Bond Street
University Park, IL 60484-3101
phone 708.534 5200 fax 708 534 5211

Dep:
Wgt 10 00 LBS
DV: 0.00
SPECIAL HANDLING: 0.00 0 00
TOTAL: 0.00

Svcs PRIORITY OVERNIGHT Master 5049 4009 1403
TRCK 5049 4009 1403

eurofins

Regulator

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Raminga	Date: 7-1-21	COC No: 1
Arcadis U S., Inc.	Email: N/A / Tel/Fax: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Analysis Turnaround Time			
Milwaukee, WI 53202	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone	TAT if different from Below ____			Walk-in Client:
FAX	☐ 2 weeks			Lab Sampling:
Project Name Marinette, WI	☑ 1 week			
Site: Marinette, WI	☐ 2 days			Lab Project Number 50015522
P O # 30015296.00014 (WPDES)	☐ 1 day			500-201802

500-201802 COC

	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:
1	V-200-A	7-1-21	11:00	G	W	8	N	N	X	X	X	X	System Influent
2	V-900-A	↓	11:25	G	W	8	N	N	X	X	X	X	System Effluent
3	Trip Blank (7-1-21 A)	↓		G	W	1	N	N	X				Trip Blank
	Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other								2	3	-	-	

JR

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

Special Instructions/QC Requirements & Comments:
V-200-A-PH = 7.18   V-900-A-PH = 7.09
3.3 → 2.9

Custody Seals Intact. ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd.____ Corr'd____ Therm ID No.____

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Jacob Raminga	Barley Excavating	7-1-21 / 17:20	Fed Ex		
			Received in Laboratory by: [signature]	EТА-CHI	7/2/21 0945

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-201802-1

Login Number: 201802
List Number: 1
Creator: Scott, Sherri L

List Source: Eurofins TestAmerica, Chicago

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	2.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 500-202114-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
7/16/2021 4:37:13 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Job ID: 500-202114-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative
500-202114-1

Comments
No additional comments.

Receipt
The samples were received on 7/9/2021 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 0.6º C.

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 RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 500-609019 and analytical batch 500-609093 recovered outside control limits for the following analytes: 2-Methylnaphthalene, Acenaphthene and Naphthalene.

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

General Chemistry
No analytical or quality issues were noted, other than those described 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.
Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-202114-1	V-200-A	Water	07/08/21 10:50	07/09/21 09:30	
500-202114-2	V-900-A	Water	07/08/21 11:15	07/09/21 09:30	
500-202114-3	Trip Blank (7-1-21)A	Water	07/08/21 00:00	07/09/21 09:30	

Client Sample ID: V-200-A
Date Collected: 07/08/21 10:50
Date Received: 07/09/21 09:30

Lab Sample ID: 500-202114-1
Matrix: Water

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			07/15/21 17:01	1
Toluene	<0.15		0.50	0.15	ug/L			07/15/21 17:01	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/15/21 17:01	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/15/21 17:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*75 - 120*		*07/15/21 17:01*	*1*
4-Bromofluorobenzene (Surr)	*97*		*71 - 120*		*07/15/21 17:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*121*		*71 - 127*		*07/15/21 17:01*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 120*		*07/15/21 17:01*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.096	*	0.78	0.096	ug/L		07/13/21 06:29	07/13/21 22:12	1
Acenaphthylene	<0.11		0.78	0.11	ug/L		07/13/21 06:29	07/13/21 22:12	1
Anthracene	<0.14		0.78	0.14	ug/L		07/13/21 06:29	07/13/21 22:12	1
Benzo[a]anthracene	<0.051		0.78	0.051	ug/L		07/13/21 06:29	07/13/21 22:12	1
Benzo[a]pyrene	<0.059		0.78	0.059	ug/L		07/13/21 06:29	07/13/21 22:12	1
Benzo[b]fluoranthene	<0.064		0.78	0.064	ug/L		07/13/21 06:29	07/13/21 22:12	1
Benzo[g,h,i]perylene	<0.38		0.78	0.38	ug/L		07/13/21 06:29	07/13/21 22:12	1
Benzo[k]fluoranthene	<0.13		0.78	0.13	ug/L		07/13/21 06:29	07/13/21 22:12	1
Chrysene	<0.073		0.78	0.073	ug/L		07/13/21 06:29	07/13/21 22:12	1
Dibenz(a,h)anthracene	<0.088		0.78	0.088	ug/L		07/13/21 06:29	07/13/21 22:12	1
Fluoranthene	<0.16		0.78	0.16	ug/L		07/13/21 06:29	07/13/21 22:12	1
Fluorene	<0.13		0.78	0.13	ug/L		07/13/21 06:29	07/13/21 22:12	1
Indeno[1,2,3-cd]pyrene	<0.060		0.78	0.060	ug/L		07/13/21 06:29	07/13/21 22:12	1
Naphthalene	<0.12	*	0.78	0.12	ug/L		07/13/21 06:29	07/13/21 22:12	1
Phenanthrene	<0.16		0.78	0.16	ug/L		07/13/21 06:29	07/13/21 22:12	1
Pyrene	<0.18		0.78	0.18	ug/L		07/13/21 06:29	07/13/21 22:12	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		07/13/21 06:29	07/13/21 22:12	1
2-Methylnaphthalene	<0.066	*	1.6	0.066	ug/L		07/13/21 06:29	07/13/21 22:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*74*		*36 - 120*	*07/13/21 06:29*	*07/13/21 22:12*	*1*
Terphenyl-d14	*112*		*40 - 145*	*07/13/21 06:29*	*07/13/21 22:12*	*1*
2-Fluorobiphenyl	*86*		*34 - 110*	*07/13/21 06:29*	*07/13/21 22:12*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.4		5.3	1.4	mg/L		07/15/21 14:46	07/15/21 14:48	1
Total Suspended Solids	**3.0**	**J**	5.0	1.9	mg/L			07/14/21 12:46	1

Client Sample ID: V-900-A
Date Collected: 07/08/21 11:15
Date Received: 07/09/21 09:30

Lab Sample ID: 500-202114-2
Matrix: Water

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			07/15/21 17:26	1
Toluene	<0.15		0.50	0.15	ug/L			07/15/21 17:26	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/15/21 17:26	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/15/21 17:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*75 - 120*		*07/15/21 17:26*	*1*
4-Bromofluorobenzene (Surr)	*91*		*71 - 120*		*07/15/21 17:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*122*		*71 - 127*		*07/15/21 17:26*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 120*		*07/15/21 17:26*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.097	*	0.79	0.097	ug/L		07/13/21 06:29	07/13/21 22:33	1
Acenaphthylene	<0.11		0.79	0.11	ug/L		07/13/21 06:29	07/13/21 22:33	1
Anthracene	<0.15		0.79	0.15	ug/L		07/13/21 06:29	07/13/21 22:33	1
Benzo[a]anthracene	<0.052		0.79	0.052	ug/L		07/13/21 06:29	07/13/21 22:33	1
Benzo[a]pyrene	<0.060		0.79	0.060	ug/L		07/13/21 06:29	07/13/21 22:33	1
Benzo[b]fluoranthene	<0.065		0.79	0.065	ug/L		07/13/21 06:29	07/13/21 22:33	1
Benzo[g,h,i]perylene	<0.38		0.79	0.38	ug/L		07/13/21 06:29	07/13/21 22:33	1
Benzo[k]fluoranthene	<0.13		0.79	0.13	ug/L		07/13/21 06:29	07/13/21 22:33	1
Chrysene	<0.074		0.79	0.074	ug/L		07/13/21 06:29	07/13/21 22:33	1
Dibenz(a,h)anthracene	<0.090		0.79	0.090	ug/L		07/13/21 06:29	07/13/21 22:33	1
Fluoranthene	<0.16		0.79	0.16	ug/L		07/13/21 06:29	07/13/21 22:33	1
Fluorene	<0.13		0.79	0.13	ug/L		07/13/21 06:29	07/13/21 22:33	1
Indeno[1,2,3-cd]pyrene	<0.061		0.79	0.061	ug/L		07/13/21 06:29	07/13/21 22:33	1
Naphthalene	<0.12	*	0.79	0.12	ug/L		07/13/21 06:29	07/13/21 22:33	1
Phenanthrene	<0.17		0.79	0.17	ug/L		07/13/21 06:29	07/13/21 22:33	1
Pyrene	<0.18		0.79	0.18	ug/L		07/13/21 06:29	07/13/21 22:33	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		07/13/21 06:29	07/13/21 22:33	1
2-Methylnaphthalene	<0.067	*	1.6	0.067	ug/L		07/13/21 06:29	07/13/21 22:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*81*		*36 - 120*	*07/13/21 06:29*	*07/13/21 22:33*	*1*
Terphenyl-d14	*117*		*40 - 145*	*07/13/21 06:29*	*07/13/21 22:33*	*1*
2-Fluorobiphenyl	*92*		*34 - 110*	*07/13/21 06:29*	*07/13/21 22:33*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.4		5.2	1.4	mg/L		07/15/21 14:46	07/15/21 14:48	1
Total Suspended Solids	<1.9		5.0	1.9	mg/L			07/14/21 12:47	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 500-202114-1

Client Sample ID: Trip Blank (7-1-21)A

Date Collected: 07/08/21 00:00
Date Received: 07/09/21 09:30

Lab Sample ID: 500-202114-3

Matrix: Water

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			07/15/21 17:52	1
Toluene	<0.15		0.50	0.15	ug/L			07/15/21 17:52	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/15/21 17:52	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/15/21 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*75 - 120*		*07/15/21 17:52*	*1*
4-Bromofluorobenzene (Surr)	*92*		*71 - 120*		*07/15/21 17:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*120*		*71 - 127*		*07/15/21 17:52*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 120*		*07/15/21 17:52*	*1*

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits

General Chemistry

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.
¤	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.
Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	BFB	DCA	DBFM
Lab Sample ID	Client Sample ID	(75-120)	(71-120)	(71-127)	(70-120)
500-202114-1	V-200-A	100	97	121	106
500-202114-2	V-900-A	99	91	122	106
500-202114-3	Trip Blank (7-1-21)A	98	92	120	103
LCS 500-609457/5	Lab Control Sample	99	93	118	107
MB 500-609457/8	Method Blank	98	92	121	108

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)		
		NBZ	TPHL	FBP
Lab Sample ID	Client Sample ID	(36-120)	(40-145)	(34-110)
500-202114-1	V-200-A	74	112	86
500-202114-2	V-900-A	81	117	92
LCS 500-609019/2-A	Lab Control Sample	69	106	75
LCSD 500-609019/3-A	Lab Control Sample Dup	50	111	59
MB 500-609019/1-A	Method Blank	61	99	62

Surrogate Legend

NBZ = Nitrobenzene-d5
TPHL = Terphenyl-d14
FBP = 2-Fluorobiphenyl

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

Lab Sample ID: MB 500-609457/8
Matrix: Water
Analysis Batch: 609457

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			07/15/21 11:52	1
Toluene	<0.15		0.50	0.15	ug/L			07/15/21 11:52	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/15/21 11:52	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/15/21 11:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*75 - 120*		*07/15/21 11:52*	*1*
4-Bromofluorobenzene (Surr)	*92*		*71 - 120*		*07/15/21 11:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*121*		*71 - 127*		*07/15/21 11:52*	*1*
Dibromofluoromethane (Surr)	*108*		*70 - 120*		*07/15/21 11:52*	*1*

Lab Sample ID: LCS 500-609457/5
Matrix: Water
Analysis Batch: 609457

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	44.4		ug/L		89	37 - 151
Toluene	50.0	45.6		ug/L		91	47 - 150
Ethylbenzene	50.0	45.5		ug/L		91	37 - 162

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*75 - 120*
4-Bromofluorobenzene (Surr)	*93*		*71 - 120*
1,2-Dichloroethane-d4 (Surr)	*118*		*71 - 127*
Dibromofluoromethane (Surr)	*107*		*70 - 120*

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

Lab Sample ID: MB 500-609019/1-A
Matrix: Water
Analysis Batch: 609093

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 609019

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.099		0.80	0.099	ug/L		07/13/21 06:29	07/13/21 15:54	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		07/13/21 06:29	07/13/21 15:54	1
Anthracene	<0.15		0.80	0.15	ug/L		07/13/21 06:29	07/13/21 15:54	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		07/13/21 06:29	07/13/21 15:54	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		07/13/21 06:29	07/13/21 15:54	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		07/13/21 06:29	07/13/21 15:54	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		07/13/21 06:29	07/13/21 15:54	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		07/13/21 06:29	07/13/21 15:54	1
Chrysene	<0.075		0.80	0.075	ug/L		07/13/21 06:29	07/13/21 15:54	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		07/13/21 06:29	07/13/21 15:54	1
Fluoranthene	<0.16		0.80	0.16	ug/L		07/13/21 06:29	07/13/21 15:54	1
Fluorene	<0.13		0.80	0.13	ug/L		07/13/21 06:29	07/13/21 15:54	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		07/13/21 06:29	07/13/21 15:54	1
Naphthalene	<0.12		0.80	0.12	ug/L		07/13/21 06:29	07/13/21 15:54	1
Phenanthrene	<0.17		0.80	0.17	ug/L		07/13/21 06:29	07/13/21 15:54	1

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

Lab Sample ID: MB 500-609019/1-A
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609093
Prep Batch: 609019

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<0.18		0.80	0.18	ug/L		07/13/21 06:29	07/13/21 15:54	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		07/13/21 06:29	07/13/21 15:54	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		07/13/21 06:29	07/13/21 15:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*61*		*36 - 120*	*07/13/21 06:29*	*07/13/21 15:54*	*1*
Terphenyl-d14	*99*		*40 - 145*	*07/13/21 06:29*	*07/13/21 15:54*	*1*
2-Fluorobiphenyl	*62*		*34 - 110*	*07/13/21 06:29*	*07/13/21 15:54*	*1*

Lab Sample ID: LCS 500-609019/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609093
Prep Batch: 609019

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	32.0	27.1		ug/L		85	47 - 145
Acenaphthylene	32.0	26.5		ug/L		83	33 - 145
Anthracene	32.0	31.1		ug/L		97	27 - 133
Benzo[a]anthracene	32.0	33.6		ug/L		105	33 - 143
Benzo[a]pyrene	32.0	40.0		ug/L		125	17 - 163
Benzo[b]fluoranthene	32.0	35.3		ug/L		110	24 - 159
Benzo[g,h,i]perylene	32.0	28.4		ug/L		89	10 - 219
Benzo[k]fluoranthene	32.0	33.7		ug/L		105	11 - 162
Chrysene	32.0	33.4		ug/L		104	17 - 168
Dibenz(a,h)anthracene	32.0	31.6		ug/L		99	10 - 227
Fluoranthene	32.0	32.4		ug/L		101	26 - 137
Fluorene	32.0	26.5		ug/L		83	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	30.7		ug/L		96	10 - 171
Naphthalene	32.0	20.7		ug/L		65	21 - 133
Phenanthrene	32.0	31.0		ug/L		97	54 - 120
Pyrene	32.0	33.3		ug/L		104	52 - 115
1-Methylnaphthalene	32.0	20.9		ug/L		65	
2-Methylnaphthalene	32.0	20.8		ug/L		65	34 - 110

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5	*69*		*36 - 120*
Terphenyl-d14	*106*		*40 - 145*
2-Fluorobiphenyl	*75*		*34 - 110*

Lab Sample ID: LCSD 500-609019/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609093
Prep Batch: 609019

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	32.0	21.6	*	ug/L		67	47 - 145	23	20
Acenaphthylene	32.0	22.3		ug/L		70	33 - 145	17	20
Anthracene	32.0	30.1		ug/L		94	27 - 133	3	20
Benzo[a]anthracene	32.0	33.0		ug/L		103	33 - 143	2	20
Benzo[a]pyrene	32.0	38.8		ug/L		121	17 - 163	3	20

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

Lab Sample ID: LCSD 500-609019/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609093
Prep Batch: 609019

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[b]fluoranthene			32.0	33.7		ug/L		105	24 - 159	5	20
Benzo[g,h,i]perylene			32.0	29.9		ug/L		93	10 - 219	5	20
Benzo[k]fluoranthene			32.0	35.3		ug/L		110	11 - 162	5	20
Chrysene			32.0	33.8		ug/L		106	17 - 168	1	20
Dibenz(a,h)anthracene			32.0	32.6		ug/L		102	10 - 227	3	20
Fluoranthene			32.0	32.7		ug/L		102	26 - 137	1	20
Fluorene			32.0	24.4		ug/L		76	59 - 121	8	20
Indeno[1,2,3-cd]pyrene			32.0	31.8		ug/L		99	10 - 171	3	20
Naphthalene			32.0	15.3	*	ug/L		48	21 - 133	30	20
Phenanthrene			32.0	29.8		ug/L		93	54 - 120	4	20
Pyrene			32.0	35.3		ug/L		110	52 - 115	6	20
1-Methylnaphthalene			32.0	15.8		ug/L		49		28	
2-Methylnaphthalene			32.0	15.4	*	ug/L		48	34 - 110	30	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Nitrobenzene-d5	*50*		*36 - 120*
Terphenyl-d14	*111*		*40 - 145*
2-Fluorobiphenyl	*59*		*34 - 110*

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-609574/12-A
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609575
Prep Batch: 609574

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		07/15/21 14:46	07/15/21 14:48	1

Lab Sample ID: LCS 500-609574/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609575
Prep Batch: 609574

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HEM (Oil & Grease)			40.0	34.30		mg/L		86	78 - 114		

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

Lab Sample ID: MB 500-609351/1
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609351

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<1.9		5.0	1.9	mg/L			07/14/21 12:25	1

Lab Sample ID: LCS 500-609351/2
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609351

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			200	196.0		mg/L		98	80 - 120		

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 500-202114-1
Date Collected: 07/08/21 10:50
Matrix: Water
Date Received: 07/09/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	609457	07/15/21 17:01	JDD	TAL CHI
Total/NA	Prep	625			609019	07/13/21 06:29	SB	TAL CHI
Total/NA	Analysis	625		1	609093	07/13/21 22:12	AJD	TAL CHI
Total/NA	Prep	1664B			609574	07/15/21 14:46	JSB	TAL CHI
Total/NA	Analysis	1664B		1	609575	07/15/21 14:48	JSB	TAL CHI
Total/NA	Analysis	SM 2540D		1	609351		SMO	TAL CHI
						(Start) 07/14/21 12:46		
						(End) 07/14/21 12:47		

Client Sample ID: V-900-A
Lab Sample ID: 500-202114-2
Date Collected: 07/08/21 11:15
Matrix: Water
Date Received: 07/09/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	609457	07/15/21 17:26	JDD	TAL CHI
Total/NA	Prep	625			609019	07/13/21 06:29	SB	TAL CHI
Total/NA	Analysis	625		1	609093	07/13/21 22:33	AJD	TAL CHI
Total/NA	Prep	1664B			609574	07/15/21 14:46	JSB	TAL CHI
Total/NA	Analysis	1664B		1	609575	07/15/21 14:48	JSB	TAL CHI
Total/NA	Analysis	SM 2540D		1	609351		SMO	TAL CHI
						(Start) 07/14/21 12:47		
						(End) 07/14/21 12:48		

Client Sample ID: Trip Blank (7-1-21)A
Lab Sample ID: 500-202114-3
Date Collected: 07/08/21 00:00
Matrix: Water
Date Received: 07/09/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	609457	07/15/21 17:52	JDD	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-21

Dep: Wgt: 10.00 LBS SATURDAY: 0.00
DV: 0.00 TOTAL: HANDLING: 0.00 0.00

Svcs PRIORITY OVERNIGHT Master 5049 4009 1403
TRCK 5049 4009 1425

Eurofins TestA rica, Chicago
2417 Bond Street

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

eurofi

Regulat

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Ramminger	Date: 7-8-21	COC No 1
Arcadis U.S , Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time			For Lab Use Only:
Phone	☑ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
FAX	TAT if different from Below			Lab Sampling
Project Name Marinette, WI	☐ 2 weeks			Lab Project Number
Site Marinette, WI	☑ 1 week			50015522
P O # 30015296 00014 (WPDES)	☐ 2 days			500-202114
	☐ 1 day			Sample Specific Notes

500-202114 COC

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	7-8-21	10.50	G	W	8	N	N	X	X	X	X	System Influent
V-900-A	↓	11:15	G	W	8	N	N	X	X	X	X	System Effluent
Trip Blank (7-8-21 (A)	↓		G	W	1	N	N	X				Trip Blank

1
2
3

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

U-200-A-PH= 7.11 U-900-A-PH= 7.06 0.6

Custody Seals Intact ☐ Yes ☐ No	Custody Seal No	Cooler Temp (°C) Obs'd _____ Corr'd _____ Therm ID No _____			
Relinquished by: Jacob Ramminger	Company: Barley Excavating	Date/Time: 7-8-21 / 11:50	Received by: Fed Ex	Company:	Date/Time
Relinquished by:	Company:	Date/Time	Received by:	Company:	Date/Time
Relinquished by:	Company:	Date/Time	Received in Laboratory by: Stephanie Hemendy	Company: EEA CHI	Date/Time: 7/9/21 0930

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

7/16/2021

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-202114-1

Login Number: 202114
List Number: 1
Creator: Buckley, Paula M

List Source: Eurofins TestAmerica, Chicago

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	0.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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 <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 500-202114-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES
Revision: 1

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

Attn: Lisa Rutkowski

Sandra Fredrick

Authorized for release by:
7/26/2021 11:41:08 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 500-202114-1

Job ID: 500-202114-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative
500-202114-1

Comments
REVISED: TRIP BLANK ID UPDATED TO MATCH COC.

Receipt
The samples were received on 7/9/2021 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 0.6º C.

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 RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 500-609019 and analytical batch 500-609093 recovered outside control limits for the following analytes: 2-Methylnaphthalene, Acenaphthene and Naphthalene.

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

General Chemistry
No analytical or quality issues were noted, other than those described 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.
Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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 TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-202114-1	V-200-A	Water	07/08/21 10:50	07/09/21 09:30
500-202114-2	V-900-A	Water	07/08/21 11:15	07/09/21 09:30
500-202114-3	Trip Blank (7-8-21)A	Water	07/08/21 00:00	07/09/21 09:30

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 500-202114-1

Client Sample ID: V-200-A

Date Collected: 07/08/21 10:50
Date Received: 07/09/21 09:30

Lab Sample ID: 500-202114-1

Matrix: Water

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			07/15/21 17:01	1
Toluene	<0.15		0.50	0.15	ug/L			07/15/21 17:01	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/15/21 17:01	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/15/21 17:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*75 - 120*		*07/15/21 17:01*	*1*
4-Bromofluorobenzene (Surr)	*97*		*71 - 120*		*07/15/21 17:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*121*		*71 - 127*		*07/15/21 17:01*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 120*		*07/15/21 17:01*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.096	*	0.78	0.096	ug/L		07/13/21 06:29	07/13/21 22:12	1
Acenaphthylene	<0.11		0.78	0.11	ug/L		07/13/21 06:29	07/13/21 22:12	1
Anthracene	<0.14		0.78	0.14	ug/L		07/13/21 06:29	07/13/21 22:12	1
Benzo[a]anthracene	<0.051		0.78	0.051	ug/L		07/13/21 06:29	07/13/21 22:12	1
Benzo[a]pyrene	<0.059		0.78	0.059	ug/L		07/13/21 06:29	07/13/21 22:12	1
Benzo[b]fluoranthene	<0.064		0.78	0.064	ug/L		07/13/21 06:29	07/13/21 22:12	1
Benzo[g,h,i]perylene	<0.38		0.78	0.38	ug/L		07/13/21 06:29	07/13/21 22:12	1
Benzo[k]fluoranthene	<0.13		0.78	0.13	ug/L		07/13/21 06:29	07/13/21 22:12	1
Chrysene	<0.073		0.78	0.073	ug/L		07/13/21 06:29	07/13/21 22:12	1
Dibenz(a,h)anthracene	<0.088		0.78	0.088	ug/L		07/13/21 06:29	07/13/21 22:12	1
Fluoranthene	<0.16		0.78	0.16	ug/L		07/13/21 06:29	07/13/21 22:12	1
Fluorene	<0.13		0.78	0.13	ug/L		07/13/21 06:29	07/13/21 22:12	1
Indeno[1,2,3-cd]pyrene	<0.060		0.78	0.060	ug/L		07/13/21 06:29	07/13/21 22:12	1
Naphthalene	<0.12	*	0.78	0.12	ug/L		07/13/21 06:29	07/13/21 22:12	1
Phenanthrene	<0.16		0.78	0.16	ug/L		07/13/21 06:29	07/13/21 22:12	1
Pyrene	<0.18		0.78	0.18	ug/L		07/13/21 06:29	07/13/21 22:12	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		07/13/21 06:29	07/13/21 22:12	1
2-Methylnaphthalene	<0.066	*	1.6	0.066	ug/L		07/13/21 06:29	07/13/21 22:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*74*		*36 - 120*	*07/13/21 06:29*	*07/13/21 22:12*	*1*
Terphenyl-d14	*112*		*40 - 145*	*07/13/21 06:29*	*07/13/21 22:12*	*1*
2-Fluorobiphenyl	*86*		*34 - 110*	*07/13/21 06:29*	*07/13/21 22:12*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.4		5.3	1.4	mg/L		07/15/21 14:46	07/15/21 14:48	1
Total Suspended Solids	**3.0**	**J**	5.0	1.9	mg/L			07/14/21 12:46	1

Client Sample ID: V-900-A
Date Collected: 07/08/21 11:15
Date Received: 07/09/21 09:30

Lab Sample ID: 500-202114-2
Matrix: Water

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			07/15/21 17:26	1
Toluene	<0.15		0.50	0.15	ug/L			07/15/21 17:26	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/15/21 17:26	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/15/21 17:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*75 - 120*		*07/15/21 17:26*	*1*
4-Bromofluorobenzene (Surr)	*91*		*71 - 120*		*07/15/21 17:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*122*		*71 - 127*		*07/15/21 17:26*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 120*		*07/15/21 17:26*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.097	*	0.79	0.097	ug/L		07/13/21 06:29	07/13/21 22:33	1
Acenaphthylene	<0.11		0.79	0.11	ug/L		07/13/21 06:29	07/13/21 22:33	1
Anthracene	<0.15		0.79	0.15	ug/L		07/13/21 06:29	07/13/21 22:33	1
Benzo[a]anthracene	<0.052		0.79	0.052	ug/L		07/13/21 06:29	07/13/21 22:33	1
Benzo[a]pyrene	<0.060		0.79	0.060	ug/L		07/13/21 06:29	07/13/21 22:33	1
Benzo[b]fluoranthene	<0.065		0.79	0.065	ug/L		07/13/21 06:29	07/13/21 22:33	1
Benzo[g,h,i]perylene	<0.38		0.79	0.38	ug/L		07/13/21 06:29	07/13/21 22:33	1
Benzo[k]fluoranthene	<0.13		0.79	0.13	ug/L		07/13/21 06:29	07/13/21 22:33	1
Chrysene	<0.074		0.79	0.074	ug/L		07/13/21 06:29	07/13/21 22:33	1
Dibenz(a,h)anthracene	<0.090		0.79	0.090	ug/L		07/13/21 06:29	07/13/21 22:33	1
Fluoranthene	<0.16		0.79	0.16	ug/L		07/13/21 06:29	07/13/21 22:33	1
Fluorene	<0.13		0.79	0.13	ug/L		07/13/21 06:29	07/13/21 22:33	1
Indeno[1,2,3-cd]pyrene	<0.061		0.79	0.061	ug/L		07/13/21 06:29	07/13/21 22:33	1
Naphthalene	<0.12	*	0.79	0.12	ug/L		07/13/21 06:29	07/13/21 22:33	1
Phenanthrene	<0.17		0.79	0.17	ug/L		07/13/21 06:29	07/13/21 22:33	1
Pyrene	<0.18		0.79	0.18	ug/L		07/13/21 06:29	07/13/21 22:33	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		07/13/21 06:29	07/13/21 22:33	1
2-Methylnaphthalene	<0.067	*	1.6	0.067	ug/L		07/13/21 06:29	07/13/21 22:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*81*		*36 - 120*	*07/13/21 06:29*	*07/13/21 22:33*	*1*
Terphenyl-d14	*117*		*40 - 145*	*07/13/21 06:29*	*07/13/21 22:33*	*1*
2-Fluorobiphenyl	*92*		*34 - 110*	*07/13/21 06:29*	*07/13/21 22:33*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.4		5.2	1.4	mg/L		07/15/21 14:46	07/15/21 14:48	1
Total Suspended Solids	<1.9		5.0	1.9	mg/L			07/14/21 12:47	1

Client: ARCADIS U.S., Inc.
Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: Trip Blank (7-8-21)A
Lab Sample ID: 500-202114-3

Date Collected: 07/08/21 00:00
Matrix: Water
Date Received: 07/09/21 09:30

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			07/15/21 17:52	1
Toluene	<0.15		0.50	0.15	ug/L			07/15/21 17:52	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/15/21 17:52	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/15/21 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*75 - 120*		*07/15/21 17:52*	*1*
4-Bromofluorobenzene (Surr)	*92*		*71 - 120*		*07/15/21 17:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*120*		*71 - 127*		*07/15/21 17:52*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 120*		*07/15/21 17:52*	*1*

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits

General Chemistry

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.
¤	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.
Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	BFB	DCA	DBFM
Lab Sample ID	Client Sample ID	(75-120)	(71-120)	(71-127)	(70-120)
500-202114-1	V-200-A	100	97	121	106
500-202114-2	V-900-A	99	91	122	106
500-202114-3	Trip Blank (7-8-21)A	98	92	120	103
LCS 500-609457/5	Lab Control Sample	99	93	118	107
MB 500-609457/8	Method Blank	98	92	121	108

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)		
		NBZ	TPHL	FBP
Lab Sample ID	Client Sample ID	(36-120)	(40-145)	(34-110)
500-202114-1	V-200-A	74	112	86
500-202114-2	V-900-A	81	117	92
LCS 500-609019/2-A	Lab Control Sample	69	106	75
LCSD 500-609019/3-A	Lab Control Sample Dup	50	111	59
MB 500-609019/1-A	Method Blank	61	99	62

Surrogate Legend

NBZ = Nitrobenzene-d5
TPHL = Terphenyl-d14
FBP = 2-Fluorobiphenyl

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

Lab Sample ID: MB 500-609457/8
Matrix: Water
Analysis Batch: 609457

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			07/15/21 11:52	1
Toluene	<0.15		0.50	0.15	ug/L			07/15/21 11:52	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			07/15/21 11:52	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			07/15/21 11:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*75 - 120*		*07/15/21 11:52*	*1*
4-Bromofluorobenzene (Surr)	*92*		*71 - 120*		*07/15/21 11:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*121*		*71 - 127*		*07/15/21 11:52*	*1*
Dibromofluoromethane (Surr)	*108*		*70 - 120*		*07/15/21 11:52*	*1*

Lab Sample ID: LCS 500-609457/5
Matrix: Water
Analysis Batch: 609457

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	44.4		ug/L		89	37 - 151
Toluene	50.0	45.6		ug/L		91	47 - 150
Ethylbenzene	50.0	45.5		ug/L		91	37 - 162

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*75 - 120*
4-Bromofluorobenzene (Surr)	*93*		*71 - 120*
1,2-Dichloroethane-d4 (Surr)	*118*		*71 - 127*
Dibromofluoromethane (Surr)	*107*		*70 - 120*

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

Lab Sample ID: MB 500-609019/1-A
Matrix: Water
Analysis Batch: 609093

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 609019

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.099		0.80	0.099	ug/L		07/13/21 06:29	07/13/21 15:54	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		07/13/21 06:29	07/13/21 15:54	1
Anthracene	<0.15		0.80	0.15	ug/L		07/13/21 06:29	07/13/21 15:54	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		07/13/21 06:29	07/13/21 15:54	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		07/13/21 06:29	07/13/21 15:54	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		07/13/21 06:29	07/13/21 15:54	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		07/13/21 06:29	07/13/21 15:54	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		07/13/21 06:29	07/13/21 15:54	1
Chrysene	<0.075		0.80	0.075	ug/L		07/13/21 06:29	07/13/21 15:54	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		07/13/21 06:29	07/13/21 15:54	1
Fluoranthene	<0.16		0.80	0.16	ug/L		07/13/21 06:29	07/13/21 15:54	1
Fluorene	<0.13		0.80	0.13	ug/L		07/13/21 06:29	07/13/21 15:54	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		07/13/21 06:29	07/13/21 15:54	1
Naphthalene	<0.12		0.80	0.12	ug/L		07/13/21 06:29	07/13/21 15:54	1
Phenanthrene	<0.17		0.80	0.17	ug/L		07/13/21 06:29	07/13/21 15:54	1

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

Lab Sample ID: MB 500-609019/1-A
Matrix: Water
Analysis Batch: 609093

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 609019

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<0.18		0.80	0.18	ug/L		07/13/21 06:29	07/13/21 15:54	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		07/13/21 06:29	07/13/21 15:54	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		07/13/21 06:29	07/13/21 15:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*61*		*36 - 120*	*07/13/21 06:29*	*07/13/21 15:54*	*1*
Terphenyl-d14	*99*		*40 - 145*	*07/13/21 06:29*	*07/13/21 15:54*	*1*
2-Fluorobiphenyl	*62*		*34 - 110*	*07/13/21 06:29*	*07/13/21 15:54*	*1*

Lab Sample ID: LCS 500-609019/2-A
Matrix: Water
Analysis Batch: 609093

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 609019

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	32.0	27.1		ug/L		85	47 - 145
Acenaphthylene	32.0	26.5		ug/L		83	33 - 145
Anthracene	32.0	31.1		ug/L		97	27 - 133
Benzo[a]anthracene	32.0	33.6		ug/L		105	33 - 143
Benzo[a]pyrene	32.0	40.0		ug/L		125	17 - 163
Benzo[b]fluoranthene	32.0	35.3		ug/L		110	24 - 159
Benzo[g,h,i]perylene	32.0	28.4		ug/L		89	10 - 219
Benzo[k]fluoranthene	32.0	33.7		ug/L		105	11 - 162
Chrysene	32.0	33.4		ug/L		104	17 - 168
Dibenz(a,h)anthracene	32.0	31.6		ug/L		99	10 - 227
Fluoranthene	32.0	32.4		ug/L		101	26 - 137
Fluorene	32.0	26.5		ug/L		83	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	30.7		ug/L		96	10 - 171
Naphthalene	32.0	20.7		ug/L		65	21 - 133
Phenanthrene	32.0	31.0		ug/L		97	54 - 120
Pyrene	32.0	33.3		ug/L		104	52 - 115
1-Methylnaphthalene	32.0	20.9		ug/L		65	
2-Methylnaphthalene	32.0	20.8		ug/L		65	34 - 110

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5	*69*		*36 - 120*
Terphenyl-d14	*106*		*40 - 145*
2-Fluorobiphenyl	*75*		*34 - 110*

Lab Sample ID: LCSD 500-609019/3-A
Matrix: Water
Analysis Batch: 609093

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 609019

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	32.0	21.6	*	ug/L		67	47 - 145	23	20
Acenaphthylene	32.0	22.3		ug/L		70	33 - 145	17	20
Anthracene	32.0	30.1		ug/L		94	27 - 133	3	20
Benzo[a]anthracene	32.0	33.0		ug/L		103	33 - 143	2	20
Benzo[a]pyrene	32.0	38.8		ug/L		121	17 - 163	3	20

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

Lab Sample ID: LCSD 500-609019/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609093
Prep Batch: 609019

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[b]fluoranthene	32.0	33.7		ug/L		105	24 - 159	5	20
Benzo[g,h,i]perylene	32.0	29.9		ug/L		93	10 - 219	5	20
Benzo[k]fluoranthene	32.0	35.3		ug/L		110	11 - 162	5	20
Chrysene	32.0	33.8		ug/L		106	17 - 168	1	20
Dibenz(a,h)anthracene	32.0	32.6		ug/L		102	10 - 227	3	20
Fluoranthene	32.0	32.7		ug/L		102	26 - 137	1	20
Fluorene	32.0	24.4		ug/L		76	59 - 121	8	20
Indeno[1,2,3-cd]pyrene	32.0	31.8		ug/L		99	10 - 171	3	20
Naphthalene	32.0	15.3	*	ug/L		48	21 - 133	30	20
Phenanthrene	32.0	29.8		ug/L		93	54 - 120	4	20
Pyrene	32.0	35.3		ug/L		110	52 - 115	6	20
1-Methylnaphthalene	32.0	15.8		ug/L		49		28	
2-Methylnaphthalene	32.0	15.4	*	ug/L		48	34 - 110	30	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Nitrobenzene-d5	*50*		*36 - 120*
Terphenyl-d14	*111*		*40 - 145*
2-Fluorobiphenyl	*59*		*34 - 110*

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-609574/12-A
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609575
Prep Batch: 609574

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		07/15/21 14:46	07/15/21 14:48	1

Lab Sample ID: LCS 500-609574/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609575
Prep Batch: 609574

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	34.30		mg/L		86	78 - 114

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

Lab Sample ID: MB 500-609351/1
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609351

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<1.9		5.0	1.9	mg/L			07/14/21 12:25	1

Lab Sample ID: LCS 500-609351/2
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 609351

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	200	196.0		mg/L		98	80 - 120

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 500-202114-1
Date Collected: 07/08/21 10:50
Matrix: Water
Date Received: 07/09/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	609457	07/15/21 17:01	JDD	TAL CHI
Total/NA	Prep	625			609019	07/13/21 06:29	SB	TAL CHI
Total/NA	Analysis	625		1	609093	07/13/21 22:12	AJD	TAL CHI
Total/NA	Prep	1664B			609574	07/15/21 14:46	JSB	TAL CHI
Total/NA	Analysis	1664B		1	609575	07/15/21 14:48	JSB	TAL CHI
Total/NA	Analysis	SM 2540D		1	609351		SMO	TAL CHI
						(Start) 07/14/21 12:46		
						(End) 07/14/21 12:47		

Client Sample ID: V-900-A
Lab Sample ID: 500-202114-2
Date Collected: 07/08/21 11:15
Matrix: Water
Date Received: 07/09/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	609457	07/15/21 17:26	JDD	TAL CHI
Total/NA	Prep	625			609019	07/13/21 06:29	SB	TAL CHI
Total/NA	Analysis	625		1	609093	07/13/21 22:33	AJD	TAL CHI
Total/NA	Prep	1664B			609574	07/15/21 14:46	JSB	TAL CHI
Total/NA	Analysis	1664B		1	609575	07/15/21 14:48	JSB	TAL CHI
Total/NA	Analysis	SM 2540D		1	609351		SMO	TAL CHI
						(Start) 07/14/21 12:47		
						(End) 07/14/21 12:48		

Client Sample ID: Trip Blank (7-8-21)A
Lab Sample ID: 500-202114-3
Date Collected: 07/08/21 00:00
Matrix: Water
Date Received: 07/09/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	609457	07/15/21 17:52	JDD	TAL CHI

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 500-202114-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-21

Dep: Wgt: 10 00 LBS SATURDAY: 0.00
DV: 0.00 TOTAL: HANDLING: 0.00 0.00

Svcs PRIORITY OVERNIGHT Master 5049 4009 1403
TRCK 5049 4009 1425

Eurofins TestA rica, Chicago
2417 Bond Street

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

eurofi

Regulat

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Ramminger	Date: 7-8-21	COC No 1
Arcadis U.S , Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time			For Lab Use Only:
Phone	☑ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
FAX	TAT if different from Below			Lab Sampling
Project Name Marinette, WI	☐ 2 weeks			Lab Project Number
Site Marinette, WI	☑ 1 week			50015522
P O # 30015296 00014 (WPDES)	☐ 2 days			500-202114
	☐ 1 day			Sample Specific Notes

500-202114 COC

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	7-8-21	10.50	G	W	8	N	N	X	X	X	X	System Influent
V-900-A	↓	11:15	G	W	8	N	N	X	X	X	X	System Effluent
Trip Blank (7-8-21 (A)	↓		G	W	1	N	N	X				Trip Blank
								2	3	-	-	

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

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

U-200-A-PH= 7.11 U-900-A-PH= 7.06 0.6

Custody Seals Intact ☐ Yes ☐ No	Custody Seal No	Cooler Temp (°C) Obs'd _____ Corr'd _____	Therm ID No _____

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Jacob Ramminger	Barley Excavating	7-8-21/11:50	Fed Ex		
Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Relinquished by	Company	Date/Time	Received in Laboratory by: Stephanie Hemendy	Company EEA CHI	Date/Time 7/9/21 0930

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-202114-1

Login Number: 202114
List Number: 1
Creator: Buckley, Paula M

List Source: Eurofins TestAmerica, Chicago

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	0.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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 <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 500-210113-1
Client Project/Site: Marinette, WI 30015296.00014 WPDES

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
1/10/2022 10:02:33 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Job ID: 500-210113-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative
500-210113-1

Comments
No additional comments.

Receipt
The samples were received on 12/21/2021 11:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.8º C.

Receipt Exceptions
One or more containers for the following sample(s) was received broken or leaking: Sample #1 "V-200-A" two of three voa vials received broken for BTEX and one of two amber glass 250 unpreserved received broken for PAHs.

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: Perylene-d12 Internal standard (ISTD) response for the following samples was outside of acceptance limits: 500-210113-1 and 500-210113-2. Analytes associated to this internal standard were non-detect; therefore, re-analysis was not performed.

Method 625: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 500-635450 and analytical batch 500-636547 recovered outside control limits for the following analyte: Phenanthrene.

Method 625: The following sample contained one base surrogate outside acceptance limits: MB 500-635450/1-A. The laboratory's SOP allows one base surrogate to be outside acceptance limits; therefore, re-extraction was not performed. These results have been reported and qualified.

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

General Chemistry
No analytical or quality issues were noted, other than those described 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.
Job ID: 500-210113-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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.
Job ID: 500-210113-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-210113-1	V-200-A	Water	12/20/21 10:20	12/21/21 11:00
500-210113-2	V-900-A	Water	12/20/21 10:45	12/21/21 11:00
500-210113-3	Trip Blank (12-20-21)	Water	12/20/21 00:00	12/21/21 11:00

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 WPDES

Job ID: 500-210113-1

Client Sample ID: V-200-A

Date Collected: 12/20/21 10:20
Date Received: 12/21/21 11:00

Lab Sample ID: 500-210113-1

Matrix: Water

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			12/29/21 23:52	1
Toluene	<0.15		0.50	0.15	ug/L			12/29/21 23:52	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/29/21 23:52	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/29/21 23:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*75 - 120*		*12/29/21 23:52*	*1*
4-Bromofluorobenzene (Surr)	*99*		*71 - 120*		*12/29/21 23:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*71 - 127*		*12/29/21 23:52*	*1*
Dibromofluoromethane (Surr)	*107*		*70 - 120*		*12/29/21 23:52*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.096	*	0.78	0.096	ug/L		12/27/21 07:22	01/07/22 04:55	1
Acenaphthylene	<0.10		0.78	0.10	ug/L		12/27/21 07:22	01/07/22 04:55	1
Anthracene	<0.14		0.78	0.14	ug/L		12/27/21 07:22	01/07/22 04:55	1
Benzo[a]anthracene	<0.051		0.78	0.051	ug/L		12/27/21 07:22	01/07/22 04:55	1
Benzo[a]pyrene	<0.059	*	0.78	0.059	ug/L		12/27/21 07:22	01/07/22 04:55	1
Benzo[b]fluoranthene	<0.063	*	0.78	0.063	ug/L		12/27/21 07:22	01/07/22 04:55	1
Benzo[g,h,i]perylene	<0.37	*	0.78	0.37	ug/L		12/27/21 07:22	01/07/22 04:55	1
Benzo[k]fluoranthene	<0.13	*	0.78	0.13	ug/L		12/27/21 07:22	01/07/22 04:55	1
Chrysene	<0.073		0.78	0.073	ug/L		12/27/21 07:22	01/07/22 04:55	1
Dibenz(a,h)anthracene	<0.088	*	0.78	0.088	ug/L		12/27/21 07:22	01/07/22 04:55	1
Fluoranthene	<0.16		0.78	0.16	ug/L		12/27/21 07:22	01/07/22 04:55	1
Fluorene	<0.13	*	0.78	0.13	ug/L		12/27/21 07:22	01/07/22 04:55	1
Indeno[1,2,3-cd]pyrene	<0.060	*	0.78	0.060	ug/L		12/27/21 07:22	01/07/22 04:55	1
Naphthalene	<0.12	*	0.78	0.12	ug/L		12/27/21 07:22	01/07/22 04:55	1
Phenanthrene	<0.16	*	0.78	0.16	ug/L		12/27/21 07:22	01/07/22 04:55	1
Pyrene	<0.18		0.78	0.18	ug/L		12/27/21 07:22	01/07/22 04:55	1
1-Methylnaphthalene	<0.23		1.6	0.23	ug/L		12/27/21 07:22	01/07/22 04:55	1
2-Methylnaphthalene	<0.065	*	1.6	0.065	ug/L		12/27/21 07:22	01/07/22 04:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*62*		*36 - 120*	*12/27/21 07:22*	*01/07/22 04:55*	*1*
Terphenyl-d14	*128*		*40 - 145*	*12/27/21 07:22*	*01/07/22 04:55*	*1*
2-Fluorobiphenyl	*60*		*34 - 110*	*12/27/21 07:22*	*01/07/22 04:55*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	**3.8**	**J B**	5.3	1.4	mg/L		01/07/22 09:56	01/07/22 10:06	1
Total Suspended Solids	**11.8**		5.0	1.9	mg/L			12/26/21 13:35	1

Client Sample Results

Client: ARCADIS U.S., Inc.
Job ID: 500-210113-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-900-A
Date Collected: 12/20/21 10:45
Date Received: 12/21/21 11:00

Lab Sample ID: 500-210113-2
Matrix: Water

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			12/30/21 00:16	1
Toluene	<0.15		0.50	0.15	ug/L			12/30/21 00:16	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/30/21 00:16	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/30/21 00:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*75 - 120*		*12/30/21 00:16*	*1*
4-Bromofluorobenzene (Surr)	*101*		*71 - 120*		*12/30/21 00:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*71 - 127*		*12/30/21 00:16*	*1*
Dibromofluoromethane (Surr)	*104*		*70 - 120*		*12/30/21 00:16*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.093	*	0.76	0.093	ug/L		12/27/21 07:22	01/07/22 05:15	1
Acenaphthylene	<0.10		0.76	0.10	ug/L		12/27/21 07:22	01/07/22 05:15	1
Anthracene	<0.14		0.76	0.14	ug/L		12/27/21 07:22	01/07/22 05:15	1
Benzo[a]anthracene	<0.049		0.76	0.049	ug/L		12/27/21 07:22	01/07/22 05:15	1
Benzo[a]pyrene	<0.057	*	0.76	0.057	ug/L		12/27/21 07:22	01/07/22 05:15	1
Benzo[b]fluoranthene	<0.062	*	0.76	0.062	ug/L		12/27/21 07:22	01/07/22 05:15	1
Benzo[g,h,i]perylene	<0.37	*	0.76	0.37	ug/L		12/27/21 07:22	01/07/22 05:15	1
Benzo[k]fluoranthene	<0.13	*	0.76	0.13	ug/L		12/27/21 07:22	01/07/22 05:15	1
Chrysene	<0.071		0.76	0.071	ug/L		12/27/21 07:22	01/07/22 05:15	1
Dibenz(a,h)anthracene	<0.086	*	0.76	0.086	ug/L		12/27/21 07:22	01/07/22 05:15	1
Fluoranthene	<0.15		0.76	0.15	ug/L		12/27/21 07:22	01/07/22 05:15	1
Fluorene	<0.13	*	0.76	0.13	ug/L		12/27/21 07:22	01/07/22 05:15	1
Indeno[1,2,3-cd]pyrene	<0.058	*	0.76	0.058	ug/L		12/27/21 07:22	01/07/22 05:15	1
Naphthalene	<0.12	*	0.76	0.12	ug/L		12/27/21 07:22	01/07/22 05:15	1
Phenanthrene	<0.16	*	0.76	0.16	ug/L		12/27/21 07:22	01/07/22 05:15	1
Pyrene	<0.17		0.76	0.17	ug/L		12/27/21 07:22	01/07/22 05:15	1
1-Methylnaphthalene	<0.23		1.5	0.23	ug/L		12/27/21 07:22	01/07/22 05:15	1
2-Methylnaphthalene	<0.064	*	1.5	0.064	ug/L		12/27/21 07:22	01/07/22 05:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*67*		*36 - 120*	*12/27/21 07:22*	*01/07/22 05:15*	*1*
Terphenyl-d14	*132*		*40 - 145*	*12/27/21 07:22*	*01/07/22 05:15*	*1*
2-Fluorobiphenyl	*62*		*34 - 110*	*12/27/21 07:22*	*01/07/22 05:15*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	**5.0**	**J B F1**	5.1	1.4	mg/L		01/07/22 09:56	01/07/22 10:06	1
Total Suspended Solids	<1.9		5.0	1.9	mg/L			12/26/21 13:37	1

Client: ARCADIS U.S., Inc.
Job ID: 500-210113-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: Trip Blank (12-20-21)

Lab Sample ID: 500-210113-3
Date Collected: 12/20/21 00:00
Matrix: Water
Date Received: 12/21/21 11:00

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			12/29/21 22:16	1
Toluene	<0.15		0.50	0.15	ug/L			12/29/21 22:16	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/29/21 22:16	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/29/21 22:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*75 - 120*		*12/29/21 22:16*	*1*
4-Bromofluorobenzene (Surr)	*97*		*71 - 120*		*12/29/21 22:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*71 - 127*		*12/29/21 22:16*	*1*
Dibromofluoromethane (Surr)	*104*		*70 - 120*		*12/29/21 22:16*	*1*

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 500-210113-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits
*	ISTD response or retention time outside acceptable limits
*	LCS or LCSD is outside acceptance limits.
X	Surrogate recovery exceeds control limits

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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.
¤	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 30015296.00014 WPDES

Job ID: 500-210113-1

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

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	BFB	DCA	DBFM
Lab Sample ID	Client Sample ID	(75-120)	(71-120)	(71-127)	(70-120)
500-210113-1	V-200-A	97	99	100	107
500-210113-2	V-900-A	96	101	101	104
500-210113-2 MS	V-900-A	98	100	89	93
500-210113-2 MSD	V-900-A	98	102	93	95
500-210113-3	Trip Blank (12-20-21)	96	97	100	104
LCS 500-635911/30	Lab Control Sample	101	102	93	95
MB 500-635911/33	Method Blank	96	98	100	104

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)		
		NBZ	TPHL	FBP
Lab Sample ID	Client Sample ID	(36-120)	(40-145)	(34-110)
500-210113-1	V-200-A	62	128	60
500-210113-2	V-900-A	67	132	62
LCS 500-635450/2-A	Lab Control Sample	76	64	56
LCSD 500-635450/3-A	Lab Control Sample Dup	74	66	57
MB 500-635450/1-A	Method Blank	127 X	122	97

Surrogate Legend

NBZ = Nitrobenzene-d5
TPHL = Terphenyl-d14
FBP = 2-Fluorobiphenyl

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

Lab Sample ID: MB 500-635911/33
Matrix: Water
Analysis Batch: 635911

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			12/29/21 21:52	1
Toluene	<0.15		0.50	0.15	ug/L			12/29/21 21:52	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/29/21 21:52	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/29/21 21:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*75 - 120*		*12/29/21 21:52*	*1*
4-Bromofluorobenzene (Surr)	*98*		*71 - 120*		*12/29/21 21:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*71 - 127*		*12/29/21 21:52*	*1*
Dibromofluoromethane (Surr)	*104*		*70 - 120*		*12/29/21 21:52*	*1*

Lab Sample ID: LCS 500-635911/30
Matrix: Water
Analysis Batch: 635911

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	49.9		ug/L		100	37 - 151
Toluene	50.0	53.8		ug/L		108	47 - 150
Ethylbenzene	50.0	49.5		ug/L		99	37 - 162

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*75 - 120*
4-Bromofluorobenzene (Surr)	*102*		*71 - 120*
1,2-Dichloroethane-d4 (Surr)	*93*		*71 - 127*
Dibromofluoromethane (Surr)	*95*		*70 - 120*

Lab Sample ID: 500-210113-2 MS
Matrix: Water
Analysis Batch: 635911

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.15		50.0	53.0		ug/L		106	37 - 151
Toluene	<0.15		50.0	56.3		ug/L		113	47 - 150
Ethylbenzene	<0.18		50.0	53.6		ug/L		107	37 - 162

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*75 - 120*
4-Bromofluorobenzene (Surr)	*100*		*71 - 120*
1,2-Dichloroethane-d4 (Surr)	*89*		*71 - 127*
Dibromofluoromethane (Surr)	*93*		*70 - 120*

Lab Sample ID: 500-210113-2 MSD
Matrix: Water
Analysis Batch: 635911

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.15		50.0	50.8		ug/L		102	37 - 151	4	20
Toluene	<0.15		50.0	53.4		ug/L		107	47 - 150	5	20

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

Lab Sample ID: 500-210113-2 MSD
Matrix: Water
Analysis Batch: 635911

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylbenzene	<0.18		50.0	50.9		ug/L		102	37 - 162	5	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*75 - 120*
4-Bromofluorobenzene (Surr)	*102*		*71 - 120*
1,2-Dichloroethane-d4 (Surr)	*93*		*71 - 127*
Dibromofluoromethane (Surr)	*95*		*70 - 120*

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

Lab Sample ID: MB 500-635450/1-A
Matrix: Water
Analysis Batch: 636547

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 635450

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.099		0.80	0.099	ug/L		12/27/21 07:22	01/05/22 11:19	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		12/27/21 07:22	01/05/22 11:19	1
Anthracene	<0.15		0.80	0.15	ug/L		12/27/21 07:22	01/05/22 11:19	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		12/27/21 07:22	01/05/22 11:19	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		12/27/21 07:22	01/05/22 11:19	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		12/27/21 07:22	01/05/22 11:19	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		12/27/21 07:22	01/05/22 11:19	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		12/27/21 07:22	01/05/22 11:19	1
Chrysene	<0.075		0.80	0.075	ug/L		12/27/21 07:22	01/05/22 11:19	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		12/27/21 07:22	01/05/22 11:19	1
Fluoranthene	<0.16		0.80	0.16	ug/L		12/27/21 07:22	01/05/22 11:19	1
Fluorene	<0.13		0.80	0.13	ug/L		12/27/21 07:22	01/05/22 11:19	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		12/27/21 07:22	01/05/22 11:19	1
Naphthalene	<0.12		0.80	0.12	ug/L		12/27/21 07:22	01/05/22 11:19	1
Phenanthrene	<0.17		0.80	0.17	ug/L		12/27/21 07:22	01/05/22 11:19	1
Pyrene	<0.18		0.80	0.18	ug/L		12/27/21 07:22	01/05/22 11:19	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		12/27/21 07:22	01/05/22 11:19	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		12/27/21 07:22	01/05/22 11:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*127*	*X*	*36 - 120*	*12/27/21 07:22*	*01/05/22 11:19*	*1*
Terphenyl-d14	*122*		*40 - 145*	*12/27/21 07:22*	*01/05/22 11:19*	*1*
2-Fluorobiphenyl	*97*		*34 - 110*	*12/27/21 07:22*	*01/05/22 11:19*	*1*

Lab Sample ID: LCS 500-635450/2-A
Matrix: Water
Analysis Batch: 636547

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 635450

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	32.0	17.6		ug/L		55	47 - 145
Acenaphthylene	32.0	20.0		ug/L		63	33 - 145
Anthracene	32.0	18.1		ug/L		57	27 - 133
Benzo[a]anthracene	32.0	23.0		ug/L		72	33 - 143

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

Lab Sample ID: LCS 500-635450/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 636547
Prep Batch: 635450

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzo[a]pyrene			32.0	26.3		ug/L		82	17 - 163		
Benzo[b]fluoranthene			32.0	25.1		ug/L		78	24 - 159		
Benzo[g,h,i]perylene			32.0	23.8		ug/L		74	10 - 219		
Benzo[k]fluoranthene			32.0	22.6		ug/L		71	11 - 162		
Chrysene			32.0	21.8		ug/L		68	17 - 168		
Dibenz(a,h)anthracene			32.0	24.4		ug/L		76	10 - 227		
Fluoranthene			32.0	20.1		ug/L		63	26 - 137		
Fluorene			32.0	18.9		ug/L		59	59 - 121		
Indeno[1,2,3-cd]pyrene			32.0	24.7		ug/L		77	10 - 171		
Naphthalene			32.0	16.6		ug/L		52	21 - 133		
Phenanthrene			32.0	19.1		ug/L		60	54 - 120		
Pyrene			32.0	18.2		ug/L		57	52 - 115		
1-Methylnaphthalene			32.0	17.9		ug/L		56			
2-Methylnaphthalene			32.0	18.0		ug/L		56	34 - 110		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5	*76*		*36 - 120*
Terphenyl-d14	*64*		*40 - 145*
2-Fluorobiphenyl	*56*		*34 - 110*

Lab Sample ID: LCSD 500-635450/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 636547
Prep Batch: 635450

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene			32.0	20.8		ug/L		65	47 - 145	17	20
Acenaphthylene			32.0	23.0		ug/L		72	33 - 145	14	20
Anthracene			32.0	21.0		ug/L		66	27 - 133	15	20
Benzo[a]anthracene			32.0	25.6		ug/L		80	33 - 143	11	20
Benzo[a]pyrene			32.0	30.2		ug/L		94	17 - 163	14	20
Benzo[b]fluoranthene			32.0	27.1		ug/L		85	24 - 159	8	20
Benzo[g,h,i]perylene			32.0	26.7		ug/L		83	10 - 219	11	20
Benzo[k]fluoranthene			32.0	26.6		ug/L		83	11 - 162	16	20
Chrysene			32.0	24.8		ug/L		78	17 - 168	13	20
Dibenz(a,h)anthracene			32.0	27.2		ug/L		85	10 - 227	11	20
Fluoranthene			32.0	23.5		ug/L		73	26 - 137	15	20
Fluorene			32.0	21.9		ug/L		68	59 - 121	15	20
Indeno[1,2,3-cd]pyrene			32.0	27.1		ug/L		85	10 - 171	9	20
Naphthalene			32.0	19.4		ug/L		61	21 - 133	16	20
Phenanthrene			32.0	24.4	*	ug/L		76	54 - 120	25	20
Pyrene			32.0	21.0		ug/L		65	52 - 115	14	20
1-Methylnaphthalene			32.0	19.8		ug/L		62		10	
2-Methylnaphthalene			32.0	20.6		ug/L		65	34 - 110	14	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Nitrobenzene-d5	*74*		*36 - 120*
Terphenyl-d14	*66*		*40 - 145*
2-Fluorobiphenyl	*57*		*34 - 110*

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-636952/14-A
Matrix: Water
Analysis Batch: 636955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 636952

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	2.00	J	5.0	1.3	mg/L		01/07/22 09:56	01/07/22 10:06	1

Lab Sample ID: MB 500-636952/1-A
Matrix: Water
Analysis Batch: 636955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 636952

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	2.00	J	5.0	1.3	mg/L		01/07/22 09:56	01/07/22 10:06	1

Lab Sample ID: LCS 500-636952/2-A
Matrix: Water
Analysis Batch: 636955

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 636952

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	39.80		mg/L		100	78 - 114

Lab Sample ID: 500-210113-2 MS
Matrix: Water
Analysis Batch: 636955

Client Sample ID: V-900-A
Prep Type: Total/NA
Prep Batch: 636952

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	5.0	J B F1	41.3	35.71	F1	mg/L		74	78 - 114

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

Lab Sample ID: MB 500-635435/1
Matrix: Water
Analysis Batch: 635435

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			12/26/21 13:25	1

Lab Sample ID: LCS 500-635435/2
Matrix: Water
Analysis Batch: 635435

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	178.0		mg/L		89	80 - 120

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 500-210113-1
Project/Site: Marinette, WI 30015296.00014 WPDES

Client Sample ID: V-200-A
Lab Sample ID: 500-210113-1
Date Collected: 12/20/21 10:20
Matrix: Water
Date Received: 12/21/21 11:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	635911	12/29/21 23:52	STW	TAL CHI
Total/NA	Prep	625			635450	12/27/21 07:22	FRG	TAL CHI
Total/NA	Analysis	625		1	636833	01/07/22 04:55	JSB	TAL CHI
Total/NA	Prep	1664B			636952	01/07/22 09:56	LWN	TAL CHI
Total/NA	Analysis	1664B		1	636955	01/07/22 10:06	LWN	TAL CHI
Total/NA	Analysis	SM 2540D		1	635435		SMO	TAL CHI
						(Start) 12/26/21 13:35		
						(End) 12/26/21 13:37		

Client Sample ID: V-900-A
Lab Sample ID: 500-210113-2
Date Collected: 12/20/21 10:45
Matrix: Water
Date Received: 12/21/21 11:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	635911	12/30/21 00:16	STW	TAL CHI
Total/NA	Prep	625			635450	12/27/21 07:22	FRG	TAL CHI
Total/NA	Analysis	625		1	636833	01/07/22 05:15	JSB	TAL CHI
Total/NA	Prep	1664B			636952	01/07/22 09:56	LWN	TAL CHI
Total/NA	Analysis	1664B		1	636955	01/07/22 10:06	LWN	TAL CHI
Total/NA	Analysis	SM 2540D		1	635435		SMO	TAL CHI
						(Start) 12/26/21 13:37		
						(End) 12/26/21 13:38		

Client Sample ID: Trip Blank (12-20-21)
Lab Sample ID: 500-210113-3
Date Collected: 12/20/21 00:00
Matrix: Water
Date Received: 12/21/21 11:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	635911	12/29/21 22:16	STW	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.
Job ID: 500-210113-1
Project/Site: Marinette, WI 30015296.00014 WPDES

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

Eurofins TestAmerica, Chicago
2417 Bond Street

University Park, IL 60484-3101
phone 708 534 5200 fax 708.534 5211

Chain of Custody Record

500-210113 COC

eurofins

Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Remington	Date: 12-20-21	COC No 1
Arcadis U.S , Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	**Analysis Turnaround Time**			For Lab Use Only:
Phone	☑ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
FAX	TAT if different from Below _____			Lab Sampling:
Project Name Marinette, WI	☐ 2 weeks			Lab Project Number
Site: Marinette, WI	☑ 1 week			50015522
P O # 30015296 00014 (WPDES)	☐ 2 days			500-210113
	☐ 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)	BTEX Method 624	Oil & Grease Method 1664	TSS Method 2540D	PAHs Method 625	Sample Specific Notes.
1	V-200-A	12-20-21	10:20	G	W	8	N	N	X	X	X	X	System Influent
2	V-900-A	↓	10:45	G	W	8	N	N	X	X	X	X	System Effluent
3	Trip Blank (12-20-21)			G	W	1	N	N	X				Trip Blank
									2	3	-	-	

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 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

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
V-200-A-PH = 7.23 V-900-PH = 7.09

0.8

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.	Cooler Temp (°C) Obs'd _____ Corr'd _____ Therm ID No _____			
Relinquished by: Jacob Remington	Company: Barley Excavating	Date/Time: 12-20-21/11:45	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company	Date/Time	Received by:	Company:	Date/Time
Relinquished by:	Company:	Date/Time.	Received in Laboratory by: Stephanie Hernandez	Company: ETA-CHI	Date/Time 12/21/21 1100

Page 1 of 30

500-210113 Wayb

ORIGIN ID:GRBA (282) 202-5955
JOE BARCLAY
BARCLAY EXCAVATING
1824 10TH AVE

MENOMINEE, MI 49858
UNITED STATES US

SHIP DATE: 24SEP21
ACTWGT: 25.00 LB
CAD: 4436748/INET4400

TO SAMLPE RECEIPT
EUROFINS TESTAMERICA
2417 BOND STREET

UNIVERSITY PARK IL 60484
(708) 534-5200

RMA:

FedEx Express

E

TRK# 0221 7962 2312 7160

TUE - 21 DEC AA
PRIORITY OVERNIGHT

DSR
60484
IL-US
ORD

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-210113-1

Login Number: 210113

List Source: Eurofins Chicago

List Number: 1

Creator: Hernandez, Stephanie

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	False	Refer to Job Narrative for details.
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	

Appendix D

Ditch A Downstream Surface Water Analytical Results

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-77156-1
Client Project/Site: Marinette, WI 30015296.00014 DITCH A

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

Attn: Lisa Rutkowski

Sandra Fredrick

Authorized for release by:
8/9/2021 8:20:50 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-77156-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

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.
¤	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

Job ID: 320-77156-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-77156-1

Comments
No additional comments.

Receipt
The samples were received on 8/4/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.1º 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 320-513366. Method code: 3535_PFC_28D Matrix: Aqueous

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

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 DITCH A

Job ID: 320-77156-1

Client Sample ID: SW-40 (8-3-21)

Date Collected: 08/03/21 13:00
Date Received: 08/04/21 10:00

Lab Sample ID: 320-77156-1

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.1**	**J**	4.9	2.3	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluoropentanoic acid (PFPeA)	<1.9		1.9	0.48	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9	0.56	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9	0.24	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9	0.82	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorononanoic acid (PFNA)	<1.9		1.9	0.26	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9	0.30	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9	1.1	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9	0.53	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorotridecanoic acid (PFTriA)	<1.9		1.9	1.3	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorotetradecanoic acid (PFTeA)	<1.9		1.9	0.71	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.9		1.9	0.86	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.9		1.9	0.91	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9	0.19	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9	0.29	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9	0.55	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.9		1.9	0.18	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorooctanesulfonic acid (PFOS)	<1.9		1.9	0.52	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorononanesulfonic acid (PFNS)	<1.9		1.9	0.36	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorodecanesulfonic acid (PFDS)	<1.9		1.9	0.31	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorododecanesulfonic acid (PFDoS)	<1.9		1.9	0.94	ng/L		08/05/21 12:36	08/07/21 03:07	1
Perfluorooctanesulfonamide (FOSA)	<1.9		1.9	0.95	ng/L		08/05/21 12:36	08/07/21 03:07	1
NEtFOSA	<1.9		1.9	0.84	ng/L		08/05/21 12:36	08/07/21 03:07	1
NMeFOSA	<1.9		1.9	0.42	ng/L		08/05/21 12:36	08/07/21 03:07	1
NMeFOSAA	<4.9		4.9	1.2	ng/L		08/05/21 12:36	08/07/21 03:07	1
NEtFOSAA	<4.9		4.9	1.3	ng/L		08/05/21 12:36	08/07/21 03:07	1
NMeFOSE	<3.9		3.9	1.4	ng/L		08/05/21 12:36	08/07/21 03:07	1
NEtFOSE	<1.9		1.9	0.82	ng/L		08/05/21 12:36	08/07/21 03:07	1
4:2 FTS	<1.9		1.9	0.23	ng/L		08/05/21 12:36	08/07/21 03:07	1
6:2 FTS	<4.9		4.9	2.4	ng/L		08/05/21 12:36	08/07/21 03:07	1
8:2 FTS	<1.9		1.9	0.45	ng/L		08/05/21 12:36	08/07/21 03:07	1
10:2 FTS	**0.84**	**J**	1.9	0.65	ng/L		08/05/21 12:36	08/07/21 03:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9	0.39	ng/L		08/05/21 12:36	08/07/21 03:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.9		3.9	1.5	ng/L		08/05/21 12:36	08/07/21 03:07	1
F-53B Major	<1.9		1.9	0.23	ng/L		08/05/21 12:36	08/07/21 03:07	1
F-53B Minor	<1.9		1.9	0.31	ng/L		08/05/21 12:36	08/07/21 03:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*97*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:07*	*1*
13C5 PFPeA	*82*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:07*	*1*
13C2 PFHxA	*105*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:07*	*1*
13C4 PFHpA	*96*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:07*	*1*
13C4 PFOA	*98*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:07*	*1*
13C5 PFNA	*93*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:07*	*1*
13C2 PFDA	*113*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:07*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 DITCH A

Job ID: 320-77156-1

Client Sample ID: SW-40 (8-3-21)
Date Collected: 08/03/21 13:00
Date Received: 08/04/21 10:00

Lab Sample ID: 320-77156-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	109		25 - 150	08/05/21 12:36	08/07/21 03:07	1
13C2 PFDoA	100		25 - 150	08/05/21 12:36	08/07/21 03:07	1
13C2 PFTeDA	93		25 - 150	08/05/21 12:36	08/07/21 03:07	1
13C2 PFHxDA	133		25 - 150	08/05/21 12:36	08/07/21 03:07	1
13C3 PFBS	94		25 - 150	08/05/21 12:36	08/07/21 03:07	1
18O2 PFHxS	94		25 - 150	08/05/21 12:36	08/07/21 03:07	1
13C4 PFOS	107		25 - 150	08/05/21 12:36	08/07/21 03:07	1
13C8 FOSA	104		10 - 150	08/05/21 12:36	08/07/21 03:07	1
d3-NMeFOSAA	83		25 - 150	08/05/21 12:36	08/07/21 03:07	1
d5-NEtFOSAA	90		25 - 150	08/05/21 12:36	08/07/21 03:07	1
d-N-MeFOSA-M	79		10 - 150	08/05/21 12:36	08/07/21 03:07	1
d-N-EtFOSA-M	82		10 - 150	08/05/21 12:36	08/07/21 03:07	1
d7-N-MeFOSE-M	80		10 - 150	08/05/21 12:36	08/07/21 03:07	1
d9-N-EtFOSE-M	78		10 - 150	08/05/21 12:36	08/07/21 03:07	1
M2-4:2 FTS	87		25 - 150	08/05/21 12:36	08/07/21 03:07	1
M2-6:2 FTS	99		25 - 150	08/05/21 12:36	08/07/21 03:07	1
M2-8:2 FTS	117		25 - 150	08/05/21 12:36	08/07/21 03:07	1
13C3 HFPO-DA	95		25 - 150	08/05/21 12:36	08/07/21 03:07	1
13C2 10:2 FTS	88		25 - 150	08/05/21 12:36	08/07/21 03:07	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 DITCH A

Job ID: 320-77156-1

Client Sample ID: DUP-01-A (8-3-21)

Date Collected: 08/03/21 00:00
Date Received: 08/04/21 10:00

Lab Sample ID: 320-77156-2

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.0**	**J**	4.7	2.3	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluoropentanoic acid (PFPeA)	<1.9		1.9	0.46	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9	0.55	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9	0.24	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9	0.80	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorononanoic acid (PFNA)	<1.9		1.9	0.25	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9	0.29	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9	1.0	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9	0.52	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorotridecanoic acid (PFTriA)	<1.9		1.9	1.2	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorotetradecanoic acid (PFTeA)	<1.9		1.9	0.69	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.9		1.9	0.84	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.9		1.9	0.88	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9	0.19	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9	0.28	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9	0.54	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.9		1.9	0.18	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorooctanesulfonic acid (PFOS)	<1.9		1.9	0.51	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorononanesulfonic acid (PFNS)	<1.9		1.9	0.35	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorodecanesulfonic acid (PFDS)	<1.9		1.9	0.30	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorododecanesulfonic acid (PFDoS)	<1.9		1.9	0.91	ng/L		08/05/21 12:36	08/07/21 03:16	1
Perfluorooctanesulfonamide (FOSA)	<1.9		1.9	0.92	ng/L		08/05/21 12:36	08/07/21 03:16	1
NEtFOSA	<1.9		1.9	0.82	ng/L		08/05/21 12:36	08/07/21 03:16	1
NMeFOSA	<1.9		1.9	0.40	ng/L		08/05/21 12:36	08/07/21 03:16	1
NMeFOSAA	<4.7		4.7	1.1	ng/L		08/05/21 12:36	08/07/21 03:16	1
NEtFOSAA	<4.7		4.7	1.2	ng/L		08/05/21 12:36	08/07/21 03:16	1
NMeFOSE	<3.8		3.8	1.3	ng/L		08/05/21 12:36	08/07/21 03:16	1
NEtFOSE	<1.9		1.9	0.80	ng/L		08/05/21 12:36	08/07/21 03:16	1
4:2 FTS	<1.9		1.9	0.23	ng/L		08/05/21 12:36	08/07/21 03:16	1
6:2 FTS	<4.7		4.7	2.4	ng/L		08/05/21 12:36	08/07/21 03:16	1
8:2 FTS	<1.9		1.9	0.43	ng/L		08/05/21 12:36	08/07/21 03:16	1
10:2 FTS	**0.74**	**J**	1.9	0.63	ng/L		08/05/21 12:36	08/07/21 03:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9	0.38	ng/L		08/05/21 12:36	08/07/21 03:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.8		3.8	1.4	ng/L		08/05/21 12:36	08/07/21 03:16	1
F-53B Major	<1.9		1.9	0.23	ng/L		08/05/21 12:36	08/07/21 03:16	1
F-53B Minor	<1.9		1.9	0.30	ng/L		08/05/21 12:36	08/07/21 03:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*104*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:16*	*1*
13C5 PFPeA	*95*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:16*	*1*
13C2 PFHxA	*120*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:16*	*1*
13C4 PFHpA	*104*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:16*	*1*
13C4 PFOA	*102*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:16*	*1*
13C5 PFNA	*107*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:16*	*1*
13C2 PFDA	*122*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 DITCH A

Job ID: 320-77156-1

Client Sample ID: DUP-01-A (8-3-21)
Date Collected: 08/03/21 00:00
Date Received: 08/04/21 10:00

Lab Sample ID: 320-77156-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	113		25 - 150	08/05/21 12:36	08/07/21 03:16	1
13C2 PFDoA	101		25 - 150	08/05/21 12:36	08/07/21 03:16	1
13C2 PFTeDA	91		25 - 150	08/05/21 12:36	08/07/21 03:16	1
13C2 PFHxDA	124		25 - 150	08/05/21 12:36	08/07/21 03:16	1
13C3 PFBS	108		25 - 150	08/05/21 12:36	08/07/21 03:16	1
18O2 PFHxS	100		25 - 150	08/05/21 12:36	08/07/21 03:16	1
13C4 PFOS	121		25 - 150	08/05/21 12:36	08/07/21 03:16	1
13C8 FOSA	116		10 - 150	08/05/21 12:36	08/07/21 03:16	1
d3-NMeFOSAA	87		25 - 150	08/05/21 12:36	08/07/21 03:16	1
d5-NEtFOSAA	95		25 - 150	08/05/21 12:36	08/07/21 03:16	1
d-N-MeFOSA-M	88		10 - 150	08/05/21 12:36	08/07/21 03:16	1
d-N-EtFOSA-M	85		10 - 150	08/05/21 12:36	08/07/21 03:16	1
d7-N-MeFOSE-M	85		10 - 150	08/05/21 12:36	08/07/21 03:16	1
d9-N-EtFOSE-M	85		10 - 150	08/05/21 12:36	08/07/21 03:16	1
M2-4:2 FTS	93		25 - 150	08/05/21 12:36	08/07/21 03:16	1
M2-6:2 FTS	94		25 - 150	08/05/21 12:36	08/07/21 03:16	1
M2-8:2 FTS	116		25 - 150	08/05/21 12:36	08/07/21 03:16	1
13C3 HFPO-DA	101		25 - 150	08/05/21 12:36	08/07/21 03:16	1
13C2 10:2 FTS	82		25 - 150	08/05/21 12:36	08/07/21 03:16	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 DITCH A

Job ID: 320-77156-1

Client Sample ID: Field Blank-A (8-3-21)

Date Collected: 08/03/21 13:10
Date Received: 08/04/21 10:00

Lab Sample ID: 320-77156-3

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.6		4.6	2.2	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8	0.45	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.53	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.23	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.78	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.25	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.28	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	1.0	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.50	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.2	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.67	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.82	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.86	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.28	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.52	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.8		1.8	0.17	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.50	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.34	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.89	ng/L		08/05/21 12:36	08/07/21 03:26	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.90	ng/L		08/05/21 12:36	08/07/21 03:26	1
NEtFOSA	<1.8		1.8	0.80	ng/L		08/05/21 12:36	08/07/21 03:26	1
NMeFOSA	<1.8		1.8	0.39	ng/L		08/05/21 12:36	08/07/21 03:26	1
NMeFOSAA	<4.6		4.6	1.1	ng/L		08/05/21 12:36	08/07/21 03:26	1
NEtFOSAA	<4.6		4.6	1.2	ng/L		08/05/21 12:36	08/07/21 03:26	1
NMeFOSE	<3.7		3.7	1.3	ng/L		08/05/21 12:36	08/07/21 03:26	1
NEtFOSE	<1.8		1.8	0.78	ng/L		08/05/21 12:36	08/07/21 03:26	1
4:2 FTS	<1.8		1.8	0.22	ng/L		08/05/21 12:36	08/07/21 03:26	1
6:2 FTS	<4.6		4.6	2.3	ng/L		08/05/21 12:36	08/07/21 03:26	1
8:2 FTS	<1.8		1.8	0.42	ng/L		08/05/21 12:36	08/07/21 03:26	1
10:2 FTS	<1.8		1.8	0.61	ng/L		08/05/21 12:36	08/07/21 03:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.37	ng/L		08/05/21 12:36	08/07/21 03:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.7		3.7	1.4	ng/L		08/05/21 12:36	08/07/21 03:26	1
F-53B Major	<1.8		1.8	0.22	ng/L		08/05/21 12:36	08/07/21 03:26	1
F-53B Minor	<1.8		1.8	0.29	ng/L		08/05/21 12:36	08/07/21 03:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*100*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:26*	*1*
13C5 PFPeA	*96*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:26*	*1*
13C2 PFHxA	*109*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:26*	*1*
13C4 PFHpA	*103*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:26*	*1*
13C4 PFOA	*102*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:26*	*1*
13C5 PFNA	*108*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:26*	*1*
13C2 PFDA	*124*		*25 - 150*	*08/05/21 12:36*	*08/07/21 03:26*	*1*

Client: ARCADIS U.S., Inc.
Job ID: 320-77156-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

Client Sample ID: Field Blank-A (8-3-21)
Lab Sample ID: 320-77156-3
Date Collected: 08/03/21 13:10
Matrix: Water
Date Received: 08/04/21 10:00

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	115		25 - 150	08/05/21 12:36	08/07/21 03:26	1
13C2 PFDoA	110		25 - 150	08/05/21 12:36	08/07/21 03:26	1
13C2 PFTeDA	96		25 - 150	08/05/21 12:36	08/07/21 03:26	1
13C2 PFHxDA	131		25 - 150	08/05/21 12:36	08/07/21 03:26	1
13C3 PFBS	104		25 - 150	08/05/21 12:36	08/07/21 03:26	1
18O2 PFHxS	103		25 - 150	08/05/21 12:36	08/07/21 03:26	1
13C4 PFOS	111		25 - 150	08/05/21 12:36	08/07/21 03:26	1
13C8 FOSA	110		10 - 150	08/05/21 12:36	08/07/21 03:26	1
d3-NMeFOSAA	86		25 - 150	08/05/21 12:36	08/07/21 03:26	1
d5-NEtFOSAA	101		25 - 150	08/05/21 12:36	08/07/21 03:26	1
d-N-MeFOSA-M	77		10 - 150	08/05/21 12:36	08/07/21 03:26	1
d-N-EtFOSA-M	83		10 - 150	08/05/21 12:36	08/07/21 03:26	1
d7-N-MeFOSE-M	94		10 - 150	08/05/21 12:36	08/07/21 03:26	1
d9-N-EtFOSE-M	89		10 - 150	08/05/21 12:36	08/07/21 03:26	1
M2-4:2 FTS	98		25 - 150	08/05/21 12:36	08/07/21 03:26	1
M2-6:2 FTS	105		25 - 150	08/05/21 12:36	08/07/21 03:26	1
M2-8:2 FTS	110		25 - 150	08/05/21 12:36	08/07/21 03:26	1
13C3 HFPO-DA	99		25 - 150	08/05/21 12:36	08/07/21 03:26	1
13C2 10:2 FTS	90		25 - 150	08/05/21 12:36	08/07/21 03:26	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 DITCH A

Job ID: 320-77156-1

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)
320-77156-1	SW-40 (8-3-21)	97	82	105	96	98	93	113	109
320-77156-2	DUP-01-A (8-3-21)	104	95	120	104	102	107	122	113
320-77156-3	Field Blank-A (8-3-21)	100	96	109	103	102	108	124	115
LCS 320-513366/2-A	Lab Control Sample	92	96	109	103	96	100	110	110
LCSD 320-513366/3-A	Lab Control Sample Dup	89	85	101	93	94	91	100	107
MB 320-513366/1-A	Method Blank	95	95	104	98	93	96	114	107

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
320-77156-1	SW-40 (8-3-21)	100	93	133	94	94	107	104	83
320-77156-2	DUP-01-A (8-3-21)	101	91	124	108	100	121	116	87
320-77156-3	Field Blank-A (8-3-21)	110	96	131	104	103	111	110	86
LCS 320-513366/2-A	Lab Control Sample	103	95	127	97	98	111	106	89
LCSD 320-513366/3-A	Lab Control Sample Dup	97	91	116	93	94	105	94	78
MB 320-513366/1-A	Method Blank	104	96	126	94	97	104	102	82

		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)
320-77156-1	SW-40 (8-3-21)	90	79	82	80	78	87	99	117
320-77156-2	DUP-01-A (8-3-21)	95	88	85	85	85	93	94	116
320-77156-3	Field Blank-A (8-3-21)	101	77	83	94	89	98	105	110
LCS 320-513366/2-A	Lab Control Sample	103	79	85	85	90	94	93	114
LCSD 320-513366/3-A	Lab Control Sample Dup	88	68	78	78	87	89	93	95
MB 320-513366/1-A	Method Blank	96	81	84	87	91	98	105	108

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
320-77156-1	SW-40 (8-3-21)	95	88
320-77156-2	DUP-01-A (8-3-21)	101	82
320-77156-3	Field Blank-A (8-3-21)	99	90
LCS 320-513366/2-A	Lab Control Sample	101	93
LCSD 320-513366/3-A	Lab Control Sample Dup	91	78
MB 320-513366/1-A	Method Blank	92	97

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxDA = 13C2 PFHxDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77156-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-513366/1-A
Matrix: Water
Analysis Batch: 514034

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 513366

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	<2.0		2.0	0.19	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		08/05/21 12:36	08/06/21 23:59	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		08/05/21 12:36	08/06/21 23:59	1
NEtFOSA	<2.0		2.0	0.87	ng/L		08/05/21 12:36	08/06/21 23:59	1
NMeFOSA	<2.0		2.0	0.43	ng/L		08/05/21 12:36	08/06/21 23:59	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		08/05/21 12:36	08/06/21 23:59	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		08/05/21 12:36	08/06/21 23:59	1
NMeFOSE	<4.0		4.0	1.4	ng/L		08/05/21 12:36	08/06/21 23:59	1
NEtFOSE	<2.0		2.0	0.85	ng/L		08/05/21 12:36	08/06/21 23:59	1
4:2 FTS	<2.0		2.0	0.24	ng/L		08/05/21 12:36	08/06/21 23:59	1
6:2 FTS	<5.0		5.0	2.5	ng/L		08/05/21 12:36	08/06/21 23:59	1
8:2 FTS	<2.0		2.0	0.46	ng/L		08/05/21 12:36	08/06/21 23:59	1
10:2 FTS	<2.0		2.0	0.67	ng/L		08/05/21 12:36	08/06/21 23:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		08/05/21 12:36	08/06/21 23:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		08/05/21 12:36	08/06/21 23:59	1
F-53B Major	<2.0		2.0	0.24	ng/L		08/05/21 12:36	08/06/21 23:59	1
F-53B Minor	<2.0		2.0	0.32	ng/L		08/05/21 12:36	08/06/21 23:59	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*95*		*25 - 150*	*08/05/21 12:36*	*08/06/21 23:59*	*1*
13C5 PFPeA	*95*		*25 - 150*	*08/05/21 12:36*	*08/06/21 23:59*	*1*
13C2 PFHxA	*104*		*25 - 150*	*08/05/21 12:36*	*08/06/21 23:59*	*1*
13C4 PFHpA	*98*		*25 - 150*	*08/05/21 12:36*	*08/06/21 23:59*	*1*
13C4 PFOA	*93*		*25 - 150*	*08/05/21 12:36*	*08/06/21 23:59*	*1*

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

Lab Sample ID: MB 320-513366/1-A
Matrix: Water
Analysis Batch: 514034

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 513366

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	96		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 PFDA	114		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 PFUnA	107		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 PFDoA	104		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 PFTeDA	96		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 PFHxDA	126		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C3 PFBS	94		25 - 150	08/05/21 12:36	08/06/21 23:59	1
18O2 PFHxS	97		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C4 PFOS	104		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C8 FOSA	102		10 - 150	08/05/21 12:36	08/06/21 23:59	1
d3-NMeFOSAA	82		25 - 150	08/05/21 12:36	08/06/21 23:59	1
d5-NEtFOSAA	96		25 - 150	08/05/21 12:36	08/06/21 23:59	1
d-N-MeFOSA-M	81		10 - 150	08/05/21 12:36	08/06/21 23:59	1
d-N-EtFOSA-M	84		10 - 150	08/05/21 12:36	08/06/21 23:59	1
d7-N-MeFOSE-M	87		10 - 150	08/05/21 12:36	08/06/21 23:59	1
d9-N-EtFOSE-M	91		10 - 150	08/05/21 12:36	08/06/21 23:59	1
M2-4:2 FTS	98		25 - 150	08/05/21 12:36	08/06/21 23:59	1
M2-6:2 FTS	105		25 - 150	08/05/21 12:36	08/06/21 23:59	1
M2-8:2 FTS	108		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C3 HFPO-DA	92		25 - 150	08/05/21 12:36	08/06/21 23:59	1
13C2 10:2 FTS	97		25 - 150	08/05/21 12:36	08/06/21 23:59	1

Lab Sample ID: LCS 320-513366/2-A
Matrix: Water
Analysis Batch: 514193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 513366

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	38.3		ng/L		96	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	41.1		ng/L		103	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	37.6		ng/L		94	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	40.4		ng/L		101	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	40.3		ng/L		101	60 - 135
Perfluorononanoic acid (PFNA)	40.0	42.1		ng/L		105	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	39.0		ng/L		97	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	41.6		ng/L		104	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.0		ng/L		107	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	43.1		ng/L		108	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	42.3		ng/L		106	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	43.0		ng/L		108	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	45.3		ng/L		113	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	38.6		ng/L		109	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	38.4		ng/L		102	60 - 135

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

Lab Sample ID: LCS 320-513366/2-A
Matrix: Water
Analysis Batch: 514193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 513366

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	37.3		ng/L		103	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	36.4		ng/L		96	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	33.5		ng/L		90	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	33.9		ng/L		88	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	32.5		ng/L		84	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	32.5		ng/L		84	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	32.8		ng/L		82	60 - 135
NEtFOSA	40.0	41.4		ng/L		104	60 - 135
NMeFOSA	40.0	45.0		ng/L		113	60 - 135
NMeFOSAA	40.0	50.7		ng/L		127	60 - 135
NEtFOSAA	40.0	38.6		ng/L		96	60 - 135
NMeFOSE	40.0	41.8		ng/L		104	60 - 135
NEtFOSE	40.0	39.6		ng/L		99	60 - 135
4:2 FTS	37.4	40.9		ng/L		110	60 - 135
6:2 FTS	37.9	39.1		ng/L		103	60 - 135
8:2 FTS	38.3	35.5		ng/L		93	60 - 135
10:2 FTS	38.6	38.9		ng/L		101	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	34.4		ng/L		91	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	37.1		ng/L		93	60 - 135
F-53B Major	37.3	35.0		ng/L		94	60 - 135
F-53B Minor	37.7	38.8		ng/L		103	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*92*		*25 - 150*
13C5 PFPeA	*96*		*25 - 150*
13C2 PFHxA	*109*		*25 - 150*
13C4 PFHpA	*103*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*100*		*25 - 150*
13C2 PFDA	*110*		*25 - 150*
13C2 PFUnA	*110*		*25 - 150*
13C2 PFDoA	*103*		*25 - 150*
13C2 PFTeDA	*95*		*25 - 150*
13C2 PFHxDA	*127*		*25 - 150*
13C3 PFBS	*97*		*25 - 150*
18O2 PFHxS	*98*		*25 - 150*
13C4 PFOS	*111*		*25 - 150*
13C8 FOSA	*106*		*10 - 150*
d3-NMeFOSAA	*89*		*25 - 150*
d5-NEtFOSAA	*103*		*25 - 150*
d-N-MeFOSA-M	*79*		*10 - 150*
d-N-EtFOSA-M	*85*		*10 - 150*

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

Lab Sample ID: LCS 320-513366/2-A
Matrix: Water
Analysis Batch: 514193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 513366

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*85*		*10 - 150*
d9-N-EtFOSE-M	*90*		*10 - 150*
M2-4:2 FTS	*94*		*25 - 150*
M2-6:2 FTS	*93*		*25 - 150*
M2-8:2 FTS	*114*		*25 - 150*
13C3 HFPO-DA	*101*		*25 - 150*
13C2 10:2 FTS	*93*		*25 - 150*

Lab Sample ID: LCSD 320-513366/3-A
Matrix: Water
Analysis Batch: 514034

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 513366

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	37.2		ng/L		93	60 - 135	3	30
Perfluoropentanoic acid (PFPeA)			40.0	40.9		ng/L		102	60 - 135	1	30
Perfluorohexanoic acid (PFHxA)			40.0	37.4		ng/L		94	60 - 135	0	30
Perfluoroheptanoic acid (PFHpA)			40.0	39.0		ng/L		97	60 - 135	4	30
Perfluorooctanoic acid (PFOA)			40.0	37.9		ng/L		95	60 - 135	6	30
Perfluorononanoic acid (PFNA)			40.0	44.0		ng/L		110	60 - 135	4	30
Perfluorodecanoic acid (PFDA)			40.0	37.9		ng/L		95	60 - 135	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	38.8		ng/L		97	60 - 135	7	30
Perfluorododecanoic acid (PFDoA)			40.0	43.2		ng/L		108	60 - 135	0	30
Perfluorotridecanoic acid (PFTriA)			40.0	44.3		ng/L		111	60 - 135	3	30
Perfluorotetradecanoic acid (PFTeA)			40.0	40.2		ng/L		100	60 - 135	5	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	39.6		ng/L		99	60 - 135	8	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	45.0		ng/L		112	60 - 135	1	30
Perfluorobutanesulfonic acid (PFBS)			35.4	37.5		ng/L		106	60 - 135	3	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	39.6		ng/L		105	60 - 135	3	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	34.9		ng/L		96	60 - 135	7	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	36.4		ng/L		96	60 - 135	0	30
Perfluorooctanesulfonic acid (PFOS)			37.1	33.8		ng/L		91	60 - 135	1	30
Perfluorononanesulfonic acid (PFNS)			38.4	33.6		ng/L		87	60 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)			38.6	30.5		ng/L		79	60 - 135	6	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	31.6		ng/L		82	60 - 135	3	30
Perfluorooctanesulfonamide (FOSA)			40.0	32.1		ng/L		80	60 - 135	2	30
NEtFOSA			40.0	40.2		ng/L		101	60 - 135	3	30
NMeFOSA			40.0	46.5		ng/L		116	60 - 135	3	30
NMeFOSAA			40.0	47.4		ng/L		118	60 - 135	7	30

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

Lab Sample ID: LCSD 320-513366/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 514034
Prep Batch: 513366

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	39.5		ng/L		99	60 - 135	2	30
NMeFOSE			40.0	44.2		ng/L		111	60 - 135	6	30
NEtFOSE			40.0	39.9		ng/L		100	60 - 135	1	30
4:2 FTS			37.4	39.8		ng/L		107	60 - 135	3	30
6:2 FTS			37.9	36.5		ng/L		96	60 - 135	7	30
8:2 FTS			38.3	37.2		ng/L		97	60 - 135	5	30
10:2 FTS			38.6	44.2		ng/L		115	60 - 135	13	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	38.0		ng/L		101	60 - 135	10	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	38.9		ng/L		97	60 - 135	5	30
F-53B Major			37.3	34.9		ng/L		94	60 - 135	0	30
F-53B Minor			37.7	38.4		ng/L		102	60 - 135	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*89*		*25 - 150*
13C5 PFPeA	*85*		*25 - 150*
13C2 PFHxA	*101*		*25 - 150*
13C4 PFHpA	*93*		*25 - 150*
13C4 PFOA	*94*		*25 - 150*
13C5 PFNA	*91*		*25 - 150*
13C2 PFDA	*100*		*25 - 150*
13C2 PFUnA	*107*		*25 - 150*
13C2 PFDoA	*97*		*25 - 150*
13C2 PFTeDA	*91*		*25 - 150*
13C2 PFHxDA	*116*		*25 - 150*
13C3 PFBS	*93*		*25 - 150*
18O2 PFHxS	*94*		*25 - 150*
13C4 PFOS	*105*		*25 - 150*
13C8 FOSA	*94*		*10 - 150*
d3-NMeFOSAA	*78*		*25 - 150*
d5-NEtFOSAA	*88*		*25 - 150*
d-N-MeFOSA-M	*68*		*10 - 150*
d-N-EtFOSA-M	*78*		*10 - 150*
d7-N-MeFOSE-M	*78*		*10 - 150*
d9-N-EtFOSE-M	*87*		*10 - 150*
M2-4:2 FTS	*89*		*25 - 150*
M2-6:2 FTS	*93*		*25 - 150*
M2-8:2 FTS	*95*		*25 - 150*
13C3 HFPO-DA	*91*		*25 - 150*
13C2 10:2 FTS	*78*		*25 - 150*

QC Association Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77156-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

LCMS

Prep Batch: 513366

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77156-1	SW-40 (8-3-21)	Total/NA	Water	3535	
320-77156-2	DUP-01-A (8-3-21)	Total/NA	Water	3535	
320-77156-3	Field Blank-A (8-3-21)	Total/NA	Water	3535	
MB 320-513366/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-513366/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-513366/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 514034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-77156-1	SW-40 (8-3-21)	Total/NA	Water	537 (modified)	513366
320-77156-2	DUP-01-A (8-3-21)	Total/NA	Water	537 (modified)	513366
320-77156-3	Field Blank-A (8-3-21)	Total/NA	Water	537 (modified)	513366
MB 320-513366/1-A	Method Blank	Total/NA	Water	537 (modified)	513366
LCSD 320-513366/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	513366

Analysis Batch: 514193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-513366/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	513366

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-77156-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

Client Sample ID: SW-40 (8-3-21)
Lab Sample ID: 320-77156-1
Date Collected: 08/03/21 13:00
Matrix: Water
Date Received: 08/04/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257.7 mL	10.0 mL	513366	08/05/21 12:36	KJW	TAL SAC
Total/NA	Analysis	537 (modified)		1			514034	08/07/21 03:07	JRB	TAL SAC

Client Sample ID: DUP-01-A (8-3-21)
Lab Sample ID: 320-77156-2
Date Collected: 08/03/21 00:00
Matrix: Water
Date Received: 08/04/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.6 mL	10.0 mL	513366	08/05/21 12:36	KJW	TAL SAC
Total/NA	Analysis	537 (modified)		1			514034	08/07/21 03:16	JRB	TAL SAC

Client Sample ID: Field Blank-A (8-3-21)
Lab Sample ID: 320-77156-3
Date Collected: 08/03/21 13:10
Matrix: Water
Date Received: 08/04/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.6 mL	10.0 mL	513366	08/05/21 12:36	KJW	TAL SAC
Total/NA	Analysis	537 (modified)		1			514034	08/07/21 03:26	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77156-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-21

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77156-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-77156-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-77156-1	SW-40 (8-3-21)	Water	08/03/21 13:00	08/04/21 10:00
320-77156-2	DUP-01-A (8-3-21)	Water	08/03/21 00:00	08/04/21 10:00
320-77156-3	Field Blank-A (8-3-21)	Water	08/03/21 13:10	08/04/21 10:00

Eurofins TestAmerica, Sacramento
880 Riverside Parkway

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

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

Client Contact	**Project Manager: Lisa Rutkowski**		COC No: 1
	Email: N/A	**Site Contact:**	**Date:** 8-3-21 — 1 of 1 COCs
Arcadis U.S., Inc.	**Tel/Fax:** N/A	**Lab Contact: Sandie Fredrick**	**Carrier:** Fed Ex — TALS Project #:
126 North Jefferson Street, Suite 400	**Analysis Turnaround Time**		Sampler: Jacob Ramminger
Milwaukee, WI 53202	☑ CALENDAR DAYS ☐ WORKING DAYS		**For Lab Use Only:**
Phone	TAT if different from Below _____		Walk-in Client:
FAX	☑ 2 weeks		Lab Sampling:
Project Name: Marinette, WI	☐ 1 week		Job / SDG No.:
Site: Marinette, WI	☐ 2 days		
P O # **30015296.00014**	☐ 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)	PFAS 537 Modified 36 Compound	Sample Specific Notes:
SW-40 (8-3-21)	8-3-21	1300	G	W	2	N	N	X	Downstream
DUP-01-A (8-3-21)	↓	—	G	W	2	N	N	X	Duplicate
Field Blank-A (8-3-21)	↓	1310	G	W	2	N	N	X	Field Blank

JR JR JR

320-77156 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.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
Questions call Lisa Rutkowski, Liz Hover

Custody Seals Intact: ☒ Yes ☐ No	Custody Seal No.: 600565		Cooler Temp. (°C): Obs'd: 1.1	Corr'd: 1.1	Therm ID No.: 6-05
Relinquished by: Jacob Ramminger	Company: Barley Excavating	Date/Time: 8-3-21/1320	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: ETA SAC	Date/Time: 8/4/21 10am
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.26, dated 7/25/2019

8/9/2021

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-77156-1

Login Number: 77156
List Number: 1
Creator: Her, David A

List Source: Eurofins TestAmerica, Sacramento

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	1600563
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	
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	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-78573-1
Client Project/Site: Marinette, WI 30015296.00014 DITCH A

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

Attn: Lisa Rutkowski

Sandie Fredrick

Authorized for release by:
9/13/2021 5:45:37 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 320-78573-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

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.
¤	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

Job ID: 320-78573-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-78573-1

Comments
No additional comments.

Receipt
The samples were received on 9/8/2021 9:27 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 3.7º 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 320-523689. 320-523689 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.

Client Sample ID: SW-40 (9-2-2021)
Lab Sample ID: 320-78573-1
Date Collected: 09/02/21 10:00
Matrix: Water
Date Received: 09/08/21 09:27

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.2**		4.2	2.0	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluoropentanoic acid (PFPeA)	**1.6**	**J**	1.7	0.41	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorohexanoic acid (PFHxA)	<1.7		1.7	0.49	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluoroheptanoic acid (PFHpA)	<1.7		1.7	0.21	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorooctanoic acid (PFOA)	<1.7		1.7	0.72	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorononanoic acid (PFNA)	<1.7		1.7	0.23	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorodecanoic acid (PFDA)	<1.7		1.7	0.26	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluoroundecanoic acid (PFUnA)	<1.7		1.7	0.93	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.46	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorotridecanoic acid (PFTriA)	<1.7		1.7	1.1	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.61	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.75	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7		1.7	0.79	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorobutanesulfonic acid (PFBS)	<1.7		1.7	0.17	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.25	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorohexanesulfonic acid (PFHxS)	<1.7		1.7	0.48	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.7		1.7	0.16	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorooctanesulfonic acid (PFOS)	**0.99**	**J**	1.7	0.45	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorononanesulfonic acid (PFNS)	<1.7		1.7	0.31	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.27	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.82	ng/L		09/09/21 19:27	09/11/21 00:59	1
Perfluorooctanesulfonamide (FOSA)	<1.7		1.7	0.82	ng/L		09/09/21 19:27	09/11/21 00:59	1
NEtFOSA	<1.7		1.7	0.73	ng/L		09/09/21 19:27	09/11/21 00:59	1
NMeFOSA	<1.7		1.7	0.36	ng/L		09/09/21 19:27	09/11/21 00:59	1
NMeFOSAA	<4.2		4.2	1.0	ng/L		09/09/21 19:27	09/11/21 00:59	1
NEtFOSAA	<4.2		4.2	1.1	ng/L		09/09/21 19:27	09/11/21 00:59	1
NMeFOSE	<3.4		3.4	1.2	ng/L		09/09/21 19:27	09/11/21 00:59	1
NEtFOSE	<1.7		1.7	0.72	ng/L		09/09/21 19:27	09/11/21 00:59	1
4:2 FTS	<1.7		1.7	0.20	ng/L		09/09/21 19:27	09/11/21 00:59	1
6:2 FTS	<4.2		4.2	2.1	ng/L		09/09/21 19:27	09/11/21 00:59	1
8:2 FTS	**1.7**		1.7	0.39	ng/L		09/09/21 19:27	09/11/21 00:59	1
10:2 FTS	**0.72**	**J**	1.7	0.56	ng/L		09/09/21 19:27	09/11/21 00:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.34	ng/L		09/09/21 19:27	09/11/21 00:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.4		3.4	1.3	ng/L		09/09/21 19:27	09/11/21 00:59	1
F-53B Major	<1.7		1.7	0.20	ng/L		09/09/21 19:27	09/11/21 00:59	1
F-53B Minor	<1.7		1.7	0.27	ng/L		09/09/21 19:27	09/11/21 00:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*97*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:59*	*1*
13C5 PFPeA	*102*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:59*	*1*
13C2 PFHxA	*93*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:59*	*1*
13C4 PFHpA	*107*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:59*	*1*
13C4 PFOA	*96*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:59*	*1*
13C5 PFNA	*93*		*25 - 150*	*09/09/21 19:27*	*09/11/21 00:59*	*1*

Client: ARCADIS U.S., Inc.
Job ID: 320-78573-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

Client Sample ID: SW-40 (9-2-2021)
Lab Sample ID: 320-78573-1
Date Collected: 09/02/21 10:00
Matrix: Water
Date Received: 09/08/21 09:27

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	92		25 - 150	09/09/21 19:27	09/11/21 00:59	1
13C2 PFUnA	88		25 - 150	09/09/21 19:27	09/11/21 00:59	1
13C2 PFDoA	84		25 - 150	09/09/21 19:27	09/11/21 00:59	1
13C2 PFTeDA	78		25 - 150	09/09/21 19:27	09/11/21 00:59	1
13C2 PFHxDA	82		25 - 150	09/09/21 19:27	09/11/21 00:59	1
13C3 PFBS	99		25 - 150	09/09/21 19:27	09/11/21 00:59	1
18O2 PFHxS	104		25 - 150	09/09/21 19:27	09/11/21 00:59	1
13C4 PFOS	94		25 - 150	09/09/21 19:27	09/11/21 00:59	1
13C8 FOSA	98		10 - 150	09/09/21 19:27	09/11/21 00:59	1
d3-NMeFOSAA	83		25 - 150	09/09/21 19:27	09/11/21 00:59	1
d5-NEtFOSAA	88		25 - 150	09/09/21 19:27	09/11/21 00:59	1
d-N-MeFOSA-M	77		10 - 150	09/09/21 19:27	09/11/21 00:59	1
d-N-EtFOSA-M	74		10 - 150	09/09/21 19:27	09/11/21 00:59	1
d7-N-MeFOSE-M	75		10 - 150	09/09/21 19:27	09/11/21 00:59	1
d9-N-EtFOSE-M	79		10 - 150	09/09/21 19:27	09/11/21 00:59	1
M2-4:2 FTS	103		25 - 150	09/09/21 19:27	09/11/21 00:59	1
M2-6:2 FTS	104		25 - 150	09/09/21 19:27	09/11/21 00:59	1
M2-8:2 FTS	113		25 - 150	09/09/21 19:27	09/11/21 00:59	1
13C3 HFPO-DA	100		25 - 150	09/09/21 19:27	09/11/21 00:59	1
13C2 10:2 FTS	103		25 - 150	09/09/21 19:27	09/11/21 00:59	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 DITCH A

Job ID: 320-78573-1

Client Sample ID: DUP-01-A (9-2-2021)

Date Collected: 09/02/21 00:00
Date Received: 09/08/21 09:27

Lab Sample ID: 320-78573-2

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.9**		4.6	2.2	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluoropentanoic acid (PFPeA)	**1.5**	**J**	1.9	0.45	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9	0.54	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9	0.23	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9	0.79	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorononanoic acid (PFNA)	<1.9		1.9	0.25	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9	0.29	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9	1.0	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9	0.51	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorotridecanoic acid (PFTriA)	<1.9		1.9	1.2	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorotetradecanoic acid (PFTeA)	<1.9		1.9	0.68	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.9		1.9	0.82	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.9		1.9	0.87	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9	0.19	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9	0.28	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9	0.53	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.9		1.9	0.18	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorooctanesulfonic acid (PFOS)	<1.9		1.9	0.50	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorononanesulfonic acid (PFNS)	<1.9		1.9	0.34	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorodecanesulfonic acid (PFDS)	<1.9		1.9	0.30	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorododecanesulfonic acid (PFDoS)	<1.9		1.9	0.90	ng/L		09/09/21 19:27	09/11/21 01:08	1
Perfluorooctanesulfonamide (FOSA)	<1.9		1.9	0.91	ng/L		09/09/21 19:27	09/11/21 01:08	1
NEtFOSA	<1.9		1.9	0.80	ng/L		09/09/21 19:27	09/11/21 01:08	1
NMeFOSA	<1.9		1.9	0.40	ng/L		09/09/21 19:27	09/11/21 01:08	1
NMeFOSAA	<4.6		4.6	1.1	ng/L		09/09/21 19:27	09/11/21 01:08	1
NEtFOSAA	<4.6		4.6	1.2	ng/L		09/09/21 19:27	09/11/21 01:08	1
NMeFOSE	<3.7		3.7	1.3	ng/L		09/09/21 19:27	09/11/21 01:08	1
NEtFOSE	<1.9		1.9	0.79	ng/L		09/09/21 19:27	09/11/21 01:08	1
4:2 FTS	<1.9		1.9	0.22	ng/L		09/09/21 19:27	09/11/21 01:08	1
6:2 FTS	<4.6		4.6	2.3	ng/L		09/09/21 19:27	09/11/21 01:08	1
8:2 FTS	<1.9		1.9	0.43	ng/L		09/09/21 19:27	09/11/21 01:08	1
10:2 FTS	<1.9		1.9	0.62	ng/L		09/09/21 19:27	09/11/21 01:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9	0.37	ng/L		09/09/21 19:27	09/11/21 01:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.7		3.7	1.4	ng/L		09/09/21 19:27	09/11/21 01:08	1
F-53B Major	<1.9		1.9	0.22	ng/L		09/09/21 19:27	09/11/21 01:08	1
F-53B Minor	<1.9		1.9	0.30	ng/L		09/09/21 19:27	09/11/21 01:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*99*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:08*	*1*
13C5 PFPeA	*102*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:08*	*1*
13C2 PFHxA	*97*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:08*	*1*
13C4 PFHpA	*103*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:08*	*1*
13C4 PFOA	*97*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:08*	*1*
13C5 PFNA	*85*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:08*	*1*
13C2 PFDA	*87*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:08*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 DITCH A

Job ID: 320-78573-1

Client Sample ID: DUP-01-A (9-2-2021)
Date Collected: 09/02/21 00:00
Date Received: 09/08/21 09:27

Lab Sample ID: 320-78573-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	84		25 - 150	09/09/21 19:27	09/11/21 01:08	1
13C2 PFDoA	81		25 - 150	09/09/21 19:27	09/11/21 01:08	1
13C2 PFTeDA	79		25 - 150	09/09/21 19:27	09/11/21 01:08	1
13C2 PFHxDA	84		25 - 150	09/09/21 19:27	09/11/21 01:08	1
13C3 PFBS	93		25 - 150	09/09/21 19:27	09/11/21 01:08	1
18O2 PFHxS	102		25 - 150	09/09/21 19:27	09/11/21 01:08	1
13C4 PFOS	84		25 - 150	09/09/21 19:27	09/11/21 01:08	1
13C8 FOSA	89		10 - 150	09/09/21 19:27	09/11/21 01:08	1
d3-NMeFOSAA	76		25 - 150	09/09/21 19:27	09/11/21 01:08	1
d5-NEtFOSAA	86		25 - 150	09/09/21 19:27	09/11/21 01:08	1
d-N-MeFOSA-M	65		10 - 150	09/09/21 19:27	09/11/21 01:08	1
d-N-EtFOSA-M	68		10 - 150	09/09/21 19:27	09/11/21 01:08	1
d7-N-MeFOSE-M	74		10 - 150	09/09/21 19:27	09/11/21 01:08	1
d9-N-EtFOSE-M	78		10 - 150	09/09/21 19:27	09/11/21 01:08	1
M2-4:2 FTS	111		25 - 150	09/09/21 19:27	09/11/21 01:08	1
M2-6:2 FTS	103		25 - 150	09/09/21 19:27	09/11/21 01:08	1
M2-8:2 FTS	94		25 - 150	09/09/21 19:27	09/11/21 01:08	1
13C3 HFPO-DA	98		25 - 150	09/09/21 19:27	09/11/21 01:08	1
13C2 10:2 FTS	93		25 - 150	09/09/21 19:27	09/11/21 01:08	1

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 DITCH A

Job ID: 320-78573-1

Client Sample ID: Field Blank-A (9-2-2021)

Date Collected: 09/02/21 10:10
Date Received: 09/08/21 09:27

Lab Sample ID: 320-78573-3

Matrix: Water

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		09/09/21 19:27	09/11/21 01:18	1
Perfluoropentanoic acid (PFPeA)	<1.7		1.7	0.41	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorohexanoic acid (PFHxA)	<1.7		1.7	0.49	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluoroheptanoic acid (PFHpA)	<1.7		1.7	0.21	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorooctanoic acid (PFOA)	<1.7		1.7	0.72	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorononanoic acid (PFNA)	<1.7		1.7	0.23	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorodecanoic acid (PFDA)	<1.7		1.7	0.26	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluoroundecanoic acid (PFUnA)	<1.7		1.7	0.93	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.46	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorotridecanoic acid (PFTriA)	<1.7		1.7	1.1	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.61	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.75	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7		1.7	0.79	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorobutanesulfonic acid (PFBS)	<1.7		1.7	0.17	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.25	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorohexanesulfonic acid (PFHxS)	<1.7		1.7	0.48	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluoroheptanesulfonic Acid (PFHpS)	<1.7		1.7	0.16	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorooctanesulfonic acid (PFOS)	<1.7		1.7	0.45	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorononanesulfonic acid (PFNS)	<1.7		1.7	0.31	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.27	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.82	ng/L		09/09/21 19:27	09/11/21 01:18	1
Perfluorooctanesulfonamide (FOSA)	<1.7		1.7	0.82	ng/L		09/09/21 19:27	09/11/21 01:18	1
NEtFOSA	<1.7		1.7	0.73	ng/L		09/09/21 19:27	09/11/21 01:18	1
NMeFOSA	<1.7		1.7	0.36	ng/L		09/09/21 19:27	09/11/21 01:18	1
NMeFOSAA	<4.2		4.2	1.0	ng/L		09/09/21 19:27	09/11/21 01:18	1
NEtFOSAA	<4.2		4.2	1.1	ng/L		09/09/21 19:27	09/11/21 01:18	1
NMeFOSE	<3.4		3.4	1.2	ng/L		09/09/21 19:27	09/11/21 01:18	1
NEtFOSE	<1.7		1.7	0.72	ng/L		09/09/21 19:27	09/11/21 01:18	1
4:2 FTS	<1.7		1.7	0.20	ng/L		09/09/21 19:27	09/11/21 01:18	1
6:2 FTS	<4.2		4.2	2.1	ng/L		09/09/21 19:27	09/11/21 01:18	1
8:2 FTS	<1.7		1.7	0.39	ng/L		09/09/21 19:27	09/11/21 01:18	1
10:2 FTS	<1.7		1.7	0.56	ng/L		09/09/21 19:27	09/11/21 01:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.34	ng/L		09/09/21 19:27	09/11/21 01:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.4		3.4	1.3	ng/L		09/09/21 19:27	09/11/21 01:18	1
F-53B Major	<1.7		1.7	0.20	ng/L		09/09/21 19:27	09/11/21 01:18	1
F-53B Minor	<1.7		1.7	0.27	ng/L		09/09/21 19:27	09/11/21 01:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*95*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:18*	*1*
13C5 PFPeA	*96*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:18*	*1*
13C2 PFHxA	*96*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:18*	*1*
13C4 PFHpA	*101*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:18*	*1*
13C4 PFOA	*94*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:18*	*1*
13C5 PFNA	*93*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:18*	*1*
13C2 PFDA	*100*		*25 - 150*	*09/09/21 19:27*	*09/11/21 01:18*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 DITCH A

Job ID: 320-78573-1

Client Sample ID: Field Blank-A (9-2-2021)
Date Collected: 09/02/21 10:10
Date Received: 09/08/21 09:27

Lab Sample ID: 320-78573-3
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	92		25 - 150	09/09/21 19:27	09/11/21 01:18	1
13C2 PFDoA	91		25 - 150	09/09/21 19:27	09/11/21 01:18	1
13C2 PFTeDA	78		25 - 150	09/09/21 19:27	09/11/21 01:18	1
13C2 PFHxDA	82		25 - 150	09/09/21 19:27	09/11/21 01:18	1
13C3 PFBS	89		25 - 150	09/09/21 19:27	09/11/21 01:18	1
18O2 PFHxS	98		25 - 150	09/09/21 19:27	09/11/21 01:18	1
13C4 PFOS	93		25 - 150	09/09/21 19:27	09/11/21 01:18	1
13C8 FOSA	85		10 - 150	09/09/21 19:27	09/11/21 01:18	1
d3-NMeFOSAA	83		25 - 150	09/09/21 19:27	09/11/21 01:18	1
d5-NEtFOSAA	91		25 - 150	09/09/21 19:27	09/11/21 01:18	1
d-N-MeFOSA-M	75		10 - 150	09/09/21 19:27	09/11/21 01:18	1
d-N-EtFOSA-M	78		10 - 150	09/09/21 19:27	09/11/21 01:18	1
d7-N-MeFOSE-M	86		10 - 150	09/09/21 19:27	09/11/21 01:18	1
d9-N-EtFOSE-M	84		10 - 150	09/09/21 19:27	09/11/21 01:18	1
M2-4:2 FTS	106		25 - 150	09/09/21 19:27	09/11/21 01:18	1
M2-6:2 FTS	104		25 - 150	09/09/21 19:27	09/11/21 01:18	1
M2-8:2 FTS	107		25 - 150	09/09/21 19:27	09/11/21 01:18	1
13C3 HFPO-DA	95		25 - 150	09/09/21 19:27	09/11/21 01:18	1
13C2 10:2 FTS	110		25 - 150	09/09/21 19:27	09/11/21 01:18	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00014 DITCH A

Job ID: 320-78573-1

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)
320-78573-1	SW-40 (9-2-2021)	97	102	93	107	96	93	92	88
320-78573-2	DUP-01-A (9-2-2021)	99	102	97	103	97	85	87	84
320-78573-3	Field Blank-A (9-2-2021)	95	96	96	101	94	93	100	92
LCS 320-523689/2-A	Lab Control Sample	99	96	96	101	96	94	94	97
LCSD 320-523689/3-A	Lab Control Sample Dup	89	96	91	98	94	85	93	85
MB 320-523689/1-A	Method Blank	93	98	92	96	96	91	98	96

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
320-78573-1	SW-40 (9-2-2021)	84	78	82	99	104	94	98	83
320-78573-2	DUP-01-A (9-2-2021)	81	79	84	93	102	84	89	76
320-78573-3	Field Blank-A (9-2-2021)	91	78	82	89	98	93	85	83
LCS 320-523689/2-A	Lab Control Sample	91	89	89	87	96	93	85	91
LCSD 320-523689/3-A	Lab Control Sample Dup	90	91	84	90	95	90	87	91
MB 320-523689/1-A	Method Blank	96	79	88	92	96	94	89	93

		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)
320-78573-1	SW-40 (9-2-2021)	88	77	74	75	79	103	104	113
320-78573-2	DUP-01-A (9-2-2021)	86	65	68	74	78	111	103	94
320-78573-3	Field Blank-A (9-2-2021)	91	75	78	86	84	106	104	107
LCS 320-523689/2-A	Lab Control Sample	93	78	73	82	87	108	113	111
LCSD 320-523689/3-A	Lab Control Sample Dup	90	74	75	82	85	107	104	111
MB 320-523689/1-A	Method Blank	99	78	80	85	87	113	111	118

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
320-78573-1	SW-40 (9-2-2021)	100	103
320-78573-2	DUP-01-A (9-2-2021)	98	93
320-78573-3	Field Blank-A (9-2-2021)	95	110
LCS 320-523689/2-A	Lab Control Sample	96	113
LCSD 320-523689/3-A	Lab Control Sample Dup	94	107
MB 320-523689/1-A	Method Blank	99	118

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxDA = 13C2 PFHxDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78573-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-523689/1-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 523689

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluoroheptanesulfonic Acid (PFHpS)	<2.0		2.0	0.19	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		09/09/21 19:27	09/10/21 22:52	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		09/09/21 19:27	09/10/21 22:52	1
NEtFOSA	<2.0		2.0	0.87	ng/L		09/09/21 19:27	09/10/21 22:52	1
NMeFOSA	<2.0		2.0	0.43	ng/L		09/09/21 19:27	09/10/21 22:52	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		09/09/21 19:27	09/10/21 22:52	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		09/09/21 19:27	09/10/21 22:52	1
NMeFOSE	<4.0		4.0	1.4	ng/L		09/09/21 19:27	09/10/21 22:52	1
NEtFOSE	<2.0		2.0	0.85	ng/L		09/09/21 19:27	09/10/21 22:52	1
4:2 FTS	<2.0		2.0	0.24	ng/L		09/09/21 19:27	09/10/21 22:52	1
6:2 FTS	<5.0		5.0	2.5	ng/L		09/09/21 19:27	09/10/21 22:52	1
8:2 FTS	<2.0		2.0	0.46	ng/L		09/09/21 19:27	09/10/21 22:52	1
10:2 FTS	<2.0		2.0	0.67	ng/L		09/09/21 19:27	09/10/21 22:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		09/09/21 19:27	09/10/21 22:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		09/09/21 19:27	09/10/21 22:52	1
F-53B Major	<2.0		2.0	0.24	ng/L		09/09/21 19:27	09/10/21 22:52	1
F-53B Minor	<2.0		2.0	0.32	ng/L		09/09/21 19:27	09/10/21 22:52	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*93*		*25 - 150*	*09/09/21 19:27*	*09/10/21 22:52*	*1*
13C5 PFPeA	*98*		*25 - 150*	*09/09/21 19:27*	*09/10/21 22:52*	*1*
13C2 PFHxA	*92*		*25 - 150*	*09/09/21 19:27*	*09/10/21 22:52*	*1*
13C4 PFHpA	*96*		*25 - 150*	*09/09/21 19:27*	*09/10/21 22:52*	*1*
13C4 PFOA	*96*		*25 - 150*	*09/09/21 19:27*	*09/10/21 22:52*	*1*

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

Lab Sample ID: MB 320-523689/1-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 523689

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	91		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 PFDA	98		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 PFUnA	96		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 PFDoA	96		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 PFTeDA	79		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 PFHxDA	88		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C3 PFBS	92		25 - 150	09/09/21 19:27	09/10/21 22:52	1
18O2 PFHxS	96		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C4 PFOS	94		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C8 FOSA	89		10 - 150	09/09/21 19:27	09/10/21 22:52	1
d3-NMeFOSAA	93		25 - 150	09/09/21 19:27	09/10/21 22:52	1
d5-NEtFOSAA	99		25 - 150	09/09/21 19:27	09/10/21 22:52	1
d-N-MeFOSA-M	78		10 - 150	09/09/21 19:27	09/10/21 22:52	1
d-N-EtFOSA-M	80		10 - 150	09/09/21 19:27	09/10/21 22:52	1
d7-N-MeFOSE-M	85		10 - 150	09/09/21 19:27	09/10/21 22:52	1
d9-N-EtFOSE-M	87		10 - 150	09/09/21 19:27	09/10/21 22:52	1
M2-4:2 FTS	113		25 - 150	09/09/21 19:27	09/10/21 22:52	1
M2-6:2 FTS	111		25 - 150	09/09/21 19:27	09/10/21 22:52	1
M2-8:2 FTS	118		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C3 HFPO-DA	99		25 - 150	09/09/21 19:27	09/10/21 22:52	1
13C2 10:2 FTS	118		25 - 150	09/09/21 19:27	09/10/21 22:52	1

Lab Sample ID: LCS 320-523689/2-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 523689

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	39.6		ng/L		99	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	38.5		ng/L		96	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	38.8		ng/L		97	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	38.6		ng/L		97	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	43.7		ng/L		109	60 - 135
Perfluorononanoic acid (PFNA)	40.0	46.5		ng/L		116	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	41.0		ng/L		102	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	41.4		ng/L		103	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	42.1		ng/L		105	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	41.2		ng/L		103	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	42.8		ng/L		107	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.6		ng/L		106	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	43.0		ng/L		108	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	40.5		ng/L		115	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	44.2		ng/L		118	60 - 135

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

Lab Sample ID: LCS 320-523689/2-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 523689

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.7		ng/L		95	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.5		ng/L		106	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	41.8		ng/L		113	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	41.9		ng/L		109	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	39.7		ng/L		103	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	34.4		ng/L		89	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	41.8		ng/L		105	60 - 135
NEtFOSA	40.0	37.1		ng/L		93	60 - 135
NMeFOSA	40.0	44.9		ng/L		112	60 - 135
NMeFOSAA	40.0	41.5		ng/L		104	60 - 135
NEtFOSAA	40.0	40.2		ng/L		101	60 - 135
NMeFOSE	40.0	47.2		ng/L		118	60 - 135
NEtFOSE	40.0	43.0		ng/L		108	60 - 135
4:2 FTS	37.4	38.0		ng/L		102	60 - 135
6:2 FTS	37.9	38.9		ng/L		103	60 - 135
8:2 FTS	38.3	39.5		ng/L		103	60 - 135
10:2 FTS	38.6	35.1		ng/L		91	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.4		ng/L		115	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.3		ng/L		111	60 - 135
F-53B Major	37.3	38.6		ng/L		104	60 - 135
F-53B Minor	37.7	37.7		ng/L		100	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*99*		*25 - 150*
13C5 PFPeA	*96*		*25 - 150*
13C2 PFHxA	*96*		*25 - 150*
13C4 PFHpA	*101*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*94*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*97*		*25 - 150*
13C2 PFDoA	*91*		*25 - 150*
13C2 PFTeDA	*89*		*25 - 150*
13C2 PFHxDA	*89*		*25 - 150*
13C3 PFBS	*87*		*25 - 150*
18O2 PFHxS	*96*		*25 - 150*
13C4 PFOS	*93*		*25 - 150*
13C8 FOSA	*85*		*10 - 150*
d3-NMeFOSAA	*91*		*25 - 150*
d5-NEtFOSAA	*93*		*25 - 150*
d-N-MeFOSA-M	*78*		*10 - 150*
d-N-EtFOSA-M	*73*		*10 - 150*

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

Lab Sample ID: LCS 320-523689/2-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 523689

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*82*		*10 - 150*
d9-N-EtFOSE-M	*87*		*10 - 150*
M2-4:2 FTS	*108*		*25 - 150*
M2-6:2 FTS	*113*		*25 - 150*
M2-8:2 FTS	*111*		*25 - 150*
13C3 HFPO-DA	*96*		*25 - 150*
13C2 10:2 FTS	*113*		*25 - 150*

Lab Sample ID: LCSD 320-523689/3-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 523689

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	41.2		ng/L		103	60 - 135	4	30
Perfluoropentanoic acid (PFPeA)			40.0	37.2		ng/L		93	60 - 135	3	30
Perfluorohexanoic acid (PFHxA)			40.0	38.3		ng/L		96	60 - 135	1	30
Perfluoroheptanoic acid (PFHpA)			40.0	39.8		ng/L		100	60 - 135	3	30
Perfluorooctanoic acid (PFOA)			40.0	42.9		ng/L		107	60 - 135	2	30
Perfluorononanoic acid (PFNA)			40.0	48.2		ng/L		120	60 - 135	3	30
Perfluorodecanoic acid (PFDA)			40.0	39.6		ng/L		99	60 - 135	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	46.4		ng/L		116	60 - 135	11	30
Perfluorododecanoic acid (PFDoA)			40.0	41.6		ng/L		104	60 - 135	1	30
Perfluorotridecanoic acid (PFTriA)			40.0	38.5		ng/L		96	60 - 135	7	30
Perfluorotetradecanoic acid (PFTeA)			40.0	36.7		ng/L		92	60 - 135	15	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	38.6		ng/L		96	60 - 135	10	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	37.2		ng/L		93	60 - 135	14	30
Perfluorobutanesulfonic acid (PFBS)			35.4	35.5		ng/L		100	60 - 135	13	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	39.7		ng/L		106	60 - 135	11	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	35.7		ng/L		98	60 - 135	3	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	41.3		ng/L		108	60 - 135	2	30
Perfluorooctanesulfonic acid (PFOS)			37.1	43.5		ng/L		117	60 - 135	4	30
Perfluorononanesulfonic acid (PFNS)			38.4	42.9		ng/L		112	60 - 135	2	30
Perfluorodecanesulfonic acid (PFDS)			38.6	39.2		ng/L		102	60 - 135	1	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	34.9		ng/L		90	60 - 135	2	30
Perfluorooctanesulfonamide (FOSA)			40.0	37.8		ng/L		95	60 - 135	10	30
NEtFOSA			40.0	35.2		ng/L		88	60 - 135	5	30
NMeFOSA			40.0	42.5		ng/L		106	60 - 135	5	30
NMeFOSAA			40.0	39.6		ng/L		99	60 - 135	5	30

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

Lab Sample ID: LCSD 320-523689/3-A
Matrix: Water
Analysis Batch: 523943

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 523689

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	38.1		ng/L		95	60 - 135	5	30
NMeFOSE			40.0	39.9		ng/L		100	60 - 135	17	30
NEtFOSE			40.0	37.7		ng/L		94	60 - 135	13	30
4:2 FTS			37.4	36.2		ng/L		97	60 - 135	5	30
6:2 FTS			37.9	41.4		ng/L		109	60 - 135	6	30
8:2 FTS			38.3	41.1		ng/L		107	60 - 135	4	30
10:2 FTS			38.6	36.6		ng/L		95	60 - 135	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	42.6		ng/L		113	60 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	43.7		ng/L		109	60 - 135	1	30
F-53B Major			37.3	39.7		ng/L		106	60 - 135	3	30
F-53B Minor			37.7	37.7		ng/L		100	60 - 135	0	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*89*		*25 - 150*
13C5 PFPeA	*96*		*25 - 150*
13C2 PFHxA	*91*		*25 - 150*
13C4 PFHpA	*98*		*25 - 150*
13C4 PFOA	*94*		*25 - 150*
13C5 PFNA	*85*		*25 - 150*
13C2 PFDA	*93*		*25 - 150*
13C2 PFUnA	*85*		*25 - 150*
13C2 PFDoA	*90*		*25 - 150*
13C2 PFTeDA	*91*		*25 - 150*
13C2 PFHxDA	*84*		*25 - 150*
13C3 PFBS	*90*		*25 - 150*
18O2 PFHxS	*95*		*25 - 150*
13C4 PFOS	*90*		*25 - 150*
13C8 FOSA	*87*		*10 - 150*
d3-NMeFOSAA	*91*		*25 - 150*
d5-NEtFOSAA	*90*		*25 - 150*
d-N-MeFOSA-M	*74*		*10 - 150*
d-N-EtFOSA-M	*75*		*10 - 150*
d7-N-MeFOSE-M	*82*		*10 - 150*
d9-N-EtFOSE-M	*85*		*10 - 150*
M2-4:2 FTS	*107*		*25 - 150*
M2-6:2 FTS	*104*		*25 - 150*
M2-8:2 FTS	*111*		*25 - 150*
13C3 HFPO-DA	*94*		*25 - 150*
13C2 10:2 FTS	*107*		*25 - 150*

LCMS

Prep Batch: 523689

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78573-1	SW-40 (9-2-2021)	Total/NA	Water	3535	
320-78573-2	DUP-01-A (9-2-2021)	Total/NA	Water	3535	
320-78573-3	Field Blank-A (9-2-2021)	Total/NA	Water	3535	
MB 320-523689/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-523689/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-523689/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 523943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-78573-1	SW-40 (9-2-2021)	Total/NA	Water	537 (modified)	523689
320-78573-2	DUP-01-A (9-2-2021)	Total/NA	Water	537 (modified)	523689
320-78573-3	Field Blank-A (9-2-2021)	Total/NA	Water	537 (modified)	523689
MB 320-523689/1-A	Method Blank	Total/NA	Water	537 (modified)	523689
LCS 320-523689/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	523689
LCSD 320-523689/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	523689

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 320-78573-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

Client Sample ID: SW-40 (9-2-2021)
Lab Sample ID: 320-78573-1
Date Collected: 09/02/21 10:00
Matrix: Water
Date Received: 09/08/21 09:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			297 mL	10.0 mL	523689	09/09/21 19:27	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			523943	09/11/21 00:59	K1S	TAL SAC

Client Sample ID: DUP-01-A (9-2-2021)
Lab Sample ID: 320-78573-2
Date Collected: 09/02/21 00:00
Matrix: Water
Date Received: 09/08/21 09:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.2 mL	10.0 mL	523689	09/09/21 19:27	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			523943	09/11/21 01:08	K1S	TAL SAC

Client Sample ID: Field Blank-A (9-2-2021)
Lab Sample ID: 320-78573-3
Date Collected: 09/02/21 10:10
Matrix: Water
Date Received: 09/08/21 09:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			297 mL	10.0 mL	523689	09/09/21 19:27	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			523943	09/11/21 01:18	K1S	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78573-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

Laboratory: Eurofins TestAmerica, Sacramento

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

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

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78573-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 320-78573-1
Project/Site: Marinette, WI 30015296.00014 DITCH A

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-78573-1	SW-40 (9-2-2021)	Water	09/02/21 10:00	09/08/21 09:27
320-78573-2	DUP-01-A (9-2-2021)	Water	09/02/21 00:00	09/08/21 09:27
320-78573-3	Field Blank-A (9-2-2021)	Water	09/02/21 10:10	09/08/21 09:27

Eurofins TestAmerica, Sacramento
880 Riverside Parkway

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

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

Client Contact	Project Manager: Lisa Rutkowski	Site Contact:	Date: 9-2-21	COC No: 1
Arcadis U.S., Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: Fed Ex	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			TALS Project #: 50019256
Milwaukee, WI 53202	Analysis Turnaround Time			Sampler: Jacob Ramingen
Phone	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
FAX	TAT if different from Below _____			Walk-in Client:
Project Name: Ditch A Surface Water	☑ 2 weeks			Lab Sampling:
Site: Marinette, WI	☐ 1 week			Job / SDG No.:
P O # 30015296.00014	☐ 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)	PFAS 537 Modified 36 Compound	Sample Specific Notes:
SW-40 (9-2-2021)	9-2-21	10:00	G	W	2	N	N	X	Downstream
DUP-01-A (9-2-2021)	↓	—	G	W	2	N	N	X	Duplicate
Field Blank-A (9-2-2021)	↓	10:10	G	W	2	N	N	X	Field Blank

320-78573 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.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
Questions call Lisa Rutkowski, Liz Hover

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1749583		Cooler Temp. (°C): Obs'd: 3.7 Corr'd: 3.7 Therm ID No.: L-07		
Relinquished by: Jacob Ramingen	Company: Barley Excavating	Date/Time: 9-2-21 / 10:15	Received by: Fed Ex	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: ETASAC	Date/Time: 9-8-21 / 09:27
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.26, dated 7/25/2019

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-78573-1

Login Number: 78573
List Number: 1
Creator: Oropeza, Salvador

List Source: Eurofins TestAmerica, Sacramento

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	1749583
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	
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	

Appendix E

Waste Management Documentation

tetraSOLV FILTRATION

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

Ship Date	Lbs.
5/13/2021	40,000
5/18/2021	20,000
6/2/2021	20,000
6/3/2021	20,000
6/17/2021	20,000
6/29/2021	20,000
7/13/2021	20,000
	20,000

Ship Date	Lbs
7/29/2021	20,000
8/5/2021	20,000
8/24/2021	20,000
	20,000
9/9/2021	20,000
9/30/2021	20,000
	20,000

Steve Jordan 11/11/2021

Signature Date

tetraSOLV FILTRATION

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

Ship Date	Lbs.
10/11/2021	20,000
10/26/2021	20,000
11/16/2021	20,000
	20,000

Ship Date	Lbs.
11/30/2021	20,000
	20,000
12/21/2021	20,000
	20,000

Steve Jordan 1/19/2022

Signature Date

Signature Date

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
WIT580011850	1	(262) 339-8762	W028-001-02

GENERATOR

5. Generator's Name and Mailing Address
JCI/Tyco
1 Stanton Street
Marinette WI 54143
Att: Ryan Suennen
Generator's Phone: 715 753-7411 Ext. 84025

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
WIR000170027

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 No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1 Non-RCRA, Non-DOT	0012	DM	4000	P	
	2 Non-RCRA, Non-DOT	0036	DF	13000	P	
	3.					
	4.					

13. Special Handling Instructions and Additional Information
1. Bag House Dust Waste
2. Jute Filters and AFF Foam

INT'L

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/Offeror's Printed/Typed Name: Fred J Ringle on behalf of JCI/Tyco
Signature: Fred J Ringle
Month 08 Day 31 Year 21

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Steven Bachtold
Signature: Steven Bachtold
Month 8 Day 31 Year 21

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

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: Fred J Ringle
Signature: Fred J Ringle
Month 08 Day 31 Year 21

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
WIT560011650	1	(262) 339-8762	W026-001-03

GENERATOR

5. Generator's Name and Mailing Address
Att: Ryan Suennen
JCI/Tyco
1 Stanton Street
Marinette WI 54143
Generator's Phone: 715 753-7411 Ext. 84025

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
WIR000170027

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 No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Non-RCRA, Non-DOT	0048	DF	16800	P	
2.	Non-RCRA, Non-DOT	0044	DM ~~DF~~	01500	P	
3.						
4.						

13. Special Handling Instructions and Additional Information
1. Jute Filters and AFF Foam
2. RCRA Empty Drums

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/Offeror's Printed/Typed Name: Fred J Ringle on behalf of JCI/Tyco
Signature: Fred J Ringle
Month: 08 Day: 31 Year: 21

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Steven Bachtell
Signature: Steven Bachtell
Month: 08 Day: 31 Year: 21

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

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: Fred J Ringle
Signature: Fred J Ringle
Month: 08 Day: 31 Year: 21

DESIGNATED FACILITY TO GENERATOR

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
W I T 5 6 0 0 1 1 8 5 0	1	(262) 339-6762	W026 - 001 - 05

5. Generator's Name and Mailing Address
JCI/Tyco
1 Stanton Street
Marinette WI 54143
Att: Ryan Suennen
Generator's Phone: 715 753-7411 Ext. 84025

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
W I R 0 0 0 1 7 0 0 2 7

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 No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1	Non-RCRA, Non-DOT	0040	DF	14000	P	
2	Non-RCRA. Non-DOT	0001	DM	0250	P	
3	Non-RCRA Non-DOT	0001	DM	0400	P	
4						

13. Special Handling Instructions and Additional Information
1. Jute Filters and AFF Foam
2. Baghouse collector Solids
3. Scrap Metal

GENERATOR

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/Offeror's Printed/Typed Name: Fred J Ringle on behalf of JCI/Tyco
Signature: Fred J Ringle
Month: 09 Day: 01 Year: 21

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Steven Bachtell
Signature: Steven Bachtell
Month: 09 Day: 01 Year: 21

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

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: Fred J Ringle
Signature: Fred J Ringle
Month: 09 Day: 01 Year: 21

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
WIT560011850	1	(262) 339-8762	W026-001-07

5. Generator's Name and Mailing Address
JCI/Tyco
1 Stanton Street
Marinette WI 54143
Att: Ryan Suennen
Generator's Phone: 715 753-7411 Ext. 64025

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: WIR000170027

7. Transporter 2 Company Name
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Endpoint Waste Solutions Corp.
1026 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 No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. Non-RCRA, Non-DOT	035	DF	1750	G	
	2. Non-RCRA, Non-DOT	004	DM	200	G	
	3. ~~Non-RCRA, Non-DOT~~	~~0~~	DM			
	4.					

13. Special Handling Instructions and Additional Information
1. Jute Filters with AFF Foam
2. Oil Booms
3. Waste Flux

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/Offeror's Printed/Typed Name: x Tim Hanson (For Tyco) | Signature: x | Month: 11 | Day: 23 | Year: 21

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Steven Bachtell | Signature: Steven Bachtell | Month: 11 | Day: 23 | Year: 21

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: Fred J Ringle | Signature: Fred J Ringle | Month: 11 | Day: 23 | Year: 21

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

Arcadis U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202
Tel 414 276 7742
Fax 414 276 7603
www.arcadis.com