

SUBMITTED TO:  
Ted Stevens Anchorage  
International Airport  
P.O. Box 196960  
Anchorage, Alaska 99519-  
6960

BY:  
Shannon & Wilson, Inc.  
5430 Fairbanks Street, Suite 3  
Anchorage, Alaska 99518  
  
907-561-2120  
[www.shannonwilson.com](http://www.shannonwilson.com)

FINAL

SUMMARY REPORT

# Water Supply Well Search and Sampling

TED STEVENS ANCHORAGE INTERNATIONAL AIRPORT,  
ANCHORAGE, ALASKA

PAGE INTENTIONALLY LEFT BLANK FOR DOUBLE-SIDED PRINTING

Submitted To: Ted Stevens Anchorage International Airport  
P.O. Box 196960  
Anchorage, Alaska 99519-6960  
Attn: Mr. Tom Johnston

Subject: FINAL SUMMARY REPORT, WATER SUPPLY WELL SEARCH AND  
SAMPLING, TED STEVENS ANCHORAGE INTERNATIONAL AIRPORT,  
ANCHORAGE, ALASKA

Shannon & Wilson prepared this report and participated in this project as a consultant to Alaska Department of Transportation and Public Facilities (DOT&PF) and the Ted Stevens Anchorage International Airport (ANC). The scope of services was specified in our proposals dated August 14, 2021, and July 8, 2022, authorized on November 29, 2021, and August 30, 2022, respectively by notices to proceed (NTP) P12-2 and P12-2-23 under Professional Services Agreement Number 25-19-1-013 *Per- and Polyfluorinated Substances (PFAS) Related Environmental & Engineering Services*. This report presents a summary of our services from March 2022 through October 2023, and was prepared by the undersigned.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON, INC.



Jessa Tibbetts  
Environmental Scientist



Dan P. McMahon, PMP  
Vice President

CONTENTS

1 Introduction .....1

    1.1 Purpose and Objectives .....1

    1.2 Site Location and Boundaries .....1

    1.3 Background .....1

        1.3.1 History of AFFF Use .....2

    1.4 Geology .....3

    1.5 Groundwater and Drinking Water .....3

    1.6 Contaminants of Concern and Action Levels .....4

    1.7 Scope of Services .....5

2 Field Activities .....6

    2.1 Well Search .....6

    2.2 Water Supply Well Sampling .....8

        2.2.1 Notification of Results .....10

        2.2.2 Public Information .....11

    2.3 Sample Custody, Storage, and Transport .....11

    2.4 Deviations .....11

3 Analytical Results .....12

    3.1 Water Supply Well Samples .....12

4 Discussion and Recommendations .....12

    4.1 Comparison to Drinking Water Action Level .....13

        4.1.1 Concentrations with Depth .....13

    4.2 Conceptual Site Model .....13

    4.3 Recommendations .....13

5 References .....14

Exhibits

Exhibit 1-1: Reported PFAS Analytes .....4

Exhibit 1-2: Proposed Maximum Contaminant Levels .....5

Exhibit 2-1: Well Search Summary by Parcel .....8

Exhibit 2-2: Well Sampling Activities by Parcel .....9

Exhibit 2-3: Examples of Private WSW Purge and Sample Locations .....10

Tables - **TABLE 1 REDACTED FOR PRIVACY**

Table 1: Search Area Parcels with Identified and Potentially Existing Wells Summary of Initial

Table 2: Water Supply Well Analytical Results

Figures

Figure 1: Well Search Extent

Figure 2: Water Supply Well Results

Appendices

Appendix A: Public Information

Appendix B: Field Forms

Appendix C: Analytical Results

Appendix D: Conceptual Site Model

Important Information

## ACRONYMS

°C	degrees Celsius
AAC	Alaska Administrative Code
AIA	Alaska International Airport
ANC	Ted Stevens Anchorage International Airport
ANGB	Air National Guard Base
AFFF	aqueous film forming foam
ARFF	Aircraft Rescue and Firefighting
AWWU	Anchorage Water and Wastewater Utility
bgs	below ground surface
COC	chain of custody
CUL	cleanup level
DEC	Alaska Department of Environmental Conservation
DNR	Alaska Department of Natural Resources
DoD	Department of Defense
DOH	Alaska Department of Health
DOT&PF	Alaska Department of Transportation & Public Facilities
EPA	U.S. Environmental Protection Agency
Eurofins	Eurofins Environment Testing
FAA	Federal Aviation Administration
GIS	geographic information systems
GWP	General Work Plan
HFPO-DA	hexafluoropropylene oxide dimer acid (GenX)
LDRC	Laboratory Data Review Checklist
LHA	Lifetime Health Advisory
MCL	Maximum Contaminant Level
mg/kg	milligram per kilogram
MOA	Municipality of Anchorage
ng/L	nanograms per liter
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
QA/QC	quality assurance/quality control
QSM	Quality Systems Manual
Shannon & Wilson	Shannon & Wilson, Inc.
UCMR	unregulated contaminant monitoring rule
USGS	U.S. Geological Survey

ACRONYMS

WELTS	Well Log Tracking System
WSW	water supply well

# 1 INTRODUCTION

Shannon & Wilson, Inc. (Shannon & Wilson) has prepared this report to document our water supply well (WSW) search and sampling efforts near the Ted Stevens Anchorage International Airport (ANC) in Anchorage, Alaska. This report covers March 2022 to October 2023, for this ongoing project.

The ANC is an active Alaska Department of Environmental Conservation (DEC) listed contaminated site, designated “AIA Anchorage Airport Sitewide PFAS” (ADEC File No. 2100.38.028.38, Hazard ID 27120). Concern over the use of aqueous film forming foam (AFFF) as a fire retardant at the ANC has resulted in preliminary investigations that indicate the presence of per- and polyfluoroalkyl substances (PFAS) sources at ANC which are not yet identified.

This report was prepared for the ANC and the Alaska Department of Transportation & Public Facilities (DOT&PF) in accordance with the terms and conditions of our contract with DOT&PF, relevant DEC guidance documents, and 18 Alaska Administrative Code (AAC) 75.335.

## 1.1 Purpose and Objectives

The purpose of the services described in this report was to evaluate the potential for human exposure to PFAS-containing groundwater in private WSWs near the ANC. Shannon & Wilson's primary objective was to identify and sample active WSWs in neighborhoods within in quarter mile of the ANC. The well search and sampling area is shown in Figure 1, Well Search Extent.

## 1.2 Site Location and Boundaries

The ANC is located at 5000 West International Airport Road in Anchorage, Alaska. The airport is southwest of downtown Anchorage and east of Cook Inlet. Runways 25L-7R and 25R-7L run east-west on the southern portion of ANC. Runway 15-33 runs northwest-southeast in the central portion of the ANC. Figure 1 shows the property boundaries for land owned by the DOT&PF. The geographic coordinates of the ANC domestic terminal are latitude 61.1759, longitude -149.9901.

## 1.3 Background

The use of AFFF as a fire retardant at ANC resulted in preliminary investigative sampling of PFAS in 2016. According to the DEC contaminated sites database, PFAS contamination is

present at the Aircraft Rescue and Fire Fighting (ARFF) Building (also known as the Police and Fire Building or Safety Building). Perfluorooctanesulfonic acid (PFOS) was reported at 23,000 nanograms per liter (ng/L) in shallow groundwater, 6,600 ng/L in surface water, and 0.18 milligram per kilogram (mg/kg) in soil.

The Former Kulis Air National Guard Base (ANGB) is located along the southern boundary of the ANC (Figure 1). During previous investigation activities of AFFF releases at the Kulis ANGB conducted by the U.S. Air Force in 2016 and 2017, PFOS and perfluorooctanoic acid (PFOA) were detected in groundwater at concentrations above the DEC Human Health Groundwater Cleanup Levels (CULs) (DEC 2016). As a result, the U.S. Air Force scheduled water well survey and sampling activities of a residential area east of the former Kulis ANGB in May 2020. The well survey area contained 49 parcels that may use WSWs. Responses were received from 25 of the owners. Two WSWs were identified in the search area. These were sampled in November 2020. The two primary samples and one duplicate sample did not contain detectable concentrations of PFOS and/or PFOA (AFCEC/CIBW, 2020).

Between July 14 and 15, 2021, a door-to-door survey and homeowner/resident interviews were performed at the parcels that did not respond to the 2020 WSW survey activities. No additional WSWs were identified. According to the Anchorage Water and Wastewater Utility (AWWU) records, except for the two identified parcels, the residential parcels in the Kulis ANGB search area are connected to AWWU drinking water (AFCEC/CIBW, 2022).

The Kulis ANGB well survey area is not included as part of the water well search and sampling activities described in this report.

### 1.3.1 History of AFFF Use

Part 139 airports are required to conduct annual AFFF systems testing to maintain their certification through the Federal Aviation Administration (FAA). Prior to 2019, FAA inspections required the release of AFFF to the ground surface. AFFF has been used at the ANC for decades and is also used by most of the aircraft hangars on airport property.

AFFF has been used for certification purposes by spraying into the snow dump area to the north of the ARFF facility, located within Postmark Bog, at the end of DeHavilland Road. This location is an active contaminated site identified as "AIA Aircraft Rescue and Fire Fighting Bldg PFAS" (File Number 2100.38.028.39; Hazard ID 27137).

AFFF has also been used at the ANC fire training area located south of Runway 6R and Airport Maintenance Road. A lined fire training pit is located on the southeast portion of

the facility. This site is an active contaminated site identified as the “Alaska International Airport (AIA) Fire Training Pit” (File Number 2100.38.028.26; Hazard ID 414).

The ANC Police and Fire Department have occasionally used AFFF during fire training and prevention activities conducted once or twice a year at a location south of east-west runway 07R/25L. In addition, AFFF has been released in various locations on a few occasions for emergency response incidents at the ANC. Areas of known and potential use are shown on Figure 1. The precise timeline and locations of all potential AFFF releases are unknown.

## 1.4 Geology

The ANC is located in southcentral Alaska, along the eastern shore of Upper Cook Inlet. This area consists primarily of broad outwash plains, flood plains, stream terraces, and tidal plains. Most landforms in the area have been influenced by glaciations and many are mantled by loess deposits. Soil parent materials include sandy and gravelly glacial outwash, and loamy and gravelly glacial drift. The tidal plains along Cook Inlet consist of silty and clayey sediments. Poorly drained bogs and fens occupy broad depressions and occur throughout the ANC.

Sediments known as the Bootlegger Cove formation underlie most of the area at depths between 0 and 200 feet below ground surface (bgs). These sediments are mostly silt with up to 5 percent clay minerals. During development of the ANC area beginning in the 1950s, low-lying lands were drained and filled for commercial and residential use. The ANC is located in a natural lowland area with elevations generally less than 200 feet above mean sea level and containing numerous lakes and muskegs. (DOT&PF, 2020).

## 1.5 Groundwater and Drinking Water

According to the August 2004 *Final Airport-Wide Risk Management Plan* prepared by Shaw Environmental, Inc., three distinct water bearing zones are present within the ANC. A deep aquifer, greater than 150 feet bgs, an upper aquifer from 50 feet to 70 feet bgs, and a series of shallow discontinuous aquifers that in some locations reach the ground surface.

Groundwater flow direction varies throughout the ANC relative to topography and proximity to lakes, but it generally flows to the northwest toward Cook Inlet (USGS, 1995; DOT&PF, 2020). In 2001, the DEC approved a “Section 350 Determination” for the upper unconfined aquifer at ANC in the airside and commercial zones, which includes the majority of the ANC property. The “Section 350 Determination” establishes that the groundwater at ANC is not a current or future drinking water source.

AWWU supplies drinking water to the majority of Anchorage and ANC vicinity (DEC Public Water System ID No. 2210906). AWWU sources their water primarily from Eklutna

Lake, located in the Chugach Mountain Range Valley, about 25 miles northeast of Anchorage. The Ship Creek headwaters at Ship Lake and several groundwater wells are used as a secondary water source for Anchorage. AWWU tested for some PFAS compounds in 2015 and all the results were non-detect. Testing for these PFAS compounds is scheduled to be conducted again sometime in 2023 in accordance with the Unregulated Contaminant Monitoring Rule (UCMR) program (AWWU, 2022).

## 1.6 Contaminants of Concern and Action Levels

The primary contaminants of concern are PFOS and PFOA. The DEC groundwater-cleanup levels for PFOS and for PFOA are 400 ng/L. These levels were promulgated in November 2016. The current DEC action level for drinking water aligns with the 2021 U.S. Environmental Protection Agency (EPA) Lifetime Health Advisory (LHA) of 70 ng/L for the sum of PFOS and PFOA. The LHA was published in May 2016. This threshold is the applicable action level for drinking water samples collected as part of this project between October 24, 2022, and October 13, 2023 in accordance with DEC's April 9, 2019, Technical Memorandum, titled *Action Levels for PFAS in Water and Guidance on Sampling Groundwater and Drinking Water*.

On October 2, 2019, DEC published an updated Technical Memorandum requesting samples be submitted for additional PFAS analytes. Water samples collected during the sampling activities summarized in this report were submitted for the 18 PFAS analytes listed in EPA Method 537.1 as shown in Exhibit 1-1 below. Samples were submitted to Eurofins Environment Testing (Eurofins) using the analytical method DEC approved for the laboratory. The method is compliant with EPA Method 537 and is referenced as the Department of Defense (DoD) Quality Systems Manual (QSM) Version 5.3 Table B-15.

### Exhibit 1-1: Reported PFAS Analytes

EPA 537.1 PFAS Analytes	
PFOS	perfluorononanoic acid (PFNA)
PFOA	perfluorotetradecanoic acid (PFTeA)
hexafluoropropylene oxide dimer acid (HFPO-DA)	perfluorotridecanoic acid (PFTrDA)
perfluorononanoic acid (PFBS)	perfluoroundecanoic acid (PFUnA)
perfluorodecanoic acid (PFDA)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)
perfluorododecanoic acid (PFDoA)	11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
perfluoroheptanoic acid (PFHpA)	4,8-dioxa-3H-perfluorononanoic acid (DONA)
perfluorohexanesulfonic acid (PFHxS)	N-ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)
perfluorohexanoic acid (PFHxA)	N-methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)

On March 14, 2023, the EPA proposed to regulate six PFAS chemicals, including PFOA, PFOS, PFNA, PFHxS, PFBS, and HFPO-DA (also referred to as GenX). EPA is proposing the following enforceable Maximum Contaminant Levels (MCLs) as described in Exhibit 1-2.

**Exhibit 1-2: Proposed Maximum Contaminant Levels**

Compounds	Proposed Maximum Contaminant Levels
PFOS	4.0 ng/L
PFOA	4.0 ng/L
PFHxS	Hazardous Index = 1.0 (unitless) <sup>1</sup>
HFPO-DA	
PFNA	
PFBS	

NOTES:

1 To determine the Hazard Index for these four PFAS, water systems would monitor and compare the amount of each PFAS in drinking water to its associated Health Based Water Concentration (HBWC), which is the level below which no health effects are expected for that PFAS. Water systems would add the comparison values for each PFAS contained within the mixture. If the value is greater than 1.0, it would be an exceedance of the proposed Hazard Index MCL for PFHxS, HFPO-DA, PFNA, and PFBS  
ng/L = nanograms per liter

If the proposed EPA rule is ratified, the PFAS results from this project will need to be reevaluated to determine if properties require additional monitoring and/or to be supplied with an alternative drinking water source.

## 1.7 Scope of Services

Our scope of services summarized in this report includes limited WSW search and sampling activities within the search area (Figure 1), along with public-outreach support. Our purpose was to evaluate the potential for human exposure to PFAS-containing water in WSWs within a quarter mile radius of the ANC.

This report summarizes well search and sampling efforts performed between March 2022 and October 2023. Our well search sought to identify WSWs and defined the well use and details within approximately one-quarter mile radius around the ANC (Figure 1). We also interviewed DOT&PF staff and conducted research of historic AFFF use areas at the ANC. Areas of historical AFFF use are shown on Figure 1.

This report was prepared for the exclusive use of the ANC and DOT&PF and its representatives. This work presents our professional judgment as to the conditions of the site. Information presented here is based on the sampling and analyses we performed. This report should not be used for other purposes without our approval or if any of the following occurs:

- Project details change, or new information becomes available, such as revised regulatory levels or the discovery of additional source areas.
- Conditions change due to natural forces or human activity at, under, or adjacent to the project site.
- Assumptions stated in this report have changed.
- If the site ownership or land use has changed.
- Regulations, laws, or cleanup levels change.
- If the site's regulatory status has changed.

If any of these occur, we should be retained to review the applicability of our recommendations. This report should not be used for other purposes without Shannon & Wilson's review. If a service is not specifically indicated in this report, do not assume it was performed.

## 2 FIELD ACTIVITIES

This section summarizes activities performed between February 21, 2022, and October 13, 2023.

### 2.1 Well Search

In February 2022, Shannon & Wilson began WSW search activities for more than 5,500 properties located within 0.25-mile of the ANC. The well study area is shown in Figure 1.

Geographic information systems (GIS) data of parcel boundaries and structures were obtained from the Municipality of Anchorage (MOA) Geographic Data and Information Center. This was used in tandem with aerial imagery along with water and sewer public utility service GIS data provided by AWWU to determine which parcels potentially use WSWs for drinking water. We also referenced the Alaska Department of Natural Resources (DNR) Well Log Tracking System (WELTS) and the DEC's Drinking Water Source Projection Area Map to determine potential WSW locations and systems.

After reviewing available water/sewer utility-connection and property-ownership records, additional GIS data from the MOA and AWWU were used to prepare detailed maps for the WSW search effort, which identified 585 parcels with potential WSWs. Field staff verified the properties by visiting each parcel in the search area with a developed structure and was also not connected to AWWU water services. Each verified property was documented in an ArcGIS mapping program. Potential WSWs were identified at 160 parcels in the search area.

A packet of information was mailed to each of the 160 properties. The packet included a project summary letter, search radius map, a two-page drinking water advisory level PFAS fact sheet published by the EPA, State of Alaska PFAS Fact Sheet for the ANC, and a Water Well Inventory Survey Form (Appendix A). Of the 160 letters sent, 66 Water Well Inventory Survey Forms were returned. Contact information supplied on the forms was used to contact the owners to set up sampling activities, where possible.

Additional well search activities were conducted during our sampling activities that began in October 2022. Property owners and/or occupants that did not return the Water Well Inventory Survey Form were visited in person through door-to-door canvassing activities. After discussions with property owners/occupants and site visit observations, 29 additional parcels were identified as potentially using a WSW for drinking water. Through discussions with property owners, 10 of these parcels were confirmed to be connected to AWWU water services and removed from the sampling program. The remaining 19 parcels were added to the sampling program, resulting in a total of 179 properties identified with potential WSWs in the search area.

We made a reasonable attempt to contact each owner and/or occupant with a potential WSW in the search area. If occupants were not present during the canvassing activities, a personalized door tag with information about how to contact a Shannon & Wilson representative was left on or near the front door. We visited and/or contacted each identified property up to five times to determine if a well was present and get permission to collect a sample. If a response was not received after five contact attempts, it was considered to be a “passive refusal” and no longer contacted.

For the purposes of this project, a private WSW is defined as a privately-owned water-supply well. Please note this definition of private well does not match the DEC Drinking Water Program regularity classification of a private water system which is “a potable water system serving one single-family residence or duplex” (18 AAC 80, 2014).

A Private Well Inventory Survey Form was provided to property owners for completion. Copies of the completed forms are included in Appendix B, Field Notes. We used this information to designate a well category based on use.

- Category 1: wells used for drinking or cooking, as reported by owners or occupants.
- Category 2: wells used for dish washing and other domestic purposes.
- Category 3: wells used for vegetable-garden irrigation and are not plumbed to indoor faucets or spigots. The well water is accessed by outdoor plumbing, but the well may be located underneath or inside the structure. These wells are considered non-drinking-water wells.

- Category 4: wells used for outdoor purposes only, such as irrigation of lawns or non-vegetable gardens or vehicle washing. These wells are considered non-drinking-water wells.
- Category 5: wells currently not in use. Wells that have been abandoned in place, are inoperable, disconnected, or intended for future use, are considered Category 5 wells. These wells are considered non-drinking-water-wells.

We attempted to sample each Category 1 and Category 2 well identified during our well search activities.

The results of our February 21, 2022, through January 24, 2023, well search activities are summarized below. Thirty-one properties did not respond to our canvassing/contact attempts and are considered “passive refusals”. Parcels classified as “unknown – probable well” in Exhibit 2-1 below are those properties with passive refusals. Parcels identified as “no well” either confirmed connection to AWWU drinking water, share a well with a neighboring property, or do not have a drinking water.

**Exhibit 2-1: Well Search Summary by Parcel**

Well Present	112
Unknown – probable well	32
No well	35
Total	179

## 2.2 Water Supply Well Sampling

Shannon & Wilson collected 107 primary samples and 13 field duplicates from WSWs between October 2022 and October 2023. Wells were sampled with approval of the property owners. Each parcel with a potential WSW was given a Sample ID beginning with PW (private well) and a three-digit number (-XXX). The location associated with PW-147 was resampled because the initial sample was collected after the system’s water filter. This was discovered via conversation with the property owner when providing the results of the first sampling event.

The following Shannon & Wilson personnel collected analytical water samples for this project. These individuals are State of Alaska Qualified Environmental Professionals per 18 AAC 75.333[b] and 18 AAC 78.088[b].

- Alec Rizzo, Environmental Scientist
- Chris Pepe, Environmental Scientist
- Judy Hepner, Environmental Scientist
- Zach Thon, Environmental Scientist

**Exhibit 2-2: Well Sampling Activities by Parcel**

Sampled Wells	108
Use Well on Adjoining Parcel	2
Sampling Actively Refused	3
Sampling Passively Refused	32
Connected to AWWU	32
No Well	1
Unoccupied, not sampled	1
<b>Total</b>	<b>179</b>

Shannon & Wilson purged the WSW systems prior to sampling by allowing the water to run until parameters stabilized. We measured these parameters using a YSI multiprobe water quality meter. We recorded pH, temperature, and conductivity every three to five minutes. The following values were used to indicate stability for a minimum of three consecutive readings:  $\pm 0.1$  pH,  $\pm 0.5$  degrees Celsius ( $^{\circ}\text{C}$ ) for temperature, and  $\pm 3$  percent conductivity.

Purge water was discharged to an indoor sink or to the ground surface. In 43 of the households, indoor plumbing leads to a private septic system. Sixty-five of the properties were connected to the AWWU sewer system. Following parameter stabilization, field staff collected PFAS water samples using laboratory-supplied bottles. WSW sample I.D. numbers and locations are presented in Table 1. Copies of the Private Well Sampling Logs are included in Appendix B.



**Exhibit 2-3: Examples of Private WSW Purge and Sample Locations.**

Field staff are aware of the potential for cross-contamination from numerous everyday household items. Precautions to prevent cross contamination included discontinuing the use of personal protective equipment and field supplies known to contain PFAS, using liner bags to contain samples before and after sample collection, hand washing, and donning a fresh pair of disposable nitrile gloves before sample collection.

### 2.2.1 Notification of Results

Shannon & Wilson notified property owners and occupants following the receipt of analytical data. Individualized letters that interpret the results of the WSW samples were prepared and mailed and/or emailed per the request of the recipient. Owners and/or occupants were then contacted by telephone to confirm receipt of the letter and discuss any questions they may have.

The results letters specific to each property and analytical sample for owners and occupants, included the following information:

- sample name;
- analytical results;
- comparison of analytical results to DEC's current action level;
- description of the project;
- pages of the Eurofins laboratory report that apply to the water-well sample; and
- State of Alaska PFAS Fact Sheet for the ANC

Analytical samples for the 2022 and 2023 sampling events were submitted for 18 PFAS analytes. A copy of the result letter template is included in Appendix A.

## 2.2.2 Public Information

The DOT&PF hosts a webpage describing the PFAS water-testing project. The webpage includes a project summary, list of contacts, WSW search map, and links to additional resources and our General Work Plan (GWP) for DOT&PF Statewide PFAS Sites.

Representatives from Shannon & Wilson, the DOT&PF, DEC, Alaska Department of Health (DOH), and HDR, Inc. also gave presentations at Spenard, Turnagain, and Sand Lake Community Council meetings on January 4, 2023, February 2, 2023, and March 13, 2023, respectively. The presentations summarized the project activities and general analytical results, followed by a question-and-answer period for community members.

## 2.3 Sample Custody, Storage, and Transport

Immediately after collection, the sample bottles for each location were placed in Ziploc bags and stored in a designated sample cooler maintained between 0 °C and 6 °C with ice substitute separated from the sample bottles by a liner bag. Shannon & Wilson maintained custody of the samples until submitting them to the laboratory for analysis. For shipping we packaged analytical samples and chain-of-custody (COC) forms in a hard-plastic cooler with an adequate quantity of frozen-ice substitute and packing materials to prevent bottle breakage. Shannon & Wilson applied custody seals to the cooler, which were observed to be intact upon receipt by the laboratory.

Shannon & Wilson shipped sample coolers to Eurofins in West Sacramento, California for analysis of PFAS using Alaska Air Cargo priority overnight service, also known as Goldstreak. WSWs samples were submitted within a week of collection to the analytical laboratory. This allowed sufficient time for the laboratory to analyze the samples within holding-time requirements of the analytical method. Laboratory reports are included in Appendix C.

## 2.4 Deviations

In general, we conducted our services in accordance with our approved work plans and procedures. The following are deviations from our proposed scopes of services listed in Section 1.0.

- The following samples were or may have been collected from a location downstream of the property's water softener or other in-home treatment system during the sampling event due to the system configuration and/or sample location options: samples *PW-062*, *PW-067*, *PW-101*, *PW-126*, *PW-201*, and *PW-214*.
- The following samples were or may have been collected from a location downstream of the property's water filter system during the sampling event due to the system

configuration and/or sample location options: samples *PW-089*, *PW-090*, *PW-112*, *PW-129*, and *PW-150*.

### 3 ANALYTICAL RESULTS

Shannon & Wilson submitted the WSW samples to Eurofins for analysis of 18 PFAS compounds using the EPA 537.1 compliant methods QSM 5.3 Table B-15. Analytical lab reports and associated Laboratory Data Review Checklists (LDRCs), and summary of our Quality Assurance/Quality Control (QA/QC) are included in Appendix C. PFAS analytes are listed in Exhibit 1-1 (above). Results of WSW samples were compared to the applicable drinking water action level and are presented in Table 2.

The PFOS and PFOA results of WSW samples collected in this reporting period are shown on Figure 2. For the purposes of providing alternative drinking water, these results were compared to the DEC's current drinking water action level of 70 ng/L for the sum of PFOS and PFOA compounds. Additionally, sample results were compared to the final EPA LHAs for HFPO-DA and PFBS (Table 2).

#### 3.1 Water Supply Well Samples

Table 2 summarizes the concentrations of 18 PFAS analysis in samples collected from 108 WSWs between October 2022 through October 2023.

Sample *PW-047* contained a combined PFOS and PFOA concentration of 252 ng/L, which is greater than the applicable action level of 70 ng/L. PFOS and/or PFOA were also detected in in samples *PW-035*, *PW-070*, *PW-111*, *PW-137*, *PW-140*, *PW-149*, *PW-151*, *PW-154*, and *PW-221* at concentrations less than the DEC drinking water action level.

Although PFBS, PFDA, PFDoA, PFHpA, PFHxS, PFHxA, PFNA, 9CI-PF3ONS, and 11CI-PF3OUdS were detected above the reporting limit in one or more project samples, DEC has not promulgated CULs or drinking water action levels for these analytes.

### 4 DISCUSSION AND RECOMMENDATIONS

The following sections provide a detailed discussion of the results of the 2022 and 2023 WSW sampling conducted in October 2022 through October 13, 2023. Observations and recommendations are based on available data and may be revised following future sampling events. We note that conclusions derived from small data sets may be prone to errors and inconsistencies.

## 4.1 Comparison to Drinking Water Action Level

PFAS results for the 106 WSW samples collected between October 2022 and October 2023 are presented in Table 2.

Sample *PW-047* contained a combined PFOS and PFOA concentration that exceeded the applicable DEC drinking-water action level. DOT&PF began supplying bottled water as an interim alternate water source for the property associated with sample *PW-047* in February 2023. Water delivery to the impacted property is ongoing. According to AWWU records, water supply mains currently exist in the vicinity of the affected property. It is our understanding that the DOT&PF and ANC are working on a project to connect the property to AWWU water service.

Currently, no other wells contain PFAS concentrations that exceed DEC drinking water action level or monitoring level (at least 25% of the drinking water action level). However, we note if the EPA's proposed MCLs are ratified, several properties will require additional monitoring and/or supplied an alternative drinking water source.

### 4.1.1 Concentrations with Depth

Well depths were reported by 51 property owners. The reported depths ranged from 60 feet to 550 feet bgs. Less than 5 percent of the property owners provided well logs or direct measurements. We do not know the depth of the remaining private wells sampled.

Samples collected from WSWs showed highly variable PFAS results, both in concentration and types of PFAS present. There was no apparent correlation between well depth and PFAS concentration in wells. Depths were reported by the owners and occupants for seven of the impacted wells, and some are considered estimated. Property owners reported depths in 15 of the 34 wells with detected PFAS concentrations, which range in depth from 92 to 330 feet bgs.

## 4.2 Conceptual Site Model

Based on the results presented in this report, the conceptual site model for the site remains unchanged from when it was reported in *DOT&PF Statewide PFAS Addendum 012-ANC-03, Water supply Well Sampling, General Work Plan Addendum*, dated September 2022. Copies of the forms are provided in Appendix E.

## 4.3 Recommendations

Based on our WSW search and sampling efforts completed between May 2022 to October 2023, we recommend the DOT&PF continue to:

- Work with the affected property to provide a permanent water source. We understand this is like a connection to the AWWU waterline due to the property's proximity to established AWWU water main lines.
- Attempt to identify wells at properties where well status is unknown, per Exhibit 2-1 and Table 2.
- Work with the DEC and DOH to educate the public regarding the potential health effects of exposure to PFAS-containing water.
- Refrain from discharging PFAS-containing AFFF to the ground, surface water bodies, or groundwater during ARFF training and equipment testing.
- Work closely with the DEC regarding the regulation changes that are anticipated to be published by DEC in fall 2023 and EPA at the end of 2023 (MCL). Results should be compared to the regulations when changes are made to identify affected properties or locations where additional monitoring may be necessary.
- Conduct remedial efforts to remove groundwater contamination where results exceed the cleanup levels.

The information included in this report is based on limited sampling and should be considered representative of the times and locations at which the sampling occurred. Regulatory agencies may reach different conclusions than Shannon & Wilson. We have prepared and included in "Important Information about your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of this report.

## 5 REFERENCES

Alaska Department of Environmental Conservation (DEC), 2020a, 18 AAC 75, Oil and Other Hazardous Substances Pollution Control: Juneau, Alaska, Alaska Administrative Code (AAC), Title 18, Chapter 75, November available:  
<http://dec.alaska.gov/commish/regulations/>.

Alaska Department of Environmental Conservation (DEC), 2020b, 18 AAC 75.345, Groundwater Cleanup Levels: Juneau, Alaska, Alaska Administrative Code (AAC), Title 18, Chapter 75, Section 341, November, available:  
<http://dec.alaska.gov/commish/regulations/>.

Alaska Department of Environmental Conservation (DEC), 2020c, 18 AAC 75.341, Soil Cleanup Levels: Juneau, Alaska, Alaska Administrative Code (AAC), Title 18, Chapter 75, Section 341, November, available:  
<http://dec.alaska.gov/commish/regulations/>.

- Alaska Department of Transportation & Public Facilities (DOT&PF), 2020, Anchorage International Airport, Airport Wide Characterization Report, Testing for Per-fluorinated Compounds (PFAS analytes), Anchorage International Airport: Report prepared by DOT&PF, Anchorage, Alaska, February 2020.
- Air Force Civil Engineer Center (AFCED/CIBW), 2020, Water Well Survey to Supplement Site Inspection of Per- and Polyfluoroalkyl Substance (PFAS) Release Areas at the Former Kulis Air National Guard Base, Alaska: Report prepared by AFCED/CIBW, JBSA Lackland, Texas, May 2020.
- Air Force Civil Engineer Center (AFCED/CIBW), 2016, Installation-Specific Uniform Federal Policy Quality Assurance Project Plan Addendum, Former Kulis Air National Guard Base, Site Inspection of Potential Perfluorinated Compound Release Areas at Mul: Report prepared by AFCED/CIBW, JBSA Lackland, Texas, May 2020.
- Shaw Environmental, Inc., 2004, Final Airport-Wide Risk Management Plan, Ted Stevens Anchorage International Airport: Report prepared by Shaw Environmental, Inc., Anchorage, Alaska, August 2004.
- U.S. Geology Survey (USGS), 1995, Overview of Environmental and Hydrologic Conditions at Three Federal Aviation Administration Facilities Near Anchorage International Airport, Anchorage, Alaska: Report prepared by USGS, Anchorage, Alaska, 1995.
- Anchorage Water and Wastewater Utility (AWWU), Anchorage 2022 Drinking Water Quality Report: Report prepared by AWWU, Anchorage, Alaska, 2022.
- Air Force Civil Engineer Center (AFCED/CIBW), 2022, Supplemental Drinking Water Well Sampling, Investigation of Per-and Polyfluoroalkyl Substance Release Areas at the Former Kulis Air National Guard Base, Alaska: Report prepared by AFCED/CIBW, JBSA Lackland, Texas, August 2022

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location	PW-001	PW-002	PW-005	PW-031	PW-033	PW-035	PW-036
				Sample Date	10/24/22	12/13/22	11/18/22	11/7/22	12/9/22	12/9/22 DUP	5/12/23
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	<1.7	<1.9
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	1.9	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.6	<3.4	<3.7	<3.7	<3.6	<3.3	<3.3	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.8	1.1J	<1.9	<1.9	<1.8	<1.7	4.8	<1.9
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	<1.7	<1.9
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	<1.7	<1.9
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	0.87 J	<1.9
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	2.4	<1.9
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.8	6.2	<1.9	<1.9	<1.8	<1.7	6.7	<1.9
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	<1.7	<1.9
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	<1.7	<1.9
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	<1.7	<1.9
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	<1.7	<1.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	<1.7	<1.9
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	<1.7	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8	<1.7	<1.9	<1.9	<1.8	<1.7	<1.7	<1.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.5	<4.2	<4.6	<4.6	<4.5	<4.1	<4.2	<4.7
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.5	<4.2	<4.6	<4.6	<4.5	<4.1	<4.2	<4.7	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Red** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

		Sample Location	PW-037	PW-038	PW-039	PW-041	PW-042	PW-044	PW-047	PW-048	
		Sample Date	12/2/22	11/30/22	3/9/23	10/26/22	10/26/22	11/28/22	1/17/23	5/24/23	
Analytical Method	Analyte	Regulatory Limit	Units								
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.8	<1.9	<1.8	<1.8	<1.8	<b>240</b>	<1.6	
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<1.8	<1.9	<1.8	<1.8	<1.8	<b>12</b>	<1.6	
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.7	<3.7	<3.6	<3.7	<3.6	<3.4	<3.3	
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	2.1	<1.9	<1.8	<1.8	<1.8	2.0	<1.6	
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8	<1.9	<1.8	<1.8	<1.8	0.36J	<1.6	
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	0.39J	<1.9	<1.8	<1.8	<1.8	6.1	<1.6	
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	1.2J	<1.9	<1.8	<1.8	<1.8	21	<1.6	
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	6.1	<1.9	<1.8	<1.8	<1.8	16	<1.6	
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.8	<1.9	<1.8	<1.8	<1.8	35	<1.6	
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8	<1.9	<1.8	<1.8	<1.8	<1.7	<1.6	
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.7	<1.6
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.7	<1.6
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.7	<1.6
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.6	<4.7	<4.6	<4.6	<4.6	<4.5	<4.2	<4.1
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.6	<4.7	<4.6	<4.6	<4.6	<4.5	<4.2	<4.1	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Bold** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location	PW-049	PW-051	PW-052	PW-053	PW-055	PW-056	PW-057
				Sample Date	10/31/22	11/9/22	11/9/22 DUP	11/29/22	11/9/22	12/2/22	11/7/22
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.7	<3.9	<3.9	<3.8	<3.7	<3.7	<3.8	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	1.3J	<1.9
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	0.96J	<1.9
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	8.2	1.0J
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	10	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	0.54J	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8	<1.9	<2.0	<1.9	<1.9	<1.9	<1.9	<1.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.6	<4.8	<4.9	<4.8	<4.6	<4.7	<4.8	<4.6
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.6	<4.8	<4.9	<4.8	<4.6	<4.7	<4.8	<4.6	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Red** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location	PW-059	PW-061	PW-062	PW-063	PW-064	PW-066	PW-067	PW-068
				Sample Date	11/16/22	12/16/22	11/21/22	12/9/22	10/24/22	1/10/23	11/30/22	11/29/22
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	Perfluorooctanoic acid (PFOA)	70‡	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L		<3.7	<3.5	<3.5	<3.5	<3.8	<3.6	<3.7	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	Perfluorodecanoic acid (PFDA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	Perfluorononanoic acid (PFNA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.9	<1.8	<1.8	<1.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L		<4.6	<4.4	<4.4	<4.4	<4.7	<4.5	<4.6	<4.6
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L		<4.6	<4.4	<4.4	<4.4	<4.7	<4.5	<4.6	<4.6	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Red** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location	PW-069	PW-070	PW-071	PW-075	PW-077	PW-078	PW-079	PW-081
				Sample Date	1/20/23	12/3/22	11/4/22	10/27/22	1/23/23	11/9/22	11/29/22	11/15/22
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.8	0.54J	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<1.8	1.4J	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.5	<3.6	<3.6	<3.7	<3.5	<3.7	<3.6	<3.5	<3.5
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	0.54J	<1.8	0.79J	<1.8	<1.8
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	0.34J	<1.8	<1.8
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	0.31J	<1.8	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8	<1.8	<1.8	<1.9	<1.7	<1.8	<1.8	<1.8	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.4	<4.5	<4.5	<4.6	<4.4	<4.6	<4.5	<4.4	<4.4
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.4	<4.5	<4.5	<4.6	<4.4	<4.6	<4.5	<4.4	<4.4	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Red** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location	PW-087	PW-088	PW-089	PW-090	PW-092	PW-093	PW-094	PW-095
				Sample Date	10/26/22	12/1/22	1/19/23	12/2/22	10/28/22	11/4/22	11/8/22	11/19/22
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.6	<3.8	<3.4	<3.8	<3.7	<3.7	<3.6	<3.5	<3.5
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.8	<1.9	<1.7	<1.9	<b>0.37J</b>	<1.8	<b>0.37J*</b>	<1.8	<1.8
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.8	<1.9	<1.7	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.5	<4.7	<4.2	<4.7	<4.6	<4.6	<4.5	<4.4	<4.4
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.5	<4.7	<4.2	<4.7	<4.6	<4.6	<4.5	<4.4	<4.4	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Red** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location	PW-096	PW-098	PW-099	PW-100	PW-101	PW-102	PW-103	
				Sample Date	12/1/22	10/27/22	11/4/22	10/26/22	11/21/22	11/21/22 DUP	1/10/23	10/27/22
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.8	<3.6	<3.7	<3.7	<3.7	<3.5	<3.8N*	<3.7	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	2.5	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<b>0.66J</b>	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	5.0	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	1.2J	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.9	<1.8	<1.9	<1.9	<1.9	<1.8	<1.9N*	<1.9	<1.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.7	<4.5	<4.6	<4.7	<4.7	<4.4	<4.8N*	<4.7	<4.6
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.7	<4.5	<4.6	<4.7	<4.7	<4.4	<4.8N*	<4.7	<4.6	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Bold** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location		PW-105		PW-106		PW-108	PW-109		PW-110
				Sample Date	Sample Date	1/20/23	1/20/23 DUP	11/9/22	11/9/22 DUP	2/21/23	10/27/22	10/27/22 DUP	11/22/22
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.5	<3.5	<3.7	<3.5	<3.6	<3.6	<3.6	<3.7	<3.5	<3.5
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	0.21J	0.22J	<1.8	<1.8
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.7	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.3	<4.4	<4.7	<4.4	<4.5	<4.5	<4.5	<4.6	<4.6	<4.4
	N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.3	<4.4	<4.7	<4.4	<4.5	<4.5	<4.5	<4.6	<4.6	<4.4

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Red** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location	PW-111	PW-112	PW-113	PW-114	PW-117	PW-120	
				Sample Date	12/27/22	12/27/22 DUP	10/28/22	2/8/23	11/28/22	10/24/22	1/12/23
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	0.58J	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<1.7	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.5	<3.4	<3.8	<3.5	<3.8	<3.7	<3.7	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	0.18J	0.55J	0.70J	<1.8	<1.9	<1.8	<1.9	<1.8
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.7	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.7	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.7	<1.7	0.49J	<1.8	<1.9	<1.8	<1.9	<1.8
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.7	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.7	<1.7	2.1	<1.8	<1.9	<1.8	<1.9	<1.8
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.7	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.7	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.7	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.7	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.7	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.7	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.7	<1.7	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.3	<4.3	<4.8	<4.4	<4.8	<4.6	<4.6	<4.6
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.3	<4.3	<4.8	<4.4	<4.8	<4.6	<4.6	<4.6	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Red** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

		Sample Location	PW-123	PW-124	PW-125	PW-126	PW-127	PW-129	PW-130		
		Sample Date	11/8/22	11/4/22	1/20/23	11/8/22	1/26/23	1/26/23 DUP	11/4/22	1/24/23	
Analytical Method	Analyte	Regulatory Limit	Units								
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.7	<1.9	<1.7	<1.8	<1.9	<2.0	<1.8	<1.9
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<1.7	<1.9	<1.7	<1.8	<1.9	<2.0	<1.8	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.5	<3.8	<3.5	<3.6	<3.7	<3.9	<3.6	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.7B*	<1.9	<1.7	<1.8B*	<b>0.48J</b>	<b>0.45J</b>	<1.8	<b>0.22J</b>
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.7B*	<1.9	<1.7	<1.8	<1.9	<2.0	<1.8	<1.9
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.7	<1.9	<1.7J*	<1.8	<1.9	<2.0	<1.8	<1.9
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.7B*	<1.9	<1.7	<1.8	<1.9	<2.0	<1.8	<1.9
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.7	<1.9	<1.7	<1.8	<1.9	<2.0	<1.8	<1.9
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.7	<1.9	<1.7	<1.8	<b>0.73J</b>	<b>0.83J</b>	<1.8	<1.9
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.7B*	<1.9	<1.7	<1.8B*	<1.9	<2.0	<1.8	<1.9
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.7	<1.9	<1.7J*	<1.8	<1.9	<2.0	<1.8	<1.9
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.7	<1.9	<1.7J*	<1.8	<1.9	<2.0	<1.8	<1.9
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.7	<1.9	<1.7	<1.8	<1.9	<2.0	<1.8	<1.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<b>0.24J</b>	<1.9	<1.7	<b>0.22J</b>	<1.9	<2.0	<1.8	<1.9
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.7	<1.9	<1.7	<1.8	<1.9	<2.0	<1.8	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.7	<1.9	<1.7	<1.8	<1.9	<2.0	<1.8	<1.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.3	<4.8	<4.4J*	<4.5	<4.7J*	<4.9	<4.5	<4.6
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.3	<4.8	<4.4J*	<4.5	<4.7J*	<4.9	<4.5	<4.6	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Bold** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location	PW-131	PW-132	PW-133	PW-134	PW-135	PW-136	PW-137	
				Sample Date	2/15/23	12/2/22	11/4/22	11/30/22	11/30/22 DUP	3/9/23	10/13/23	12/14/22
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.9	<1.8	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	1.2J
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<1.9	<1.8	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	5.6
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.8	<3.6	<3.7	<3.9	<3.8	<3.6	<3.2	<3.4	
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	0.30J	
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	2.5	
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	0.75J	
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	1.0J	
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	<1.7	
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	2.2	
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	0.79J	
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	<1.7	
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	<1.7	
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	<1.7	
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	<1.7	
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	<1.6	<1.7	
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.9	<1.8	<1.8	<2.0	<1.9	<1.8	0.36 J	<1.7	
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.7	<4.5	<4.6	<4.9	<4.7	<4.5	<4.1	<4.2	
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.7	<4.5	<4.6	<4.9	<4.7	<4.5	<4.1	<4.2		

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Red** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location	PW-138	PW-139	PW-140	PW-141	PW-142	PW-143	PW-144	
				Sample Date	12/1/22	11/18/22	11/18/22	10/31/22	10/31/22 DUP	11/10/22	11/1/22	10/31/22
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		<1.9	<1.8	0.50J	<1.9	<1.8	<1.7	<1.8	<1.8
	Perfluorooctanoic acid (PFOA)	70‡	ng/L		<1.9	<1.8	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L		<3.9	<3.6	<3.5	<3.7	<3.7	<3.5	<3.6	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L		<1.9	<1.8	0.42J	0.20J	<1.8	<1.7	<1.8	0.18J
	Perfluorodecanoic acid (PFDA)	N/A	ng/L		<1.9	<1.8	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L		<1.9	<1.8	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L		<1.9	<1.8	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L		<1.9	<1.8	0.85J	<1.9	<1.8	<1.7	<1.8	<1.8
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L		<1.9	<1.8	0.60J	<1.9	<1.8	<1.7	<1.8	<1.8
	Perfluorononanoic acid (PFNA)	N/A	ng/L		<1.9	<1.8	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L		<1.9	<1.8	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L		<1.9	<1.8	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L		<1.9	<1.8	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L		<1.9	<1.8	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L		<1.9	<1.8	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L		<1.9	<1.8	<1.7	<1.9	<1.8	<1.7	<1.8	<1.8
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L		<4.9	<4.5	<4.3	<4.6	<4.6	<4.4	<4.6	<4.6
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L		<4.9	<4.5	<4.3	<4.6	<4.6	<4.4	<4.6	<4.6	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Red** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location	PW-145	PW-146	PW-147	PW-148	PW-149	PW-150	PW-151	PW-154
				Sample Date	11/4/22	10/31/22	11/7/22	11/22/22	11/10/22	11/30/22	2/8/23	11/10/22
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<1.9	<1.8	<1.8	<1.8	<1.8	0.74J	<1.9	<1.8	1.5J
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<1.9	<1.8	<1.8	<1.8	<1.8	1.0J	<1.9	7.5	<1.7
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.7	<3.6	<3.6	<3.6	<3.6	<3.4	<3.8	<3.5	<3.4
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<1.9	0.18J	0.20J	3.1	0.26J	0.31J	7.9	<1.7	<1.7
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.9	<1.8	<1.7	<1.7
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.9	<1.8	<1.7	<1.7
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<1.9	<1.8	<1.8	0.85J*	<1.7	<1.9	1.8	<1.7	<1.7
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	0.98J	7.8	<1.7	<1.7
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<1.9	<1.8	1.6J	17	0.78J	0.64J	24	<1.7	<1.7
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.9	<1.8	<1.7	<1.7
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.9	<1.8	<1.7	<1.7
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.9	<1.8	<1.7	<1.7
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.9	<1.8	<1.7	<1.7
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.9	<1.8	<1.7	<1.7
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.9	<1.8	<1.7	<1.7
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<1.9	<1.8	<1.8	<1.8	<1.7	<1.9	<1.8	<1.7	<1.7
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.6	<4.5	<4.5	<4.5	<4.3	<4.8	<4.4	<4.3	<4.3
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.6	<4.5	<4.5	<4.5	<4.3	<4.8	<4.4	<4.3	<4.3	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Bold** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location	PW-155	PW-156	PW-200	PW-201	PW-202	PW-203	PW-204	PW-214
				Sample Date	11/23/22	12/2/22	11/18/22	11/18/22	11/23/22	11/19/22	11/19/22	11/30/22
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	Perfluorooctanoic acid (PFOA)	70‡	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L		<3.5	<3.7	<3.7	<3.6	<3.6	<3.5	<3.4	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	Perfluorodecanoic acid (PFDA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	Perfluorononanoic acid (PFNA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L		<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.7	<1.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L		<4.4	<4.6	<4.6	<4.5	<4.5	<4.4	<4.3	<4.7
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L		<4.4	<4.6	<4.6	<4.5	<4.5	<4.4	<4.3	<4.7	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Bold** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location		PW-220	PW-221	PW-222	PW-223	PW-224	PW-226
				Sample Date	Sample Date	11/29/22	11/29/22 DUP	2/1/23	12/15/22	12/1/22	11/22/22
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L	<2.0	<1.8	0.57J	<16	<1.9	<1.8	<1.8	
	Perfluorooctanoic acid (PFOA)	70‡	ng/L	<2.0	<1.8	1.1J	<16	<1.9	<1.8	<1.8	
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L	<3.9	<3.7	<3.7	<33	<3.8	<3.7	<3.7	
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L	<2.0	<1.8	1.7J	3.4J	<1.9	0.22J	<1.8	
	Perfluorodecanoic acid (PFDA)	N/A	ng/L	<2.0	<1.8	<1.9	<16	<1.9	<1.8	<1.8	
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L	<2.0	<1.8	<1.9	<16	<1.9	<1.8	<1.8	
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L	<2.0	<1.8	0.52J	<16	<1.9	<1.8	<1.8	
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L	<2.0	<1.8	<1.9	<16	<1.9	<1.8	<1.8	
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L	<2.0	<1.8	10	18	0.61J	<1.8	<1.8	
	Perfluorononanoic acid (PFNA)	N/A	ng/L	<2.0	<1.8	<1.9	<16	<1.9	<1.8	<1.8	
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L	<2.0	<1.8	<1.9	<16	<1.9	<1.8	<1.8	
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L	<2.0	<1.8	<1.9	<16	<1.9	<1.8	<1.8	
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L	<2.0	<1.8	<1.9	<16	<1.9	<1.8	<1.8	
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L	<2.0	<1.8	<1.9	<16	<1.9	<1.8	<1.8	
	11-Chloroicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L	<2.0	<1.8	<1.9	<16	<1.9	<1.8	<1.8	
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L	<2.0	<1.8	<1.9	<16	<1.9	<1.8	<1.8	
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L	<4.9	<4.6	<4.6J*	<41	<4.7	<4.6	<4.6	
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L	<4.9	<4.6	<4.6J*	<41	<4.7	<4.6	<4.6		

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Bold** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

Table 2 - Summary of Initial Water Supply Well Analytical Results

Analytical Method	Analyte	Regulatory Limit	Units	Sample Location		PW-228	PW-229
				Sample Date	12/9/22	12/9/22 DUP	1/6/23
EPA 537(Mod)	Perfluorooctanesulfonic acid (PFOS)	70†	ng/L		<1.7	<1.7	<1.9
	Perfluorooctanoic acid (PFOA)	70‡	ng/L		<1.7	<1.7	<1.9
	Hexafluoropropylene oxide dimer acid (HFPO-DA)	10†	ng/L		<3.4	<3.3	<3.7
	Perfluorobutanesulfonic acid (PFBS)	2,000†	ng/L		<1.7	<1.7	<1.9
	Perfluorodecanoic acid (PFDA)	N/A	ng/L		<1.7	<1.7	<1.9
	Perfluorododecanoic acid (PFDoA)	N/A	ng/L		<1.7	<1.7	<1.9
	Perfluoroheptanoic acid (PFHpA)	N/A	ng/L		<1.7	<1.7	<1.9
	Perfluorohexanesulfonic acid (PFHxS)	N/A	ng/L		<1.7	<1.7	<1.9
	Perfluorohexanoic acid (PFHxA)	N/A	ng/L		<1.7	<1.7	<1.9
	Perfluorononanoic acid (PFNA)	N/A	ng/L		<1.7	<1.7	<1.9
	Perfluorotetradecanoic acid (PFTeA)	N/A	ng/L		<1.7	<1.7	<1.9
	Perfluorotridecanoic acid (PFTrDA)	N/A	ng/L		<1.7	<1.7	<1.9
	Perfluoroundecanoic acid (PFUnA)	N/A	ng/L		<1.7	<1.7	<1.9
	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	N/A	ng/L		<1.7	<1.7	<1.9
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	N/A	ng/L		<1.7	<1.7	<1.9
	4,8-Dioxa-3H-perfluorononanoic acid (DONA)	N/A	ng/L		<1.7	<1.7	<1.9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	N/A	ng/L		<4.2	<4.2	<4.6
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	N/A	ng/L		<4.2	<4.2	<4.6	

Notes:

- † Final EPA PFAS LHAs (HFPO/PFBS)
- ‡ DEC Drinking Water Action Level = 70 ng/L for sum of PFOS and PFOA
- DEC Alaska Department of Environmental Conservation
- EPA United States Environmental Protection Agency
- LHA Lifetime Health Advisory
- DUP Field-duplicate sample
- PFAS per- and poly-fluoroalkyl substances
- ng/L nanograms per liter
- N/A No applicable regulatory limit exists for the associated analyte.
- Red** Concentration exceeds the regulatory limit.
- < Analyte not detected; listed as less than the reporting limit (RL) unless otherwise flagged due to quality-control failures.
- J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (RL). Flag applied by the laboratory.
- J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)
- JH\* Result considered estimated, biased high, due to a QC failure. Flag applied by Shannon & Wilson, Inc. (\*)
- B\* Analyte concentration potentially affected by compound detected in the method blank at an estimated concentration. Flag applied by Shannon & Wilson, Inc. (\*)
- N\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)



Path: T:\ANC\106189 AIA PFAS\FAS\Figure 1\_Vicinity and Site Map.mxd Author: lber: CDK Date: 9/22/2022



- Legend**
- Ted Stevens Anchorage International Airport Property Boundary
  - Former Kulis Air National Guard Base
  - Ted Stevens Anchorage International Airport Water Well Study Area
  - Historic AFFF Releases
  - Former Kulis Air National Guard Base Water Well Study Area

April 2024  
**WELL SEARCH EXTENT**  
Figure 1

**Legend**

- PFOS and PFOA not detected
- PFOS and/or PFOA detected below monitoring criteria
- PFOS and/or PFOA detected above DEC Drinking Water Action Limit
- Sample collected, results pending
- Sampling to be scheduled
- Confirmed connected to AWWU
- No well at property
- Max contact attempts reached
- Property connected to neighboring well
- Sampling refused
- Vacant property/land



Path: T:\GIS Projects\Statewide PFAS\Anchorage\Figure 1 Water Supply Well Results.mxd Author: BRL User: KRF Date: 11/7/2023

Imagery provided by Maxar Products, Dynamic World © 2020 Maxar Technologies Inc., Alaska Geospatial Office, USGS

Notes: Results as of June 19, 2023



Appendix A

# PUBLIC INFORMATION

## CONTENTS

- Shannon & Wilson, Inc. maps and letter templates
- EPA drinking water advisory level fact sheet
- State of Alaska PFAS Fact Sheet for the ANC – October 2022
- Agency for Toxic Substances and Disease Registry flier

May 23, 2022

Dear Property Owner:

Shannon & Wilson is working with the Alaska Department of Transportation and Public Facilities (DOT&PF) and the Alaska Department of Environmental Conservation (DEC) to identify and sample private water supply wells near airports to determine if per- and polyfluoroalkyl substances (PFAS) are present and if so, determine if they have concentrations above health advisory levels.

The Ted Stevens Anchorage International Airport (ANC) Fire Department and other agencies have used aqueous film forming foam (AFFF), a standard firefighting agent that contains PFAS, during required training exercises and emergency events to extinguish hydrocarbon fires. PFAS are considered emerging contaminants and the health effects are not well known.

Shannon & Wilson is in the process of identifying drinking water wells around the ANC for future testing (see attached figure), due to AFFF having been used at the airport in the past. Out of an abundance of caution, ANC has requested Shannon & Wilson survey for water supply wells to determine if PFAS has migrated into surrounding drinking water wells.

The water supply well search for this project includes your property.

Please complete and return the enclosed survey at your earliest convenience.

For more information visit [dot.alaska.gov/airportwater](http://dot.alaska.gov/airportwater). We appreciate your patience as we work through this process. We look forward to receiving your completed survey.

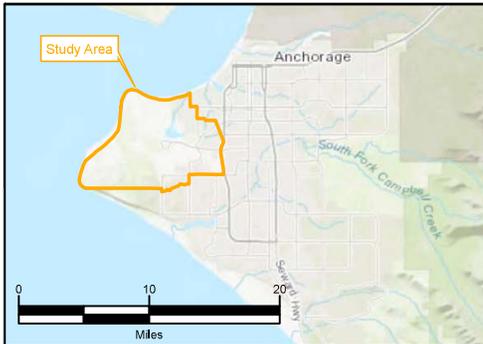
Sincerely,

SHANNON & WILSON



Jessa Tibbetts  
Environmental Scientist

Enc. Search Area Map, PFAS Information Pamphlet, Water Supply Well Survey, Return Envelope



**Legend**

- Ted Stevens Anchorage International Airport Property Boundary
- Ted Stevens Anchorage International Airport Water Well Study Area



Ted Steven Anchorage International  
 Airport Water Well Search Area  
 Anchorage, Alaska

**SITE PLAN**

May 2022

106189-001

**FIG. 1**

# Perfluoroalkyls - ToxFAQs™



## What are perfluoroalkyls?

Perfluoroalkyls are a group of man-made chemicals that are not found naturally in the environment. Some chemicals that are in this group include: perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorononanoic acid (PFNA), perfluorohexane sulfonic acid (PFHxS), and perfluorodecanoic acid (PFDA).

The two perfluoroalkyls made in the largest amounts in the United States were PFOA and PFOS. Perfluoroalkyls were used to protect products like carpet and fabric, and as a coating for paper and cardboard packaging. They can also be found in some firefighting foams.

## Where are perfluoroalkyls found in the environment?

Perfluoroalkyls can be found in air, soil, and water as a result of manufacture and use. They do not break down in the environment very easily. Perfluoroalkyls can seep through the soil into groundwater.

## How can I be exposed to perfluoroalkyls?

You may be exposed to perfluoroalkyls in the air; in indoor dust, food, and water; and in some home products. However, the main sources of exposure to perfluoroalkyls, such as PFOA and PFOS, are usually from eating food and drinking water that are contaminated with these chemicals. Because exposure is widespread, blood tests can find PFOA, PFOS, PFNA, and PFHxS in most people. However, in general, human blood levels of these chemicals are going down as exposures in the environment goes down.

Babies born to mothers exposed to PFAS can be exposed during pregnancy and while breastfeeding. However, nursing mothers should continue to breastfeed. Based on current science, the benefits of breastfeeding appear to outweigh the risks for infants exposed to PFAS in breast milk. To weigh the risks and benefits of breastfeeding, mothers should contact their doctors. Children can be exposed to perfluoroalkyls in carpet since they are closer to the ground and play on the floor.

**Exposure to perfluoroalkyls is widespread. The main sources in the environment is contaminated food and water.**

Workers in facilities that make or use perfluoroalkyls can be exposed to higher amounts of these chemicals and may have higher levels in their blood. Some communities near factories that made PFOA and PFOS were exposed to high levels of these substances in drinking water.

## How can perfluoroalkyls affect my health?

A large number of studies have examined possible relationships between levels of perfluoroalkyls in blood and harmful health effects in people. However, not all of these studies involved the same groups of people, the same type of exposure, or the same perfluoroalkyls, resulting in a variety of observed health outcomes. Research in humans suggests that high levels of certain perfluoroalkyls **may** lead to:

- increased cholesterol levels (PFOA, PFOS, PFNA, PFDA);
- changes in liver enzymes (PFOA, PFOS, PFHxS)
- decreased vaccine response in children (PFOA, PFOS, PFHxS, PFDA);
- increased risk of high blood pressure or pre-eclampsia in pregnant women (PFOA, PFOS);
- small decreases in infant birth weights (<20 grams (0.7 ounces) decrease in birth weight per 1 ng/mL increase in PFOA or PFOS in blood).

# Perfluoroalkyls

One way to learn about whether perfluoroalkyls will harm people is to do studies on lab animals. Most of these studies have tested doses of PFOA and PFOS that are higher than levels found in the environment. These animal studies have found that PFOA and PFOS can cause damage to the liver and the immune system. PFOA and PFOS have also caused birth defects, delayed development, and newborn deaths in lab animals.

Humans and animals react differently to perfluoroalkyls, and not all effects observed in animals may occur in humans. Scientists have ways to estimate how the exposure and effects in animals compare to what they would be in humans. What they learn from this process helps them decide how to protect people from chemical exposures.

## Can perfluoroalkyls cause cancer?

Studies do not clearly show whether perfluoroalkyls cause cancer in people. People exposed to high levels may have increased risk of kidney cancer or testicular cancer. However, these studies are not consistent and may not have looked at other factors like smoking.

Studies in animals have shown that PFOA and PFOS can cause cancer in the liver, testes, pancreas, and thyroid. However, some scientists believe that humans may not develop the same cancers as animals.

The Environmental Protection Agency (EPA) has classified PFOA and PFOS as having suggestive evidence of carcinogenic potential in humans. The International Agency for Research on Cancer has classified PFOA as possibly carcinogenic (causing cancer) to humans, but it has not evaluated whether other perfluoroalkyls may also cause cancer. The Department of Health and Human Services has not yet evaluated whether PFOA and other perfluoroalkyls can cause cancer.

## Can I get a medical test to check for perfluoroalkyls?

A blood test can measure perfluoroalkyls in your blood, but this is not a test routinely done in a doctor's office. If you have perfluoroalkyls in your blood, you have been exposed to these chemicals and absorbed them into your body at some time. Most people have some level of perfluoroalkyls in their blood. The blood test can't predict if you will have health problems from exposure to perfluoroalkyls.

## How can I protect myself and my family from perfluoroalkyls?

If you do not know about perfluoroalkyls levels in your water, ask your local health department. Do not use consumer products that contain perfluoroalkyls. Drink or cook with bottled water or install activated carbon water filters if your tap or well water contains perfluoroalkyls.

### For more information:



Call **CDC-INFO** at 1-800-232-4636, or submit your question online at <https://wwwn.cdc.gov/dcs/ContactUs/Form>

Go to ATSDR's Toxicological Profile for perfluoroalkyls: <https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=1117&tid=237>

Go to ATSDR's Toxic Substances Portal: <https://wwwn.cdc.gov/TSP/index.aspx>

Find & contact your ATSDR Regional Representative at [http://www.atsdr.cdc.gov/DRO/dro\\_org.html](http://www.atsdr.cdc.gov/DRO/dro_org.html)

**Water Supply Well Inventory Survey Form**

Date: \_\_\_\_\_

Parcel: \_\_\_\_\_

Name (Owner): \_\_\_\_\_

Name (Occupant): \_\_\_\_\_

Physical Address: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Email Address (optional): \_\_\_\_\_

Contact Phone Number: (owner) \_\_\_\_\_ (occupant) \_\_\_\_\_

Number of persons residing at this location:                      Adults (18 and over) \_\_\_\_\_  
    Teenagers (13 to 17) \_\_\_\_\_  
    Children (12 and under) \_\_\_\_\_

Years at this residence: \_\_\_\_\_ Full-Time       Seasonal

1) From where do you obtain your drinking water?

- a) Water Supply Utility                                       b) Well Water   
 c) Water Delivery     d) Other

2) If you have a water well, please answer the following questions:

- a) Where is the well located on the property? \_\_\_\_\_  
 b) Is the well in use? Yes  No   
 c) If yes, please check all that apply regarding the usage of your well water:  
     Drinking     Cooking     Gardening     Pets     Other \_\_\_\_\_  
 d) If no, is the well usable, unusable, or properly abandoned?  
     Usable     Unusable     Abandoned     Method \_\_\_\_\_  
 e) When was the well installed? \_\_\_\_\_  
 f) What is the well depth? \_\_\_\_\_ Do you have the well log?  Yes  No  
 g) What is the well diameter? \_\_\_\_\_  
 h) What is the well type?                       Dug Well                                       Driven  
     Drilled      Unknown  
 i) Do you have any treatment on your well (e.g. water softener)? Please describe. \_\_\_\_\_  
 \_\_\_\_\_

3) Sample Permission

Does the Alaska Department of Transportation & Public Facilities (DOT&PF) have permission to sample your private water well?  Yes  No

\_\_\_\_\_  
 Signature

\_\_\_\_\_  
 Date



## PFAS Fact Sheet – Anchorage Airport

October 2022

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals used for a wide variety of residential, commercial, and industrial uses. PFAS are considered emerging environmental contaminants and the health effects are not well known. PFAS are used in many consumer products ranging from fabric waterproofing compounds, non-stick cookware, stain resistant carpeting, some food packaging and firefighting foams.

A potential source of PFAS in groundwater near the airport is the use of a fire-fighting foam called aqueous film forming foam (AFFF). Airport firefighters used the foam to extinguish petroleum fires during training exercises and emergency events.

The Alaska Department of Transportation & Public Facilities (DOT&PF) has hired Shannon & Wilson to test water supply wells near the airport for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and other PFAS compounds.

The Alaska Department of Environmental Conservation (DEC) has adopted the Environmental Protection Agency's (EPA's) former lifetime health advisory (LHA) level for drinking water of **70 parts per trillion** for the sum of PFOS and PFOA. On June 15, 2022, the EPA adopted a revised interim LHA level. DOT&PF will continue to work with our state and federal partners to determine what this means for Alaska and will adjust as more information becomes available.

We advise well users with test results above the DEC Action Level not to use their water for drinking or cooking. If your well is considered affected, you can continue to shower, clean, and do laundry. Test results are typically available within three to four weeks of sample collection. If your well is found to have PFAS above the DEC Action Level, DOT&PF will assist with access to an alternate source of drinking water.

**Website:** [www.dot.alaska.gov/airportwater/](http://www.dot.alaska.gov/airportwater/)

**For questions about well testing:**

Shannon & Wilson, Inc.  
Jessa Tibbetts, Project Manager  
Office Phone: 907-458-3146  
Email: [jessa.tibbetts@shanwil.com](mailto:jessa.tibbetts@shanwil.com)

**For regulatory questions:**

Alaska Dept. of Environmental Conservation  
Robert Burgess, Contaminated Sites Program  
Phone: 907-269-3057  
Email: [robert.burgess@alaska.gov](mailto:robert.burgess@alaska.gov)

**For questions about PFAS and health effects:**

Alaska Department of Health  
Sarah Yoder, Env. Public Health Manager  
Phone: 907-269-8054  
Email: [sarah.yoder@alaska.gov](mailto:sarah.yoder@alaska.gov)

**For questions about fire training & other inquiries:**

DOT&PF – Statewide Aviation  
Sammy Cummings, PFAS Program Manager  
Phone: 907-888-5671  
Email: [airportwater@alaska.gov](mailto:airportwater@alaska.gov)

**For questions about airport operations:**

DOT&PF – Ted Stevens Anchorage  
International Airport  
Megan Peters, Communications Coordinator  
Phone: 907-744-9475  
Email: [megan.peters@alaska.gov](mailto:megan.peters@alaska.gov)

## Overview

EPA has established health advisories for PFOA and PFOS based on the agency's assessment of the latest peer-reviewed science to provide drinking water system operators, and state, tribal and local officials who have the primary responsibility for overseeing these systems, with information on the health risks of these chemicals, so they can take the appropriate actions to protect their residents. EPA is committed to supporting states and public water systems as they determine the appropriate steps to reduce exposure to PFOA and PFOS in drinking water. As science on health effects of these chemicals evolves, EPA will continue to evaluate new evidence.

## Background on PFOA and PFOS

PFOA and PFOS are fluorinated organic chemicals that are part of a larger group of chemicals referred to as perfluoroalkyl substances (PFASs). PFOA and PFOS have been the most extensively produced and studied of these chemicals. They have been used to make carpets, clothing, fabrics for furniture, paper packaging for food and other materials (e.g., cookware) that are resistant to water, grease or stains. They are also used for firefighting at airfields and in a number of industrial processes.

Because these chemicals have been used in an array of consumer products, most people have been exposed to them. Between 2000 and 2002, PFOS was voluntarily phased out of production in the U.S. by its primary manufacturer. In 2006, eight major companies voluntarily agreed to phase out their global production of PFOA and PFOA-related chemicals, although there are a limited number of ongoing uses. Scientists have found PFOA and PFOS in the blood of nearly all the people they tested, but these studies show that the levels of PFOA and PFOS in blood have been decreasing. While consumer products and food are a large source of exposure to these chemicals for most people, drinking water can be an additional source in the small percentage of communities where these chemicals have contaminated water supplies. Such contamination is typically localized and associated with a specific facility, for example, an industrial facility where these chemicals were produced or used to manufacture other products or an airfield at which they were used for firefighting.

## EPA's 2016 Lifetime Health Advisories

EPA develops health advisories to provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. EPA's health advisories are non-enforceable and non-regulatory and provide technical information to states agencies and other public health officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination. In 2009, EPA published provisional health advisories for PFOA and PFOS based on the evidence available at that time. The science has evolved since then and EPA is now replacing the 2009 provisional advisories with new, lifetime health advisories.

# FACT SHEET

## PFOA & PFOS Drinking Water Health Advisories

### EPA's 2016 Lifetime Health Advisories, continued

To provide Americans, including the most sensitive populations, with a margin of protection from a lifetime of exposure to PFOA and PFOS from drinking water, EPA established the health advisory levels at 70 parts per trillion. When both PFOA and PFOS are found in drinking water, the combined concentrations of PFOA and PFOS should be compared with the 70 parts per trillion health advisory level. This health advisory level offers a margin of protection for all Americans throughout their life from adverse health effects resulting from exposure to PFOA and PFOS in drinking water.

#### *How the Health Advisories were developed*

EPA's health advisories are based on the best available peer-reviewed studies of the effects of PFOA and PFOS on laboratory animals (rats and mice) and were also informed by epidemiological studies of human populations that have been exposed to PFASs. These studies indicate that exposure to PFOA and PFOS over certain levels may result in adverse health effects, including developmental effects to fetuses during pregnancy or to breastfed infants (e.g., low birth weight, accelerated puberty, skeletal variations), cancer (e.g., testicular, kidney), liver effects (e.g., tissue damage), immune effects (e.g., antibody production and immunity), thyroid effects and other effects (e.g., cholesterol changes).

EPA's health advisory levels were calculated to offer a margin of protection against adverse health effects to the most sensitive populations: fetuses during pregnancy and breastfed infants. The health advisory levels are calculated based on the drinking water intake of lactating women, who drink more water than other people and can pass these chemicals along to nursing infants through breastmilk.

### Recommended Actions for Drinking Water Systems

#### *Steps to Assess Contamination*

If water sampling results confirm that drinking water contains PFOA and PFOS at individual or combined concentrations greater than 70 parts per trillion, water systems should quickly undertake additional sampling to assess the level, scope and localized source of contamination to inform next steps

#### *Steps to Inform*

If water sampling results confirm that drinking water contains PFOA and PFOS at individual or combined concentrations greater than 70 parts per trillion, water systems should promptly notify their State drinking water safety agency (or with EPA in jurisdictions for which EPA is the primary drinking water safety agency) and consult with the relevant agency on the best approach to conduct additional sampling.

Drinking water systems and public health officials should also promptly provide consumers with information about the levels of PFOA and PFOS in their drinking water. This notice should include specific information on the risks to fetuses during pregnancy and breastfed and formula-fed infants from exposure to drinking water with an individual or combined concentration of PFOA and PFOS above EPA's health advisory level of 70 parts per trillion. In addition, the notification should include actions they are taking and identify options that consumers may consider to reduce risk such as seeking an alternative drinking water source, or in the case of parents of formula-fed infants, using formula that does not require adding water.

# FACT SHEET

## PFOA & PFOS Drinking Water Health Advisories

### Recommended Actions for Drinking Water Systems, continued

#### *Steps to Limit Exposure*

A number of options are available to drinking water systems to lower concentrations of PFOA and PFOS in their drinking water supply. In some cases, drinking water systems can reduce concentrations of perfluoroalkyl substances, including PFOA and PFOS, by closing contaminated wells or changing rates of blending of water sources. Alternatively, public water systems can treat source water with activated carbon or high pressure membrane systems (e.g., reverse osmosis) to remove PFOA and PFOS from drinking water. These treatment systems are used by some public water systems today, but should be carefully designed and maintained to ensure that they are effective for treating PFOA and PFOS. In some communities, entities have provided bottled water to consumers while steps to reduce or remove PFOA or PFOS from drinking water or to establish a new water supply are completed.

Many home drinking water treatment units are certified by independent accredited third party organizations against American National Standards Institute (ANSI) standards to verify their contaminant removal claims. NSF International (NSF®) has developed a protocol for NSF/ANSI Standards 53 and 58 that establishes minimum requirements for materials, design and construction, and performance of point-of-use (POU) activated carbon drinking water treatment systems and reverse osmosis systems that are designed to reduce PFOA and PFOS in public water supplies. The protocol has been established to certify systems (e.g., home treatment systems) that meet the minimum requirements. The systems are evaluated for contaminant reduction by challenging them with an influent of  $1.5 \pm 30\%$   $\mu\text{g/L}$  (total of both PFOA and PFOS) and must reduce this concentration by more than 95% to  $0.07 \mu\text{g/L}$  or less (total of both PFOA and PFOS) throughout the manufacturer's stated life of the treatment system. Product certification to this protocol for testing home treatment systems verifies that devices effectively reduces PFOA and PFOS to acceptable levels.

### Other Actions Relating to PFOA and PFOS

Between 2000 and 2002, PFOS was voluntarily phased out of production in the U.S. by its primary manufacturer, 3M. EPA also issued regulations to limit future manufacturing, including importation, of PFOS and its precursors, without first having EPA review the new use. A limited set of existing uses for PFOS (fire resistant aviation hydraulic fluids, photography and film products, photomicro lithography process to produce semiconductors, metal finishing and plating baths, component of an etchant) was excluded from these regulations because these uses were ongoing and alternatives were not available.

In 2006, EPA asked eight major companies to commit to working toward the elimination of their production and use of PFOA, and chemicals that degrade to PFOA, from emissions and products by the end of 2015. All eight companies have indicated that they have phased out PFOA, and chemicals that degrade to PFOA, from emissions and products by the end of 2015. Additionally, PFOA is included in EPA's proposed Toxic Substance Control Act's Significant New Use Rule (SNUR) issued in January 2015 which will ensure that EPA has an opportunity to review any efforts to reintroduce the chemical into the marketplace and take action, as necessary, to address potential concerns.

# FACT SHEET

## PFOA & PFOS Drinking Water Health Advisories

### Other Actions Relating to PFOA and PFOS, continued

EPA has not established national primary drinking water regulations for PFOA and PFOS. EPA is evaluating PFOA and PFOS as drinking water contaminants in accordance with the process required by the Safe Drinking Water Act (SDWA). To regulate a contaminant under SDWA, EPA must find that it: (1) may have adverse health effects; (2) occurs frequently (or there is a substantial likelihood that it occurs frequently) at levels of public health concern; and (3) there is a meaningful opportunity for health risk reduction for people served by public water systems.

EPA included PFOA and PFOS among the list of contaminants that water systems are required to monitor under the third Unregulated Contaminant Monitoring Rule (UCMR 3) in 2012. Results of this monitoring effort are updated regularly and can be found on the publicly-available National Contaminant Occurrence Database (NCOD) (<https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule#3>). In accordance with SDWA, EPA will consider the occurrence data from UCMR 3, along with the peer reviewed health effects assessments supporting the PFOA and PFOS Health Advisories, to make a regulatory determination on whether to initiate the process to develop a national primary drinking water regulation.

In addition, EPA plans to begin a separate effort to determine the range of PFAS for which an Integrated Risk Information System (IRIS) assessment is needed. The IRIS Program identifies and characterizes the health hazards of chemicals found in the environment. IRIS assessments inform the first two steps of the risk assessment process: hazard identification, and dose-response. As indicated in the 2015 IRIS Multi-Year Agenda, the IRIS Program will be working with other EPA offices to determine the range of PFAS compounds and the scope of assessment required to best meet Agency needs. More about this effort can be found at <https://www.epa.gov/iris/iris-agenda>.

### Non-Drinking Water Exposure to PFOA and PFOS

These health advisories only apply to exposure scenarios involving drinking water. They are not appropriate for use, in identifying risk levels for ingestion of food sources, including: fish, meat produced from livestock that consumes contaminated water, or crops irrigated with contaminated water.

The health advisories are based on exposure from drinking water ingestion, not from skin contact or breathing. The advisory values are calculated based on drinking water consumption and household use of drinking water during food preparation (e.g., cooking or to prepare coffee, tea or soup). To develop the advisories, EPA considered non-drinking water sources of exposure to PFOA and PFOS, including: air, food, dust, and consumer products. In January 2016 the Food and Drug Administration amended its regulations to no longer allow PFOA and PFOS to be added in food packaging, which will likely decrease one source of non-drinking water exposure.

## Where Can I Learn More?

- EPA's Drinking Water Health Advisories for PFOA and PFOS can be found at: <https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos>
- PFOA and PFOS data collected under EPA's Unregulated Contaminant Monitoring Rule are available: <https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule>
- EPA's stewardship program for PFAS related to TSCA: <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/and-polyfluoroalkyl-substances-pfas-under-tsca>
- EPA's research activities on PFASs can be found at: <http://www.epa.gov/chemical-research/perfluorinated-chemical-pfc-research>
- The Agency for Toxic Substances and Disease Registry's Perfluorinated Chemicals and Your Health webpage at: <http://www.atsdr.cdc.gov/PFC/>



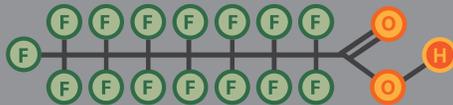
# PFAS WHAT YOU NEED TO KNOW

## WHAT ARE PFAS CHEMICALS?

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that includes PFOA, PFOS and GenX chemicals. Since the 1940s, PFAS have been manufactured and used in a variety of industries around the globe, including in the United States. PFOA and PFOS have been the most extensively produced and studied of these chemicals. Both are very persistent in the environment and in the human body. Exposure to certain PFAS can lead to adverse human health effects.

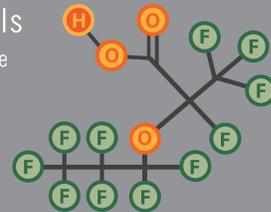
### PFOA & PFOS

U.S. manufacturers voluntarily phased out PFOA and PFOS, two specific PFAS chemicals.



### GenX Chemicals

GenX chemicals are a replacement for PFOA.



## WHAT EPA IS DOING

Some of the agency's work includes: development of additional toxicity values, analytical methods for additional PFAS and non-drinking water media as well as treatment options for PFAS in drinking water. EPA is also hosting a National Leadership Summit on PFAS in May 2018.



Established methods to measure 14 PFAS compounds in drinking water

Identified five treatment processes for PFOA and PFOS

Identified all PFAS chemicals that are legally available for production and use

Provided national monitoring data for 6 PFAS in drinking water



Issued drinking water health advisories (70 parts per trillion) for PFOA and PFOS in 2016



Provided support for 10 states with site-specific PFAS challenges and problems:

NC (Cape Fear River), MI, DE, WV, CO, NY (Hoosick Falls), OH, NH, VT and NJ



Updated website to include tools and information so that states, tribes and local communities can understand, assess and address PFAS incidents and emergencies



## HOW ARE WE EXPOSED TO PFAS?

PFAS include a large number of important chemicals that can be used in some food packaging and can make things grease- and stain-resistant. They are also used in firefighting foams and in a wide range of manufacturing practices. Unfortunately, some of these substances don't break down over time. That means they build up in the environment and in our bodies.

Drinking water can be a source of exposure in communities where these chemicals have contaminated water supplies. Such contamination is typically localized and associated with a specific facility, for example,

- an industrial facility where PFAS were produced or used to manufacture other products, or
- locations where firefighting foam was used such as oil refineries, airfields or other training facilities for firefighters

If you are concerned about the possibility of PFAS in your drinking water, contact your local water supplier and ask for more information about PFAS.



STAIN/GREASE  
REPELLENT



FIREFIGHTING  
FOAMS



INDUSTRIAL  
USES

## HEALTH EFFECTS

There is evidence that exposure to PFAS can lead to adverse health outcomes in humans. If humans or animals ingest PFAS (by eating or drinking food or water than contain PFAS), the PFAS are absorbed and can accumulate in the body. PFAS stay in the human body for long periods of time. In some cases, the level of PFAS in the body can increase to the point where people can suffer from adverse health effects.

Studies indicate that high concentrations of PFOA and PFOS can cause reproductive and developmental, liver and kidney, and immunological effects in laboratory animals. Both chemicals have caused tumors in animal studies. The most consistent findings from human studies are increased cholesterol levels among exposed populations, with more limited findings related to:

- infant birth weights
- adverse effects on the immune system
- cancer (for PFOA)
- thyroid hormone effects (for PFOS)

Date

Property Owner  
Street Address  
Anchorage, AK 995XX

**RE: RESULTS OF 2022 PFAS WATER SUPPLY WELL SAMPLING, TED STEVENS ANCHORAGE INTERNATIONAL AIRPORT**

Thank you for participating in our water supply well sampling program to evaluate the presence of per- and polyfluoroalkyl substances (PFAS) in groundwater near the Ted Stevens Anchorage International Airport (AIA). Shannon & Wilson, Inc. collected a water sample from your water supply well at **address** on **date**. **We have also sent a copy of this letter to your tenant.**

The water sample was analyzed for perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and several other PFAS compounds. We compare these concentrations to the Alaska Department of Environmental Conservation (DEC) drinking water action level of 70 parts per trillion (ppt) for the sum of PFOS and PFOA. Please note that these units are equivalent to nanograms per liter (ng/L).

Results of the analysis conducted by Eurofins Environment Testing indicate that PFOS was **not/detected**, and PFOA was **not/detected** in the groundwater sample from your well. ***(Insert detected PFAS)* were detected in the sample; however, DEC has not promulgated groundwater or drinking water standards for this/these compounds.** The portions of the original laboratory report that apply to your well (sample number *PW-XXX*) are enclosed for your records.

Shannon & Wilson has conducted this sampling event on behalf of the Alaska Department of Transportation and Public Facilities (DOT&PF). Please see the enclosed PFAS fact sheet for a link to the DOT&PF project website.

Property Owner  
Date  
Page 2

If you have any questions regarding your results, please feel free to contact us.

Sincerely,

**SHANNON & WILSON, INC.**

Jessa Tibbetts  
Environmental Scientist

Enc: Select Pages of Test America Laboratory Report No. 320-XXXXXX-1  
PFAS Fact Sheet - Anchorage Airport

Appendix B

# FIELD FORMS - REDACTED FOR PRIVACY

## CONTENTS

- Private Well Inventory Survey Forms
- Private Well Sampling Logs

Appendix C

# ANALYTICAL RESULTS

## CONTENTS

- Quality Control / Quality Assurance Summary

Eurofins Laboratory Reports and LDRCs

## QA/QC SUMMARY

Quality Assurance/Quality Control (QA/QC) procedures assist in producing data of acceptable quality and reliability. Shannon & Wilson reviewed the analytical results for laboratory QC samples and conducted a QA assessment for this project. Staff reviewed the chain-of-custody records and laboratory-receipt forms to verify custody was not breached, sample holding-times were met, and the samples were properly handled from the point of collection through analysis by the laboratory. QA review procedures document the accuracy and precision of the analytical data, as well as check the analyses were sufficiently sensitive to detect analytes at levels below regulatory standards.

Please note, the laboratory applies the flag 'J' to a detected results reported less than the reporting limit (RL) but greater than the detection limit; this "flagged" datum is considered an estimated concentration. Qualified environmental staff reviewed the data using the current Alaska Department of Environmental Conservation (DEC) laboratory data review checklist (LDRC) and applied standardized qualifiers to any result found to have been affected by a QC issue. Unless rejected, a qualified result is considered usable data. During the QC review, flags were applied to indicate estimated data or analytical bias, as applicable.

Our summary below provides details regarding QA/QC failures that resulted in flags being applied to the data set. For further details of failures not resulting in flags, please refer to the LDRCs.

## SAMPLE HANDLING

Our WSW sampling protocols describe sampling directly from the homes plumbing system to before water treatment systems such as water softeners.

Deviations from sampling protocols from October 2022 through May 2023 include:

- Samples *PW-089*, *PW-090*, *PW-112*, *PW-129*, and *PW-150* were or may have been collected from a location downstream of the property's water filter system.
- Samples *PW-062*, *PW-067*, *PW-101*, *PW-126*, *PW-201*, and *PW-214* were collected from after a water softener, as there was no other sample location available.

Detected results for the above samples have been flagged 'J\*' and not detected results for the above samples have been flagged 'UJ\*' due to the deviation. These results are considered estimated.

Coolers containing water samples were shipped via Alaska Goldstreak to Eurofins to perform the analyses noted on the chain-of-custody (COC). The coolers contained a

temperature blank to measure whether samples were kept appropriately cold. Lab personnel measured the temperature blank at the time the samples arrived at the facility; the temperature blank was recorded within the proper temperature range upon arrival at the laboratories.

Per- and polyfluoroalkyl substances (PFAS) samples have a holding time of 14 days. Project samples were received by the laboratory and prepped within holding time, with the following exception:

- Sample *PW-101* was re-prepared outside holding time; therefore, the non-detect (ND) results reported for each analyte are flagged “N\*” as tentatively identified, and the results are considered an estimate. It is noted that duplicate sample *PW-5101* was prepared within holding and confirms the ND results for primary sample *PW-101*.

Our review of COC records and laboratory sample-receipt documents did not reveal sample-handling anomalies that would affect the quality or usability of the data, and the samples were processed within the appropriate method holding times. Data is considered usable with the flags noted above.

## ANALYTICAL SENSITIVITY

Shannon & Wilson compared RLs for Eurofins data to the DEC drinking water action level. The RLs were less than DEC-established monitoring or action levels, where applicable.

PFAS analysis uses isotope dilution analysis (IDA) method. This analytical technique requires the observation of the transition mass ratios. The ratios associated with PFAS analysis were within limit for the project data set. The following exceptions are flagged in the associated data tables due to transition mass ratios outside of laboratory limits:

- Eurofins 320-94743-1: The transition mass ratio for perfluoroheptanoic acid (PFHpA) was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias in sample *PW-148*. The PFHpA result in sample *PW-148* is considered estimated, biased high, and flagged ‘JH\*’ in the associated data table.

The laboratory analyzes a method blank (MB) with each sample batch to provide information regarding potential for analyte carryover during analysis. Project analytes were not detected in the MBs associated with the project work orders (WOs) with the following exceptions.

- Eurofins 320-94386-1: PFHpA, perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), and perfluorobutanesulfonic acid (PFBS) were detected below the RL in the MB. Estimated concentrations of PFNA and PFBS were measured in samples *PW-123* and *PW-126*. Estimated concentration of PFHpA and PFDA were also detected in sample

*PW-123*. The detected results are less than 10 times the MB detections; therefore, the project sample results for the analytes listed above are considered ND due to MB contamination and are flagged with a 'UB\*' at the RL in the associated data table.

## ACCURACY

The laboratory assessed the accuracy of its analytical procedures by analyzing laboratory control samples (LCS), LCS duplicate samples (LCSD) matrix spike samples (MS), MS duplicate samples (MSD) and laboratory duplicate samples. LCS/LCSD analysis allows the laboratory to evaluate their ability to recover analytes added to clean aqueous matrices, and MS/MSD analysis allows the laboratory to evaluate their ability to recovery analytes added to project sample matrices. MS/MSD recovery failures only apply to a sample that was spiked. If the spiked sample in a batch set was not a sample from this project, then the results are not affected.

LCS/LCSD and MS/MSD recoveries associated with project samples were within laboratory limits for the project samples.

The laboratory also assessed the accuracy of IDA analytes added to individual project samples. IDAs allow the laboratory to assess the accuracy of their analytical method using chemically similar compounds as those requested for the project sample set. IDA recoveries were within QC limits for the project samples with the following exceptions.

- Eurofins 320-96369-1: the IDA recovery associated with isotope dilutions  $^{13}\text{C}_2\text{-PFD}_2\text{O}_A$ ,  $^{13}\text{C}_2\text{-PFTeDA}$ ,  $\text{d}_3\text{-NMeFOSAA}$ , and  $\text{d}_5\text{-NEtFOSAA}$  for project sample *PW-125* was outside QC limits. The non-detect reporting value is considered estimated and flagged "UJ\*" in the associated data table.
- Eurofins 320-96541-1: the IDA recovery associated with isotope dilutions  $\text{d}_3\text{-NMeFOSAA}$  and  $\text{d}_5\text{-NEtFOSAA}$  in samples *PW-5127* and *PW-221* was outside laboratory QC limits. The non-detect reporting value is considered estimated and flagged "UJ\*" in the associated data tables.

## PRECISION

Shannon & Wilson submitted field duplicate samples in our WOs. To evaluate data precision and reproducibility of our sampling techniques, the relative percent difference (RPD) was calculated between the sample and its duplicate. Shannon & Wilson can only evaluate RPDs if the results of the analysis for both the sample and its duplicate are greater than the LOQ or RL for a given analyte. The field-duplicate RPDs for detected analytes were within the project-specified data quality objective (DQO) of 30 percent for groundwater.

## DATA QUALITY SUMMARY

By working in general accordance with our proposed scope of services, Shannon & Wilson consider the samples collected for this project to be representative of site conditions at the locations and times they were obtained. Based on our QA review, no samples were rejected as unusable due to QC failures. In general, the quality of the analytical data for this project does not appear to have been compromised by analytical irregularities and is adequate for the purposes of our assessment.

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

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 11/30/2022 10:22:30 AM

**JOB DESCRIPTION**

AIA PFAS

**JOB NUMBER**

320-93900-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
11/30/2022 10:22:30 AM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	8
Isotope Dilution Summary . . . . .	27
QC Sample Results . . . . .	29
QC Association Summary . . . . .	38
Lab Chronicle . . . . .	40
Certification Summary . . . . .	44
Method Summary . . . . .	45
Sample Summary . . . . .	46
Chain of Custody . . . . .	47
Receipt Checklists . . . . .	49

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

---

## Job ID: 320-93900-1

---

### Laboratory: Eurofins Sacramento

#### Narrative

---

#### Job Narrative 320-93900-1

#### Receipt

The samples were received on 11/2/2022 1:11 PM. 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 3.2° 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 320-630215.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-630785.

Method 3535: The following samples in preparation batch 320-630215 were observed to have floating particulates present in the sample bottle. PW-001 (320-93900-9)

Method 3535: The following samples in preparation batch 320-631058 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-109 (320-93900-14), PW-5109 (320-93900-15) and PW-087 (320-93900-19)

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-631058.

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

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Client Sample ID: PW-141

Lab Sample ID: 320-93900-1

No Detections.

## Client Sample ID: PW-5141

Lab Sample ID: 320-93900-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.20		1.9	0.19	ng/L	1	EPA 537(Mod)	Total/NA

## Client Sample ID: PW-144

Lab Sample ID: 320-93900-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.18		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA

## Client Sample ID: PW-049

Lab Sample ID: 320-93900-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	10		1.8	0.22	ng/L	1	EPA 537(Mod)	Total/NA
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	0.54		1.8	0.30	ng/L	1	EPA 537(Mod)	Total/NA

## Client Sample ID: PW-146

Lab Sample ID: 320-93900-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.18		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA

## Client Sample ID: PW-092

Lab Sample ID: 320-93900-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.37		1.8	0.18	ng/L	1	EPA 537(Mod)	Total/NA

## Client Sample ID: PW-112

Lab Sample ID: 320-93900-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.1		1.9	0.56	ng/L	1	EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.49		1.9	0.24	ng/L	1	EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.70		1.9	0.19	ng/L	1	EPA 537(Mod)	Total/NA

## Client Sample ID: PW-100

Lab Sample ID: 320-93900-8

No Detections.

## Client Sample ID: PW-001

Lab Sample ID: 320-93900-9

No Detections.

## Client Sample ID: PW-064

Lab Sample ID: 320-93900-10

No Detections.

## Client Sample ID: PW-117

Lab Sample ID: 320-93900-11

No Detections.

## Client Sample ID: PW-075

Lab Sample ID: 320-93900-12

No Detections.

## Client Sample ID: PW-103

Lab Sample ID: 320-93900-13

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Client Sample ID: PW-109

Lab Sample ID: 320-93900-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.22	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-5109

Lab Sample ID: 320-93900-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.21	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-098

Lab Sample ID: 320-93900-16

No Detections.

## Client Sample ID: PW-042

Lab Sample ID: 320-93900-17

No Detections.

## Client Sample ID: PW-041

Lab Sample ID: 320-93900-18

No Detections.

## Client Sample ID: PW-087

Lab Sample ID: 320-93900-19

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-141**

**Lab Sample ID: 320-93900-1**

**Date Collected: 10/31/22 15:15**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/07/22 05:49	11/28/22 13:11	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/07/22 05:49	11/28/22 13:11	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/07/22 05:49	11/28/22 13:11	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/07/22 05:49	11/28/22 13:11	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/07/22 05:49	11/28/22 13:11	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/07/22 05:49	11/28/22 13:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/07/22 05:49	11/28/22 13:11	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/07/22 05:49	11/28/22 13:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/07/22 05:49	11/28/22 13:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/07/22 05:49	11/28/22 13:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/07/22 05:49	11/28/22 13:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/07/22 05:49	11/28/22 13:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/07/22 05:49	11/28/22 13:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/07/22 05:49	11/28/22 13:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/07/22 05:49	11/28/22 13:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/07/22 05:49	11/28/22 13:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/07/22 05:49	11/28/22 13:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/07/22 05:49	11/28/22 13:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		50 - 150	1/07/22 05:49	1/28/22 13:1	
13C4 PFHpA	102		50 - 150	1/07/22 05:49	1/28/22 13:1	
13C4 PFOA	94		50 - 150	1/07/22 05:49	1/28/22 13:1	
13C5 PFNA	101		50 - 150	1/07/22 05:49	1/28/22 13:1	
13C2 PFDA	103		50 - 150	1/07/22 05:49	1/28/22 13:1	
13C2 PFUnA	99		50 - 150	1/07/22 05:49	1/28/22 13:1	
13C2 PFDoA	100		50 - 150	1/07/22 05:49	1/28/22 13:1	
13C2 PFTeDA	104		50 - 150	1/07/22 05:49	1/28/22 13:1	
13C3 PFBS	103		50 - 150	1/07/22 05:49	1/28/22 13:1	
18O2 PFHxS	98		50 - 150	1/07/22 05:49	1/28/22 13:1	
13C4 PFOS	94		50 - 150	1/07/22 05:49	1/28/22 13:1	
d3-NMeFOSAA	90		50 - 150	1/07/22 05:49	1/28/22 13:1	
d5-NEtFOSAA	96		50 - 150	1/07/22 05:49	1/28/22 13:1	
13C3 HFPO-DA	96		50 - 150	1/07/22 05:49	1/28/22 13:1	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-5141**

**Lab Sample ID: 320-93900-2**

**Date Collected: 10/31/22 15:45**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/07/22 05:49	11/28/22 13:22	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/07/22 05:49	11/28/22 13:22	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/07/22 05:49	11/28/22 13:22	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/07/22 05:49	11/28/22 13:22	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/07/22 05:49	11/28/22 13:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/07/22 05:49	11/28/22 13:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/07/22 05:49	11/28/22 13:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/07/22 05:49	11/28/22 13:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/07/22 05:49	11/28/22 13:22	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.20</b>	<b>J</b>	1.9	0.19	ng/L		11/07/22 05:49	11/28/22 13:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/07/22 05:49	11/28/22 13:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/07/22 05:49	11/28/22 13:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/07/22 05:49	11/28/22 13:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/07/22 05:49	11/28/22 13:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/07/22 05:49	11/28/22 13:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/07/22 05:49	11/28/22 13:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/07/22 05:49	11/28/22 13:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/07/22 05:49	11/28/22 13:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		50 - 150	11/07/22 05:49	11/28/22 13:22	1
13C4 PFHpA	103		50 - 150	11/07/22 05:49	11/28/22 13:22	1
13C4 PFOA	101		50 - 150	11/07/22 05:49	11/28/22 13:22	1
13C5 PFNA	103		50 - 150	11/07/22 05:49	11/28/22 13:22	1
13C2 PFDA	102		50 - 150	11/07/22 05:49	11/28/22 13:22	1
13C2 PFUnA	103		50 - 150	11/07/22 05:49	11/28/22 13:22	1
13C2 PFDoA	98		50 - 150	11/07/22 05:49	11/28/22 13:22	1
13C2 PFTeDA	107		50 - 150	11/07/22 05:49	11/28/22 13:22	1
13C3 PFBS	101		50 - 150	11/07/22 05:49	11/28/22 13:22	1
18O2 PFHxS	97		50 - 150	11/07/22 05:49	11/28/22 13:22	1
13C4 PFOS	94		50 - 150	11/07/22 05:49	11/28/22 13:22	1
d3-NMeFOSAA	85		50 - 150	11/07/22 05:49	11/28/22 13:22	1
d5-NEtFOSAA	92		50 - 150	11/07/22 05:49	11/28/22 13:22	1
13C3 HFPO-DA	97		50 - 150	11/07/22 05:49	11/28/22 13:22	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-144**

**Lab Sample ID: 320-93900-3**

**Date Collected: 10/31/22 12:01**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.54	ng/L		11/07/22 05:49	11/28/22 13:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/07/22 05:49	11/28/22 13:32	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.79	ng/L		11/07/22 05:49	11/28/22 13:32	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/07/22 05:49	11/28/22 13:32	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		11/07/22 05:49	11/28/22 13:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/07/22 05:49	11/28/22 13:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		11/07/22 05:49	11/28/22 13:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/07/22 05:49	11/28/22 13:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.68	ng/L		11/07/22 05:49	11/28/22 13:32	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.18</b>	<b>J</b>	1.8	0.18	ng/L		11/07/22 05:49	11/28/22 13:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		11/07/22 05:49	11/28/22 13:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/07/22 05:49	11/28/22 13:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/07/22 05:49	11/28/22 13:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/07/22 05:49	11/28/22 13:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/07/22 05:49	11/28/22 13:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/07/22 05:49	11/28/22 13:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		11/07/22 05:49	11/28/22 13:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/07/22 05:49	11/28/22 13:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	107		50 - 150	11/07/22 05:49	11/28/22 13:32	1
13C4 PFHpA	108		50 - 150	11/07/22 05:49	11/28/22 13:32	1
13C4 PFOA	104		50 - 150	11/07/22 05:49	11/28/22 13:32	1
13C5 PFNA	108		50 - 150	11/07/22 05:49	11/28/22 13:32	1
13C2 PFDA	105		50 - 150	11/07/22 05:49	11/28/22 13:32	1
13C2 PFUnA	105		50 - 150	11/07/22 05:49	11/28/22 13:32	1
13C2 PFDoA	106		50 - 150	11/07/22 05:49	11/28/22 13:32	1
13C2 PFTeDA	116		50 - 150	11/07/22 05:49	11/28/22 13:32	1
13C3 PFBS	109		50 - 150	11/07/22 05:49	11/28/22 13:32	1
18O2 PFHxS	103		50 - 150	11/07/22 05:49	11/28/22 13:32	1
13C4 PFOS	100		50 - 150	11/07/22 05:49	11/28/22 13:32	1
d3-NMeFOSAA	89		50 - 150	11/07/22 05:49	11/28/22 13:32	1
d5-NEtFOSAA	102		50 - 150	11/07/22 05:49	11/28/22 13:32	1
13C3 HFPO-DA	107		50 - 150	11/07/22 05:49	11/28/22 13:32	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-049**

**Lab Sample ID: 320-93900-4**

**Date Collected: 10/31/22 09:30**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.54	ng/L		11/07/22 05:49	11/28/22 13:42	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/07/22 05:49	11/28/22 13:42	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/07/22 05:49	11/28/22 13:42	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/07/22 05:49	11/28/22 13:42	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		11/07/22 05:49	11/28/22 13:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/07/22 05:49	11/28/22 13:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		11/07/22 05:49	11/28/22 13:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/07/22 05:49	11/28/22 13:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/07/22 05:49	11/28/22 13:42	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/07/22 05:49	11/28/22 13:42	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		11/07/22 05:49	11/28/22 13:42	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/07/22 05:49	11/28/22 13:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/07/22 05:49	11/28/22 13:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/07/22 05:49	11/28/22 13:42	1
<b>9-Chlorohexadecafluoro-3-oxonane-1-sulfonic acid</b>	<b>10</b>		1.8	0.22	ng/L		11/07/22 05:49	11/28/22 13:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/07/22 05:49	11/28/22 13:42	1
<b>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</b>	<b>0.54 J</b>		1.8	0.30	ng/L		11/07/22 05:49	11/28/22 13:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/07/22 05:49	11/28/22 13:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	1/07/22 05:49	1/28/22 13:42	
13C4 PFHpA	101		50 - 150	1/07/22 05:49	1/28/22 13:42	
13C4 PFOA	100		50 - 150	1/07/22 05:49	1/28/22 13:42	
13C5 PFNA	108		50 - 150	1/07/22 05:49	1/28/22 13:42	
13C2 PFDA	106		50 - 150	1/07/22 05:49	1/28/22 13:42	
13C2 PFUnA	105		50 - 150	1/07/22 05:49	1/28/22 13:42	
13C2 PFDoA	104		50 - 150	1/07/22 05:49	1/28/22 13:42	
13C2 PFTeDA	109		50 - 150	1/07/22 05:49	1/28/22 13:42	
13C3 PFBS	103		50 - 150	1/07/22 05:49	1/28/22 13:42	
18O2 PFHxS	96		50 - 150	1/07/22 05:49	1/28/22 13:42	
13C4 PFOS	99		50 - 150	1/07/22 05:49	1/28/22 13:42	
d3-NMeFOSAA	96		50 - 150	1/07/22 05:49	1/28/22 13:42	
d5-NEtFOSAA	100		50 - 150	1/07/22 05:49	1/28/22 13:42	
13C3 HFPO-DA	100		50 - 150	1/07/22 05:49	1/28/22 13:42	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-146**

**Lab Sample ID: 320-93900-5**

**Date Collected: 10/31/22 10:30**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/07/22 05:49	11/28/22 13:52	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/07/22 05:49	11/28/22 13:52	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/07/22 05:49	11/28/22 13:52	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/07/22 05:49	11/28/22 13:52	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/07/22 05:49	11/28/22 13:52	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/07/22 05:49	11/28/22 13:52	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/07/22 05:49	11/28/22 13:52	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/07/22 05:49	11/28/22 13:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/07/22 05:49	11/28/22 13:52	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.18</b>	<b>J</b>	1.8	0.18	ng/L		11/07/22 05:49	11/28/22 13:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/07/22 05:49	11/28/22 13:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/07/22 05:49	11/28/22 13:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/07/22 05:49	11/28/22 13:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/07/22 05:49	11/28/22 13:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/07/22 05:49	11/28/22 13:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/07/22 05:49	11/28/22 13:52	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/07/22 05:49	11/28/22 13:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/07/22 05:49	11/28/22 13:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		50 - 150	11/07/22 05:49	11/28/22 13:52	1
13C4 PFHpA	101		50 - 150	11/07/22 05:49	11/28/22 13:52	1
13C4 PFOA	101		50 - 150	11/07/22 05:49	11/28/22 13:52	1
13C5 PFNA	108		50 - 150	11/07/22 05:49	11/28/22 13:52	1
13C2 PFDA	107		50 - 150	11/07/22 05:49	11/28/22 13:52	1
13C2 PFUnA	113		50 - 150	11/07/22 05:49	11/28/22 13:52	1
13C2 PFDoA	110		50 - 150	11/07/22 05:49	11/28/22 13:52	1
13C2 PFTeDA	116		50 - 150	11/07/22 05:49	11/28/22 13:52	1
13C3 PFBS	105		50 - 150	11/07/22 05:49	11/28/22 13:52	1
18O2 PFHxS	98		50 - 150	11/07/22 05:49	11/28/22 13:52	1
13C4 PFOS	102		50 - 150	11/07/22 05:49	11/28/22 13:52	1
d3-NMeFOSAA	98		50 - 150	11/07/22 05:49	11/28/22 13:52	1
d5-NEtFOSAA	107		50 - 150	11/07/22 05:49	11/28/22 13:52	1
13C3 HFPO-DA	103		50 - 150	11/07/22 05:49	11/28/22 13:52	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-092**

**Lab Sample ID: 320-93900-6**

**Date Collected: 10/28/22 09:25**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/07/22 05:49	11/28/22 14:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/07/22 05:49	11/28/22 14:02	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/07/22 05:49	11/28/22 14:02	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/07/22 05:49	11/28/22 14:02	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/07/22 05:49	11/28/22 14:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/07/22 05:49	11/28/22 14:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		11/07/22 05:49	11/28/22 14:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/07/22 05:49	11/28/22 14:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/07/22 05:49	11/28/22 14:02	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.37</b>	<b>J</b>	1.8	0.18	ng/L		11/07/22 05:49	11/28/22 14:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/07/22 05:49	11/28/22 14:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/07/22 05:49	11/28/22 14:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/07/22 05:49	11/28/22 14:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/07/22 05:49	11/28/22 14:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/07/22 05:49	11/28/22 14:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/07/22 05:49	11/28/22 14:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/07/22 05:49	11/28/22 14:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/07/22 05:49	11/28/22 14:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		50 - 150	1/07/22 05:49	1/28/22 14:02	
13C4 PFHpA	101		50 - 150	1/07/22 05:49	1/28/22 14:02	
13C4 PFOA	101		50 - 150	1/07/22 05:49	1/28/22 14:02	
13C5 PFNA	102		50 - 150	1/07/22 05:49	1/28/22 14:02	
13C2 PFDA	102		50 - 150	1/07/22 05:49	1/28/22 14:02	
13C2 PFUnA	104		50 - 150	1/07/22 05:49	1/28/22 14:02	
13C2 PFDoA	101		50 - 150	1/07/22 05:49	1/28/22 14:02	
13C2 PFTeDA	109		50 - 150	1/07/22 05:49	1/28/22 14:02	
13C3 PFBS	104		50 - 150	1/07/22 05:49	1/28/22 14:02	
18O2 PFHxS	100		50 - 150	1/07/22 05:49	1/28/22 14:02	
13C4 PFOS	98		50 - 150	1/07/22 05:49	1/28/22 14:02	
d3-NMeFOSAA	88		50 - 150	1/07/22 05:49	1/28/22 14:02	
d5-NEtFOSAA	98		50 - 150	1/07/22 05:49	1/28/22 14:02	
13C3 HFPO-DA	96		50 - 150	1/07/22 05:49	1/28/22 14:02	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-112**

**Lab Sample ID: 320-93900-7**

**Date Collected: 10/28/22 10:23**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.1		1.9	0.56	ng/L		11/07/22 05:49	11/28/22 14:12	1
Perfluoroheptanoic acid (PFHpA)	0.49	J	1.9	0.24	ng/L		11/07/22 05:49	11/28/22 14:12	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		11/07/22 05:49	11/28/22 14:12	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/07/22 05:49	11/28/22 14:12	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/07/22 05:49	11/28/22 14:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/07/22 05:49	11/28/22 14:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/07/22 05:49	11/28/22 14:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/07/22 05:49	11/28/22 14:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		11/07/22 05:49	11/28/22 14:12	1
Perfluorobutanesulfonic acid (PFBS)	0.70	J	1.9	0.19	ng/L		11/07/22 05:49	11/28/22 14:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		11/07/22 05:49	11/28/22 14:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		11/07/22 05:49	11/28/22 14:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		11/07/22 05:49	11/28/22 14:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		11/07/22 05:49	11/28/22 14:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/07/22 05:49	11/28/22 14:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/07/22 05:49	11/28/22 14:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/07/22 05:49	11/28/22 14:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/07/22 05:49	11/28/22 14:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	1/07/22 05:49	1/28/22 14:12	
13C4 PFHpA	101		50 - 150	1/07/22 05:49	1/28/22 14:12	
13C4 PFOA	99		50 - 150	1/07/22 05:49	1/28/22 14:12	
13C5 PFNA	103		50 - 150	1/07/22 05:49	1/28/22 14:12	
13C2 PFDA	104		50 - 150	1/07/22 05:49	1/28/22 14:12	
13C2 PFUnA	107		50 - 150	1/07/22 05:49	1/28/22 14:12	
13C2 PFDoA	108		50 - 150	1/07/22 05:49	1/28/22 14:12	
13C2 PFTeDA	106		50 - 150	1/07/22 05:49	1/28/22 14:12	
13C3 PFBS	107		50 - 150	1/07/22 05:49	1/28/22 14:12	
18O2 PFHxS	100		50 - 150	1/07/22 05:49	1/28/22 14:12	
13C4 PFOS	95		50 - 150	1/07/22 05:49	1/28/22 14:12	
d3-NMeFOSAA	95		50 - 150	1/07/22 05:49	1/28/22 14:12	
d5-NEtFOSAA	104		50 - 150	1/07/22 05:49	1/28/22 14:12	
13C3 HFPO-DA	99		50 - 150	1/07/22 05:49	1/28/22 14:12	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-100**

**Lab Sample ID: 320-93900-8**

**Date Collected: 10/26/22 13:40**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/07/22 05:49	11/22/22 15:52	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/07/22 05:49	11/22/22 15:52	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/07/22 05:49	11/22/22 15:52	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/07/22 05:49	11/22/22 15:52	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/07/22 05:49	11/22/22 15:52	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/07/22 05:49	11/22/22 15:52	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/07/22 05:49	11/22/22 15:52	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/07/22 05:49	11/22/22 15:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/07/22 05:49	11/22/22 15:52	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/07/22 05:49	11/22/22 15:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/07/22 05:49	11/22/22 15:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/07/22 05:49	11/22/22 15:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/07/22 05:49	11/22/22 15:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/07/22 05:49	11/22/22 15:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/07/22 05:49	11/22/22 15:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/07/22 05:49	11/22/22 15:52	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/07/22 05:49	11/22/22 15:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/07/22 05:49	11/22/22 15:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		50 - 150	11/07/22 05:49	11/22/22 15:52	1
13C4 PFHpA	101		50 - 150	11/07/22 05:49	11/22/22 15:52	1
13C4 PFOA	102		50 - 150	11/07/22 05:49	11/22/22 15:52	1
13C5 PFNA	108		50 - 150	11/07/22 05:49	11/22/22 15:52	1
13C2 PFDA	102		50 - 150	11/07/22 05:49	11/22/22 15:52	1
13C2 PFUnA	103		50 - 150	11/07/22 05:49	11/22/22 15:52	1
13C2 PFDoA	102		50 - 150	11/07/22 05:49	11/22/22 15:52	1
13C2 PFTeDA	94		50 - 150	11/07/22 05:49	11/22/22 15:52	1
13C3 PFBS	103		50 - 150	11/07/22 05:49	11/22/22 15:52	1
18O2 PFHxS	101		50 - 150	11/07/22 05:49	11/22/22 15:52	1
13C4 PFOS	99		50 - 150	11/07/22 05:49	11/22/22 15:52	1
d3-NMeFOSAA	75		50 - 150	11/07/22 05:49	11/22/22 15:52	1
d5-NEtFOSAA	84		50 - 150	11/07/22 05:49	11/22/22 15:52	1
13C3 HFPO-DA	105		50 - 150	11/07/22 05:49	11/22/22 15:52	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-001**

**Lab Sample ID: 320-93900-9**

**Date Collected: 10/24/22 13:24**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/04/22 05:12	11/07/22 10:40	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/04/22 05:12	11/07/22 10:40	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/04/22 05:12	11/07/22 10:40	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/04/22 05:12	11/07/22 10:40	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/04/22 05:12	11/07/22 10:40	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/04/22 05:12	11/07/22 10:40	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/04/22 05:12	11/07/22 10:40	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/04/22 05:12	11/07/22 10:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/04/22 05:12	11/07/22 10:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/04/22 05:12	11/07/22 10:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/04/22 05:12	11/07/22 10:40	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/04/22 05:12	11/07/22 10:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/04/22 05:12	11/07/22 10:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/04/22 05:12	11/07/22 10:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/04/22 05:12	11/07/22 10:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/04/22 05:12	11/07/22 10:40	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/04/22 05:12	11/07/22 10:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/04/22 05:12	11/07/22 10:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	1/04/22 05:12	1/07/22 10:40	
13C4 PFHpA	97		50 - 150	1/04/22 05:12	1/07/22 10:40	
13C4 PFOA	98		50 - 150	1/04/22 05:12	1/07/22 10:40	
13C5 PFNA	94		50 - 150	1/04/22 05:12	1/07/22 10:40	
13C2 PFDA	97		50 - 150	1/04/22 05:12	1/07/22 10:40	
13C2 PFUnA	95		50 - 150	1/04/22 05:12	1/07/22 10:40	
13C2 PFDoA	97		50 - 150	1/04/22 05:12	1/07/22 10:40	
13C2 PFTeDA	100		50 - 150	1/04/22 05:12	1/07/22 10:40	
13C3 PFBS	100		50 - 150	1/04/22 05:12	1/07/22 10:40	
18O2 PFHxS	107		50 - 150	1/04/22 05:12	1/07/22 10:40	
13C4 PFOS	88		50 - 150	1/04/22 05:12	1/07/22 10:40	
d3-NMeFOSAA	90		50 - 150	1/04/22 05:12	1/07/22 10:40	
d5-NEtFOSAA	88		50 - 150	1/04/22 05:12	1/07/22 10:40	
13C3 HFPO-DA	92		50 - 150	1/04/22 05:12	1/07/22 10:40	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-064**

**Lab Sample ID: 320-93900-10**

**Date Collected: 10/24/22 10:45**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		11/04/22 05:12	11/07/22 10:50	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/04/22 05:12	11/07/22 10:50	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		11/04/22 05:12	11/07/22 10:50	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/04/22 05:12	11/07/22 10:50	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/04/22 05:12	11/07/22 10:50	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/04/22 05:12	11/07/22 10:50	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		11/04/22 05:12	11/07/22 10:50	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/04/22 05:12	11/07/22 10:50	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		11/04/22 05:12	11/07/22 10:50	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/04/22 05:12	11/07/22 10:50	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		11/04/22 05:12	11/07/22 10:50	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		11/04/22 05:12	11/07/22 10:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/04/22 05:12	11/07/22 10:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/04/22 05:12	11/07/22 10:50	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/04/22 05:12	11/07/22 10:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/04/22 05:12	11/07/22 10:50	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/04/22 05:12	11/07/22 10:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/04/22 05:12	11/07/22 10:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		50 - 150	11/04/22 05:12	11/07/22 10:50	1
13C4 PFHpA	102		50 - 150	11/04/22 05:12	11/07/22 10:50	1
13C4 PFOA	99		50 - 150	11/04/22 05:12	11/07/22 10:50	1
13C5 PFNA	90		50 - 150	11/04/22 05:12	11/07/22 10:50	1
13C2 PFDA	95		50 - 150	11/04/22 05:12	11/07/22 10:50	1
13C2 PFUnA	94		50 - 150	11/04/22 05:12	11/07/22 10:50	1
13C2 PFDoA	88		50 - 150	11/04/22 05:12	11/07/22 10:50	1
13C2 PFTeDA	90		50 - 150	11/04/22 05:12	11/07/22 10:50	1
13C3 PFBS	103		50 - 150	11/04/22 05:12	11/07/22 10:50	1
18O2 PFHxS	101		50 - 150	11/04/22 05:12	11/07/22 10:50	1
13C4 PFOS	89		50 - 150	11/04/22 05:12	11/07/22 10:50	1
d3-NMeFOSAA	91		50 - 150	11/04/22 05:12	11/07/22 10:50	1
d5-NEtFOSAA	84		50 - 150	11/04/22 05:12	11/07/22 10:50	1
13C3 HFPO-DA	93		50 - 150	11/04/22 05:12	11/07/22 10:50	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-117**

**Lab Sample ID: 320-93900-11**

**Date Collected: 10/24/22 14:06**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/04/22 05:12	11/07/22 11:00	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/04/22 05:12	11/07/22 11:00	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/04/22 05:12	11/07/22 11:00	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/04/22 05:12	11/07/22 11:00	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		11/04/22 05:12	11/07/22 11:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/04/22 05:12	11/07/22 11:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		11/04/22 05:12	11/07/22 11:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/04/22 05:12	11/07/22 11:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/04/22 05:12	11/07/22 11:00	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/04/22 05:12	11/07/22 11:00	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/04/22 05:12	11/07/22 11:00	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/04/22 05:12	11/07/22 11:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/04/22 05:12	11/07/22 11:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/04/22 05:12	11/07/22 11:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/04/22 05:12	11/07/22 11:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/04/22 05:12	11/07/22 11:00	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/04/22 05:12	11/07/22 11:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/04/22 05:12	11/07/22 11:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	11/04/22 05:12	11/07/22 11:00	1
13C4 PFHpA	97		50 - 150	11/04/22 05:12	11/07/22 11:00	1
13C4 PFOA	99		50 - 150	11/04/22 05:12	11/07/22 11:00	1
13C5 PFNA	90		50 - 150	11/04/22 05:12	11/07/22 11:00	1
13C2 PFDA	98		50 - 150	11/04/22 05:12	11/07/22 11:00	1
13C2 PFUnA	89		50 - 150	11/04/22 05:12	11/07/22 11:00	1
13C2 PFDoA	89		50 - 150	11/04/22 05:12	11/07/22 11:00	1
13C2 PFTeDA	87		50 - 150	11/04/22 05:12	11/07/22 11:00	1
13C3 PFBS	99		50 - 150	11/04/22 05:12	11/07/22 11:00	1
18O2 PFHxS	103		50 - 150	11/04/22 05:12	11/07/22 11:00	1
13C4 PFOS	89		50 - 150	11/04/22 05:12	11/07/22 11:00	1
d3-NMeFOSAA	83		50 - 150	11/04/22 05:12	11/07/22 11:00	1
d5-NEtFOSAA	89		50 - 150	11/04/22 05:12	11/07/22 11:00	1
13C3 HFPO-DA	89		50 - 150	11/04/22 05:12	11/07/22 11:00	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-075**

**Lab Sample ID: 320-93900-12**

**Date Collected: 10/27/22 14:16**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/07/22 05:49	11/22/22 16:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/07/22 05:49	11/22/22 16:02	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/07/22 05:49	11/22/22 16:02	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/07/22 05:49	11/22/22 16:02	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/07/22 05:49	11/22/22 16:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/07/22 05:49	11/22/22 16:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/07/22 05:49	11/22/22 16:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/07/22 05:49	11/22/22 16:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/07/22 05:49	11/22/22 16:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/07/22 05:49	11/22/22 16:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/07/22 05:49	11/22/22 16:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/07/22 05:49	11/22/22 16:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/07/22 05:49	11/22/22 16:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/07/22 05:49	11/22/22 16:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/07/22 05:49	11/22/22 16:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/07/22 05:49	11/22/22 16:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/07/22 05:49	11/22/22 16:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/07/22 05:49	11/22/22 16:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		50 - 150	11/07/22 05:49	11/22/22 16:02	1
13C4 PFHpA	89		50 - 150	11/07/22 05:49	11/22/22 16:02	1
13C4 PFOA	89		50 - 150	11/07/22 05:49	11/22/22 16:02	1
13C5 PFNA	99		50 - 150	11/07/22 05:49	11/22/22 16:02	1
13C2 PFDA	93		50 - 150	11/07/22 05:49	11/22/22 16:02	1
13C2 PFUnA	89		50 - 150	11/07/22 05:49	11/22/22 16:02	1
13C2 PFDoA	89		50 - 150	11/07/22 05:49	11/22/22 16:02	1
13C2 PFTeDA	84		50 - 150	11/07/22 05:49	11/22/22 16:02	1
13C3 PFBS	90		50 - 150	11/07/22 05:49	11/22/22 16:02	1
18O2 PFHxS	87		50 - 150	11/07/22 05:49	11/22/22 16:02	1
13C4 PFOS	88		50 - 150	11/07/22 05:49	11/22/22 16:02	1
d3-NMeFOSAA	70		50 - 150	11/07/22 05:49	11/22/22 16:02	1
d5-NEtFOSAA	77		50 - 150	11/07/22 05:49	11/22/22 16:02	1
13C3 HFPO-DA	96		50 - 150	11/07/22 05:49	11/22/22 16:02	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-103**

**Lab Sample ID: 320-93900-13**

**Date Collected: 10/27/22 15:19**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/07/22 05:49	11/22/22 16:12	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/07/22 05:49	11/22/22 16:12	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/07/22 05:49	11/22/22 16:12	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/07/22 05:49	11/22/22 16:12	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/07/22 05:49	11/22/22 16:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/07/22 05:49	11/22/22 16:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/07/22 05:49	11/22/22 16:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/07/22 05:49	11/22/22 16:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/07/22 05:49	11/22/22 16:12	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/07/22 05:49	11/22/22 16:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/07/22 05:49	11/22/22 16:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/07/22 05:49	11/22/22 16:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/07/22 05:49	11/22/22 16:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/07/22 05:49	11/22/22 16:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/07/22 05:49	11/22/22 16:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/07/22 05:49	11/22/22 16:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/07/22 05:49	11/22/22 16:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/07/22 05:49	11/22/22 16:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	11/07/22 05:49	11/22/22 16:12	1
13C4 PFHpA	103		50 - 150	11/07/22 05:49	11/22/22 16:12	1
13C4 PFOA	101		50 - 150	11/07/22 05:49	11/22/22 16:12	1
13C5 PFNA	101		50 - 150	11/07/22 05:49	11/22/22 16:12	1
13C2 PFDA	98		50 - 150	11/07/22 05:49	11/22/22 16:12	1
13C2 PFUnA	94		50 - 150	11/07/22 05:49	11/22/22 16:12	1
13C2 PFDoA	96		50 - 150	11/07/22 05:49	11/22/22 16:12	1
13C2 PFTeDA	92		50 - 150	11/07/22 05:49	11/22/22 16:12	1
13C3 PFBS	92		50 - 150	11/07/22 05:49	11/22/22 16:12	1
18O2 PFHxS	101		50 - 150	11/07/22 05:49	11/22/22 16:12	1
13C4 PFOS	97		50 - 150	11/07/22 05:49	11/22/22 16:12	1
d3-NMeFOSAA	72		50 - 150	11/07/22 05:49	11/22/22 16:12	1
d5-NEtFOSAA	79		50 - 150	11/07/22 05:49	11/22/22 16:12	1
13C3 HFPO-DA	87		50 - 150	11/07/22 05:49	11/22/22 16:12	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-109**

**Lab Sample ID: 320-93900-14**

**Date Collected: 10/27/22 13:33**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/08/22 05:33	11/17/22 05:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/08/22 05:33	11/17/22 05:43	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/08/22 05:33	11/17/22 05:43	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/08/22 05:33	11/17/22 05:43	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/08/22 05:33	11/17/22 05:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/08/22 05:33	11/17/22 05:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/08/22 05:33	11/17/22 05:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/08/22 05:33	11/17/22 05:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/08/22 05:33	11/17/22 05:43	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.22</b>	<b>J</b>	1.8	0.18	ng/L		11/08/22 05:33	11/17/22 05:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/08/22 05:33	11/17/22 05:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/08/22 05:33	11/17/22 05:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/08/22 05:33	11/17/22 05:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/08/22 05:33	11/17/22 05:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/08/22 05:33	11/17/22 05:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/08/22 05:33	11/17/22 05:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/08/22 05:33	11/17/22 05:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/08/22 05:33	11/17/22 05:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	11/08/22 05:33	11/17/22 05:43	1
13C4 PFHpA	99		50 - 150	11/08/22 05:33	11/17/22 05:43	1
13C4 PFOA	100		50 - 150	11/08/22 05:33	11/17/22 05:43	1
13C5 PFNA	97		50 - 150	11/08/22 05:33	11/17/22 05:43	1
13C2 PFDA	96		50 - 150	11/08/22 05:33	11/17/22 05:43	1
13C2 PFUnA	92		50 - 150	11/08/22 05:33	11/17/22 05:43	1
13C2 PFDoA	99		50 - 150	11/08/22 05:33	11/17/22 05:43	1
13C2 PFTeDA	94		50 - 150	11/08/22 05:33	11/17/22 05:43	1
13C3 PFBS	101		50 - 150	11/08/22 05:33	11/17/22 05:43	1
18O2 PFHxS	94		50 - 150	11/08/22 05:33	11/17/22 05:43	1
13C4 PFOS	91		50 - 150	11/08/22 05:33	11/17/22 05:43	1
d3-NMeFOSAA	70		50 - 150	11/08/22 05:33	11/17/22 05:43	1
d5-NEtFOSAA	76		50 - 150	11/08/22 05:33	11/17/22 05:43	1
13C3 HFPO-DA	108		50 - 150	11/08/22 05:33	11/17/22 05:43	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-5109**

**Lab Sample ID: 320-93900-15**

**Date Collected: 10/27/22 14:03**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/08/22 05:33	11/17/22 05:54	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/08/22 05:33	11/17/22 05:54	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/08/22 05:33	11/17/22 05:54	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/08/22 05:33	11/17/22 05:54	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/08/22 05:33	11/17/22 05:54	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/08/22 05:33	11/17/22 05:54	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/08/22 05:33	11/17/22 05:54	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/08/22 05:33	11/17/22 05:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/08/22 05:33	11/17/22 05:54	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.21</b>	<b>J</b>	1.8	0.18	ng/L		11/08/22 05:33	11/17/22 05:54	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/08/22 05:33	11/17/22 05:54	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/08/22 05:33	11/17/22 05:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/08/22 05:33	11/17/22 05:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/08/22 05:33	11/17/22 05:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/08/22 05:33	11/17/22 05:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/08/22 05:33	11/17/22 05:54	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/08/22 05:33	11/17/22 05:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/08/22 05:33	11/17/22 05:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		50 - 150	11/08/22 05:33	11/17/22 05:54	1
13C4 PFHpA	97		50 - 150	11/08/22 05:33	11/17/22 05:54	1
13C4 PFOA	95		50 - 150	11/08/22 05:33	11/17/22 05:54	1
13C5 PFNA	93		50 - 150	11/08/22 05:33	11/17/22 05:54	1
13C2 PFDA	95		50 - 150	11/08/22 05:33	11/17/22 05:54	1
13C2 PFUnA	89		50 - 150	11/08/22 05:33	11/17/22 05:54	1
13C2 PFDoA	91		50 - 150	11/08/22 05:33	11/17/22 05:54	1
13C2 PFTeDA	86		50 - 150	11/08/22 05:33	11/17/22 05:54	1
13C3 PFBS	101		50 - 150	11/08/22 05:33	11/17/22 05:54	1
18O2 PFHxS	94		50 - 150	11/08/22 05:33	11/17/22 05:54	1
13C4 PFOS	89		50 - 150	11/08/22 05:33	11/17/22 05:54	1
d3-NMeFOSAA	69		50 - 150	11/08/22 05:33	11/17/22 05:54	1
d5-NEtFOSAA	71		50 - 150	11/08/22 05:33	11/17/22 05:54	1
13C3 HFPO-DA	105		50 - 150	11/08/22 05:33	11/17/22 05:54	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-098**

**Lab Sample ID: 320-93900-16**

**Date Collected: 10/27/22 16:03**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/08/22 05:33	11/17/22 06:04	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/08/22 05:33	11/17/22 06:04	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/08/22 05:33	11/17/22 06:04	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/08/22 05:33	11/17/22 06:04	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/08/22 05:33	11/17/22 06:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/08/22 05:33	11/17/22 06:04	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/08/22 05:33	11/17/22 06:04	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/08/22 05:33	11/17/22 06:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/08/22 05:33	11/17/22 06:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/08/22 05:33	11/17/22 06:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/08/22 05:33	11/17/22 06:04	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/08/22 05:33	11/17/22 06:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/08/22 05:33	11/17/22 06:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/08/22 05:33	11/17/22 06:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/08/22 05:33	11/17/22 06:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/08/22 05:33	11/17/22 06:04	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/08/22 05:33	11/17/22 06:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/08/22 05:33	11/17/22 06:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		50 - 150	11/08/22 05:33	11/17/22 06:04	1
13C4 PFHpA	102		50 - 150	11/08/22 05:33	11/17/22 06:04	1
13C4 PFOA	102		50 - 150	11/08/22 05:33	11/17/22 06:04	1
13C5 PFNA	101		50 - 150	11/08/22 05:33	11/17/22 06:04	1
13C2 PFDA	100		50 - 150	11/08/22 05:33	11/17/22 06:04	1
13C2 PFUnA	94		50 - 150	11/08/22 05:33	11/17/22 06:04	1
13C2 PFDoA	91		50 - 150	11/08/22 05:33	11/17/22 06:04	1
13C2 PFTeDA	86		50 - 150	11/08/22 05:33	11/17/22 06:04	1
13C3 PFBS	103		50 - 150	11/08/22 05:33	11/17/22 06:04	1
18O2 PFHxS	97		50 - 150	11/08/22 05:33	11/17/22 06:04	1
13C4 PFOS	96		50 - 150	11/08/22 05:33	11/17/22 06:04	1
d3-NMeFOSAA	74		50 - 150	11/08/22 05:33	11/17/22 06:04	1
d5-NEtFOSAA	74		50 - 150	11/08/22 05:33	11/17/22 06:04	1
13C3 HFPO-DA	104		50 - 150	11/08/22 05:33	11/17/22 06:04	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-042**

**Lab Sample ID: 320-93900-17**

**Date Collected: 10/26/22 12:31**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/08/22 05:33	11/17/22 06:14	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/08/22 05:33	11/17/22 06:14	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/08/22 05:33	11/17/22 06:14	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/08/22 05:33	11/17/22 06:14	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/08/22 05:33	11/17/22 06:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/08/22 05:33	11/17/22 06:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/08/22 05:33	11/17/22 06:14	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/08/22 05:33	11/17/22 06:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/08/22 05:33	11/17/22 06:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/08/22 05:33	11/17/22 06:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/08/22 05:33	11/17/22 06:14	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/08/22 05:33	11/17/22 06:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/08/22 05:33	11/17/22 06:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/08/22 05:33	11/17/22 06:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/08/22 05:33	11/17/22 06:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/08/22 05:33	11/17/22 06:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/08/22 05:33	11/17/22 06:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/08/22 05:33	11/17/22 06:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		50 - 150	11/08/22 05:33	11/17/22 06:14	1
13C4 PFHpA	104		50 - 150	11/08/22 05:33	11/17/22 06:14	1
13C4 PFOA	103		50 - 150	11/08/22 05:33	11/17/22 06:14	1
13C5 PFNA	103		50 - 150	11/08/22 05:33	11/17/22 06:14	1
13C2 PFDA	101		50 - 150	11/08/22 05:33	11/17/22 06:14	1
13C2 PFUnA	96		50 - 150	11/08/22 05:33	11/17/22 06:14	1
13C2 PFDoA	91		50 - 150	11/08/22 05:33	11/17/22 06:14	1
13C2 PFTeDA	86		50 - 150	11/08/22 05:33	11/17/22 06:14	1
13C3 PFBS	107		50 - 150	11/08/22 05:33	11/17/22 06:14	1
18O2 PFHxS	99		50 - 150	11/08/22 05:33	11/17/22 06:14	1
13C4 PFOS	97		50 - 150	11/08/22 05:33	11/17/22 06:14	1
d3-NMeFOSAA	68		50 - 150	11/08/22 05:33	11/17/22 06:14	1
d5-NEtFOSAA	72		50 - 150	11/08/22 05:33	11/17/22 06:14	1
13C3 HFPO-DA	109		50 - 150	11/08/22 05:33	11/17/22 06:14	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-041**

**Lab Sample ID: 320-93900-18**

**Date Collected: 10/26/22 13:13**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/08/22 05:33	11/17/22 06:24	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/08/22 05:33	11/17/22 06:24	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/08/22 05:33	11/17/22 06:24	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/08/22 05:33	11/17/22 06:24	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/08/22 05:33	11/17/22 06:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/08/22 05:33	11/17/22 06:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/08/22 05:33	11/17/22 06:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/08/22 05:33	11/17/22 06:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/08/22 05:33	11/17/22 06:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/08/22 05:33	11/17/22 06:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/08/22 05:33	11/17/22 06:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/08/22 05:33	11/17/22 06:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/08/22 05:33	11/17/22 06:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/08/22 05:33	11/17/22 06:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/08/22 05:33	11/17/22 06:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/08/22 05:33	11/17/22 06:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/08/22 05:33	11/17/22 06:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/08/22 05:33	11/17/22 06:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	11/08/22 05:33	11/17/22 06:24	1
13C4 PFHpA	104		50 - 150	11/08/22 05:33	11/17/22 06:24	1
13C4 PFOA	98		50 - 150	11/08/22 05:33	11/17/22 06:24	1
13C5 PFNA	106		50 - 150	11/08/22 05:33	11/17/22 06:24	1
13C2 PFDA	104		50 - 150	11/08/22 05:33	11/17/22 06:24	1
13C2 PFUnA	95		50 - 150	11/08/22 05:33	11/17/22 06:24	1
13C2 PFDoA	92		50 - 150	11/08/22 05:33	11/17/22 06:24	1
13C2 PFTeDA	88		50 - 150	11/08/22 05:33	11/17/22 06:24	1
13C3 PFBS	103		50 - 150	11/08/22 05:33	11/17/22 06:24	1
18O2 PFHxS	103		50 - 150	11/08/22 05:33	11/17/22 06:24	1
13C4 PFOS	100		50 - 150	11/08/22 05:33	11/17/22 06:24	1
d3-NMeFOSAA	70		50 - 150	11/08/22 05:33	11/17/22 06:24	1
d5-NEtFOSAA	75		50 - 150	11/08/22 05:33	11/17/22 06:24	1
13C3 HFPO-DA	113		50 - 150	11/08/22 05:33	11/17/22 06:24	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-087**

**Lab Sample ID: 320-93900-19**

**Date Collected: 10/26/22 09:30**

**Matrix: Water**

**Date Received: 11/02/22 13:11**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/08/22 05:33	11/17/22 06:34	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/08/22 05:33	11/17/22 06:34	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/08/22 05:33	11/17/22 06:34	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/08/22 05:33	11/17/22 06:34	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/08/22 05:33	11/17/22 06:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/08/22 05:33	11/17/22 06:34	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/08/22 05:33	11/17/22 06:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/08/22 05:33	11/17/22 06:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/08/22 05:33	11/17/22 06:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/08/22 05:33	11/17/22 06:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/08/22 05:33	11/17/22 06:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/08/22 05:33	11/17/22 06:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/08/22 05:33	11/17/22 06:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/08/22 05:33	11/17/22 06:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/08/22 05:33	11/17/22 06:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/08/22 05:33	11/17/22 06:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/08/22 05:33	11/17/22 06:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/08/22 05:33	11/17/22 06:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		50 - 150	11/08/22 05:33	11/17/22 06:34	1
13C4 PFHpA	102		50 - 150	11/08/22 05:33	11/17/22 06:34	1
13C4 PFOA	99		50 - 150	11/08/22 05:33	11/17/22 06:34	1
13C5 PFNA	102		50 - 150	11/08/22 05:33	11/17/22 06:34	1
13C2 PFDA	104		50 - 150	11/08/22 05:33	11/17/22 06:34	1
13C2 PFUnA	90		50 - 150	11/08/22 05:33	11/17/22 06:34	1
13C2 PFDoA	90		50 - 150	11/08/22 05:33	11/17/22 06:34	1
13C2 PFTeDA	81		50 - 150	11/08/22 05:33	11/17/22 06:34	1
13C3 PFBS	101		50 - 150	11/08/22 05:33	11/17/22 06:34	1
18O2 PFHxS	97		50 - 150	11/08/22 05:33	11/17/22 06:34	1
13C4 PFOS	95		50 - 150	11/08/22 05:33	11/17/22 06:34	1
d3-NMeFOSAA	71		50 - 150	11/08/22 05:33	11/17/22 06:34	1
d5-NEtFOSAA	72		50 - 150	11/08/22 05:33	11/17/22 06:34	1
13C3 HFPO-DA	108		50 - 150	11/08/22 05:33	11/17/22 06:34	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-93900-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-93900-1	PW-141	99	102	94	101	103	99	100	104
320-93900-2	PW-5141	99	103	101	103	102	103	98	107
320-93900-3	PW-144	107	108	104	108	105	105	106	116
320-93900-4	PW-049	102	101	100	108	106	105	104	109
320-93900-5	PW-146	99	101	101	108	107	113	110	116
320-93900-6	PW-092	100	101	101	102	102	104	101	109
320-93900-7	PW-112	102	101	99	103	104	107	108	106
320-93900-8	PW-100	104	101	102	108	102	103	102	94
320-93900-9	PW-001	102	97	98	94	97	95	97	100
320-93900-10	PW-064	101	102	99	90	95	94	88	90
320-93900-11	PW-117	102	97	99	90	98	89	89	87
320-93900-12	PW-075	90	89	89	99	93	89	89	84
320-93900-13	PW-103	97	103	101	101	98	94	96	92
320-93900-14	PW-109	97	99	100	97	96	92	99	94
320-93900-15	PW-5109	96	97	95	93	95	89	91	86
320-93900-16	PW-098	98	102	102	101	100	94	91	86
320-93900-17	PW-042	101	104	103	103	101	96	91	86
320-93900-18	PW-041	102	104	98	106	104	95	92	88
320-93900-19	PW-087	99	102	99	102	104	90	90	81
LCS 320-630215/2-A	Lab Control Sample	107	101	97	94	102	101	102	103
LCS 320-630785/2-A	Lab Control Sample	106	104	104	105	107	113	112	108
LCS 320-631058/2-A	Lab Control Sample	96	98	97	101	100	94	90	77
LCS 320-630215/3-A	Lab Control Sample Dup	103	102	102	92	101	104	102	102
LCS 320-630785/3-A	Lab Control Sample Dup	100	101	101	104	104	107	106	103
LCS 320-631058/3-A	Lab Control Sample Dup	99	99	95	98	99	93	97	85
MB 320-630215/1-A	Method Blank	101	100	103	97	103	96	97	103
MB 320-630785/1-A	Method Blank	104	101	104	106	105	107	105	109
MB 320-631058/1-A	Method Blank	99	102	102	104	102	97	97	84

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-93900-1	PW-141	103	98	94	90	96	96
320-93900-2	PW-5141	101	97	94	85	92	97
320-93900-3	PW-144	109	103	100	89	102	107
320-93900-4	PW-049	103	96	99	96	100	100
320-93900-5	PW-146	105	98	102	98	107	103
320-93900-6	PW-092	104	100	98	88	98	96
320-93900-7	PW-112	107	100	95	95	104	99
320-93900-8	PW-100	103	101	99	75	84	105
320-93900-9	PW-001	100	107	88	90	88	92
320-93900-10	PW-064	103	101	89	91	84	93
320-93900-11	PW-117	99	103	89	83	89	89
320-93900-12	PW-075	90	87	88	70	77	96
320-93900-13	PW-103	92	101	97	72	79	87
320-93900-14	PW-109	101	94	91	70	76	108
320-93900-15	PW-5109	101	94	89	69	71	105
320-93900-16	PW-098	103	97	96	74	74	104
320-93900-17	PW-042	107	99	97	68	72	109
320-93900-18	PW-041	103	103	100	70	75	113

Eurofins Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-93900-1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)**

**Matrix: Water**

**Prep Type: Total/NA**

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-93900-19	PW-087	101	97	95	71	72	108
LCS 320-630215/2-A	Lab Control Sample	102	102	94	96	97	97
LCS 320-630785/2-A	Lab Control Sample	107	100	101	94	100	102
LCS 320-631058/2-A	Lab Control Sample	104	96	94	73	75	111
LCSD 320-630215/3-A	Lab Control Sample Dup	104	98	92	101	91	95
LCSD 320-630785/3-A	Lab Control Sample Dup	102	98	100	87	96	96
LCSD 320-631058/3-A	Lab Control Sample Dup	104	95	96	71	77	111
MB 320-630215/1-A	Method Blank	104	102	96	97	98	89
MB 320-630785/1-A	Method Blank	111	101	101	100	100	103
MB 320-631058/1-A	Method Blank	105	99	97	73	76	113

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-630215/1-A**  
**Matrix: Water**  
**Analysis Batch: 630703**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 630215**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/04/22 05:12	11/07/22 09:49	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/04/22 05:12	11/07/22 09:49	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/04/22 05:12	11/07/22 09:49	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/04/22 05:12	11/07/22 09:49	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/04/22 05:12	11/07/22 09:49	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/04/22 05:12	11/07/22 09:49	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/04/22 05:12	11/07/22 09:49	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/04/22 05:12	11/07/22 09:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/04/22 05:12	11/07/22 09:49	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/04/22 05:12	11/07/22 09:49	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/04/22 05:12	11/07/22 09:49	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/04/22 05:12	11/07/22 09:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/04/22 05:12	11/07/22 09:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/04/22 05:12	11/07/22 09:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/04/22 05:12	11/07/22 09:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/04/22 05:12	11/07/22 09:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/04/22 05:12	11/07/22 09:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/04/22 05:12	11/07/22 09:49	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	101		50 - 150	11/04/22 05:12	11/07/22 09:49	1
13C4 PFHpA	100		50 - 150	11/04/22 05:12	11/07/22 09:49	1
13C4 PFOA	103		50 - 150	11/04/22 05:12	11/07/22 09:49	1
13C5 PFNA	97		50 - 150	11/04/22 05:12	11/07/22 09:49	1
13C2 PFDA	103		50 - 150	11/04/22 05:12	11/07/22 09:49	1
13C2 PFUnA	96		50 - 150	11/04/22 05:12	11/07/22 09:49	1
13C2 PFDoA	97		50 - 150	11/04/22 05:12	11/07/22 09:49	1
13C2 PFTeDA	103		50 - 150	11/04/22 05:12	11/07/22 09:49	1
13C3 PFBS	104		50 - 150	11/04/22 05:12	11/07/22 09:49	1
18O2 PFHxS	102		50 - 150	11/04/22 05:12	11/07/22 09:49	1
13C4 PFOS	96		50 - 150	11/04/22 05:12	11/07/22 09:49	1
d3-NMeFOSAA	97		50 - 150	11/04/22 05:12	11/07/22 09:49	1
d5-NEtFOSAA	98		50 - 150	11/04/22 05:12	11/07/22 09:49	1
13C3 HFPODA	89		50 - 150	11/04/22 05:12	11/07/22 09:49	1

**Lab Sample ID: LCS 320-630215/2-A**  
**Matrix: Water**  
**Analysis Batch: 630703**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 630215**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	42.3		ng/L		106	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.0		ng/L		105	71 - 133
Perfluorononanoic acid (PFNA)	40.0	44.5		ng/L		111	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-630215/2-A**  
**Matrix: Water**  
**Analysis Batch: 630703**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 630215**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	37.9		ng/L		95	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.4		ng/L		106	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	42.1		ng/L		105	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.6		ng/L		109	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.5		ng/L		99	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	33.6		ng/L		95	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.0		ng/L		99	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	37.4		ng/L		101	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.6		ng/L		101	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.0		ng/L		100	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.0		ng/L		104	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	35.6		ng/L		89	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	40.8		ng/L		108	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.6		ng/L		118	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	107		50 - 150
13C4 PFHpA	101		50 - 150
13C4 PFOA	97		50 - 150
13C5 PFNA	94		50 - 150
13C2 PFDA	102		50 - 150
13C2 PFUnA	101		50 - 150
13C2 PFDoA	102		50 - 150
13C2 PFTeDA	103		50 - 150
13C3 PFBS	102		50 - 150
18O2 PFHxS	102		50 - 150
13C4 PFOS	94		50 - 150
d3-NMeFOSAA	96		50 - 150
d5-NEtFOSAA	97		50 - 150
13C3 HFPODA	97		50 - 150

**Lab Sample ID: LCSD 320-630215/3-A**  
**Matrix: Water**  
**Analysis Batch: 630703**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 630215**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	39.6		ng/L		99	72 - 129	1 30
Perfluoroheptanoic acid (PFHpA)	40.0	40.2		ng/L		100	72 - 130	5 30
Perfluorooctanoic acid (PFOA)	40.0	41.0		ng/L		103	71 - 133	2 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-630215/3-A**  
**Matrix: Water**  
**Analysis Batch: 630703**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 630215**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	42.3		ng/L		106	69 - 130	5	30
Perfluorodecanoic acid (PFDA)	40.0	38.1		ng/L		95	71 - 129	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.6		ng/L		99	69 - 133	7	30
Perfluorododecanoic acid (PFDoA)	40.0	41.4		ng/L		104	72 - 134	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.5		ng/L		104	65 - 144	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.4		ng/L		99	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	35.5	33.3		ng/L		94	72 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.0		ng/L		96	68 - 131	3	30
Perfluorooctanesulfonic acid (PFOS)	37.2	36.7		ng/L		99	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	38.0		ng/L		95	65 - 136	7	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.7		ng/L		107	61 - 135	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.1		ng/L		105	77 - 137	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	35.4		ng/L		89	72 - 132	0	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	39.1		ng/L		104	76 - 136	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	46.0		ng/L		122	81 - 141	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	103		50 - 150
13C4 PFHpA	102		50 - 150
13C4 PFOA	102		50 - 150
13C5 PFNA	92		50 - 150
13C2 PFDA	101		50 - 150
13C2 PFUnA	104		50 - 150
13C2 PFDoA	102		50 - 150
13C2 PFTeDA	102		50 - 150
13C3 PFBS	104		50 - 150
18O2 PFHxS	98		50 - 150
13C4 PFOS	92		50 - 150
d3-NMeFOSAA	101		50 - 150
d5-NEtFOSAA	91		50 - 150
13C3 HFPODA	95		50 - 150

**Lab Sample ID: MB 320-630785/1-A**  
**Matrix: Water**  
**Analysis Batch: 635555**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 630785**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/07/22 05:49	11/28/22 12:41	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/07/22 05:49	11/28/22 12:41	1

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-630785/1-A**  
**Matrix: Water**  
**Analysis Batch: 635555**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 630785**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/07/22 05:49	11/28/22 12:41	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/07/22 05:49	11/28/22 12:41	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/07/22 05:49	11/28/22 12:41	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/07/22 05:49	11/28/22 12:41	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/07/22 05:49	11/28/22 12:41	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/07/22 05:49	11/28/22 12:41	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/07/22 05:49	11/28/22 12:41	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/07/22 05:49	11/28/22 12:41	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/07/22 05:49	11/28/22 12:41	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/07/22 05:49	11/28/22 12:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/07/22 05:49	11/28/22 12:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/07/22 05:49	11/28/22 12:41	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/07/22 05:49	11/28/22 12:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/07/22 05:49	11/28/22 12:41	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/07/22 05:49	11/28/22 12:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/07/22 05:49	11/28/22 12:41	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		50 - 150	11/07/22 05:49	11/28/22 12:41	1
13C4 PFHpA	101		50 - 150	11/07/22 05:49	11/28/22 12:41	1
13C4 PFOA	104		50 - 150	11/07/22 05:49	11/28/22 12:41	1
13C5 PFNA	106		50 - 150	11/07/22 05:49	11/28/22 12:41	1
13C2 PFDA	105		50 - 150	11/07/22 05:49	11/28/22 12:41	1
13C2 PFUnA	107		50 - 150	11/07/22 05:49	11/28/22 12:41	1
13C2 PFDoA	105		50 - 150	11/07/22 05:49	11/28/22 12:41	1
13C2 PFTeDA	109		50 - 150	11/07/22 05:49	11/28/22 12:41	1
13C3 PFBS	111		50 - 150	11/07/22 05:49	11/28/22 12:41	1
18O2 PFHxS	101		50 - 150	11/07/22 05:49	11/28/22 12:41	1
13C4 PFOS	101		50 - 150	11/07/22 05:49	11/28/22 12:41	1
d3-NMeFOSAA	100		50 - 150	11/07/22 05:49	11/28/22 12:41	1
d5-NEtFOSAA	100		50 - 150	11/07/22 05:49	11/28/22 12:41	1
13C3 HFPODA	103		50 - 150	11/07/22 05:49	11/28/22 12:41	1

**Lab Sample ID: LCS 320-630785/2-A**  
**Matrix: Water**  
**Analysis Batch: 635555**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 630785**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	38.8		ng/L		97	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	41.0		ng/L		102	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	43.0		ng/L		108	71 - 133
Perfluorononanoic acid (PFNA)	40.0	41.4		ng/L		104	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	41.1		ng/L		103	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	43.0		ng/L		107	69 - 133

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-630785/2-A**  
**Matrix: Water**  
**Analysis Batch: 635555**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 630785**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	40.0	41.5		ng/L		104	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.5		ng/L		109	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	42.2		ng/L		106	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	35.1		ng/L		99	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.8		ng/L		101	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	37.5		ng/L		101	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	46.5		ng/L		116	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.0		ng/L		95	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	42.4		ng/L		113	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.0		ng/L		103	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	44.3		ng/L		117	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.0		ng/L		106	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	106		50 - 150
13C4 PFHpA	104		50 - 150
13C4 PFOA	104		50 - 150
13C5 PFNA	105		50 - 150
13C2 PFDA	107		50 - 150
13C2 PFUnA	113		50 - 150
13C2 PFDoA	112		50 - 150
13C2 PFTeDA	108		50 - 150
13C3 PFBS	107		50 - 150
18O2 PFHxS	100		50 - 150
13C4 PFOS	101		50 - 150
d3-NMeFOSAA	94		50 - 150
d5-NEt FOSAA	100		50 - 150
13C3 HFPODA	102		50 - 150

**Lab Sample ID: LCSD 320-630785/3-A**  
**Matrix: Water**  
**Analysis Batch: 635555**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 630785**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.0		ng/L		100	72 - 129	3 30
Perfluoroheptanoic acid (PFHpA)	40.0	40.7		ng/L		102	72 - 130	1 30
Perfluorooctanoic acid (PFOA)	40.0	41.3		ng/L		103	71 - 133	4 30
Perfluorononanoic acid (PFNA)	40.0	41.1		ng/L		103	69 - 130	1 30
Perfluorodecanoic acid (PFDA)	40.0	41.8		ng/L		105	71 - 129	2 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-630785/3-A**  
**Matrix: Water**  
**Analysis Batch: 635555**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 630785**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	40.4		ng/L		101	69 - 133	6	30
Perfluorododecanoic acid (PFDoA)	40.0	42.0		ng/L		105	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	42.1		ng/L		105	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	42.1		ng/L		105	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	35.5	33.7		ng/L		95	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.1		ng/L		99	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)	37.2	37.7		ng/L		101	65 - 140	1	30
N-methylperfluorooctanesulfonamide	40.0	43.9		ng/L		110	65 - 136	6	30
doacetic acid (NMeFOSAA)									
N-ethylperfluorooctanesulfonamide	40.0	39.1		ng/L		98	61 - 135	3	30
doacetic acid (NEtFOSAA)									
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.5		ng/L		111	77 - 137	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.7		ng/L		102	72 - 132	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	40.0		ng/L		106	76 - 136	10	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	39.2		ng/L		104	81 - 141	2	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	100		50 - 150
13C4 PFHpA	101		50 - 150
13C4 PFOA	101		50 - 150
13C5 PFNA	104		50 - 150
13C2 PFDA	104		50 - 150
13C2 PFUnA	107		50 - 150
13C2 PFDoA	106		50 - 150
13C2 PFTeDA	103		50 - 150
13C3 PFBS	102		50 - 150
18O2 PFHxS	98		50 - 150
13C4 PFOS	100		50 - 150
d3-NMeFOSAA	87		50 - 150
d5-NEtFOSAA	96		50 - 150
13C3 HFPODA	96		50 - 150

**Lab Sample ID: MB 320-631058/1-A**  
**Matrix: Water**  
**Analysis Batch: 633612**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 631058**

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/08/22 04:39	11/17/22 05:03	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/08/22 04:39	11/17/22 05:03	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/08/22 04:39	11/17/22 05:03	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/08/22 04:39	11/17/22 05:03	1

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-631058/1-A**  
**Matrix: Water**  
**Analysis Batch: 633612**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 631058**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/08/22 04:39	11/17/22 05:03	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/08/22 04:39	11/17/22 05:03	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/08/22 04:39	11/17/22 05:03	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/08/22 04:39	11/17/22 05:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/08/22 04:39	11/17/22 05:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/08/22 04:39	11/17/22 05:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/08/22 04:39	11/17/22 05:03	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/08/22 04:39	11/17/22 05:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/08/22 04:39	11/17/22 05:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/08/22 04:39	11/17/22 05:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/08/22 04:39	11/17/22 05:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/08/22 04:39	11/17/22 05:03	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/08/22 04:39	11/17/22 05:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/08/22 04:39	11/17/22 05:03	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		50 - 150	11/08/22 04:39	11/17/22 05:03	1
13C4 PFHpA	102		50 - 150	11/08/22 04:39	11/17/22 05:03	1
13C4 PFOA	102		50 - 150	11/08/22 04:39	11/17/22 05:03	1
13C5 PFNA	104		50 - 150	11/08/22 04:39	11/17/22 05:03	1
13C2 PFDA	102		50 - 150	11/08/22 04:39	11/17/22 05:03	1
13C2 PFUnA	97		50 - 150	11/08/22 04:39	11/17/22 05:03	1
13C2 PFDoA	97		50 - 150	11/08/22 04:39	11/17/22 05:03	1
13C2 PFTeDA	84		50 - 150	11/08/22 04:39	11/17/22 05:03	1
13C3 PFBS	105		50 - 150	11/08/22 04:39	11/17/22 05:03	1
18O2 PFHxS	99		50 - 150	11/08/22 04:39	11/17/22 05:03	1
13C4 PFOS	97		50 - 150	11/08/22 04:39	11/17/22 05:03	1
d3-NMeFOSAA	73		50 - 150	11/08/22 04:39	11/17/22 05:03	1
d5-NEtFOSAA	76		50 - 150	11/08/22 04:39	11/17/22 05:03	1
13C3 HFPODA	113		50 - 150	11/08/22 04:39	11/17/22 05:03	1

**Lab Sample ID: LCS 320-631058/2-A**  
**Matrix: Water**  
**Analysis Batch: 633612**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 631058**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	43.1		ng/L		108	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	44.1		ng/L		110	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.4		ng/L		106	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.1		ng/L		105	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	40.2		ng/L		101	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	44.5		ng/L		111	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	43.2		ng/L		108	72 - 134

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-631058/2-A**  
**Matrix: Water**  
**Analysis Batch: 633612**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 631058**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorotridecanoic acid (PFTriA)	40.0	39.8		ng/L		100	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	45.8		ng/L		114	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	34.5		ng/L		97	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.5		ng/L		97	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	40.9		ng/L		110	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	45.1		ng/L		113	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.2		ng/L		110	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	42.6		ng/L		114	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.3		ng/L		103	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	39.4		ng/L		104	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.8		ng/L		111	81 - 141

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	96		50 - 150
13C4 PFHpA	98		50 - 150
13C4 PFOA	97		50 - 150
13C5 PFNA	101		50 - 150
13C2 PFDA	100		50 - 150
13C2 PFUnA	94		50 - 150
13C2 PFDoA	90		50 - 150
13C2 PFTeDA	77		50 - 150
13C3 PFBS	104		50 - 150
18O2 PFHxS	96		50 - 150
13C4 PFOS	94		50 - 150
d3-NMeFOSAA	73		50 - 150
d5-NEtFOSAA	75		50 - 150
13C3 HFPODA	111		50 - 150

**Lab Sample ID: LCSD 320-631058/3-A**  
**Matrix: Water**  
**Analysis Batch: 633612**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 631058**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	39.5		ng/L		99	72 - 129	9	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.7		ng/L		109	72 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	42.3		ng/L		106	71 - 133	0	30
Perfluorononanoic acid (PFNA)	40.0	42.7		ng/L		107	69 - 130	1	30
Perfluorodecanoic acid (PFDA)	40.0	41.5		ng/L		104	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	44.5		ng/L		111	69 - 133	0	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-631058/3-A**  
**Matrix: Water**  
**Analysis Batch: 633612**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 631058**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorododecanoic acid (PFDoA)	40.0	41.4		ng/L		104	72 - 134	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	37.6		ng/L		94	65 - 144	6	30
Perfluorotetradecanoic acid (PFTeA)	40.0	42.3		ng/L		106	71 - 132	8	30
Perfluorobutanesulfonic acid (PFBS)	35.5	33.2		ng/L		93	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.2		ng/L		99	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)	37.2	38.6		ng/L		104	65 - 140	6	30
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	40.0	43.2		ng/L		108	65 - 136	4	30
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	40.0	41.4		ng/L		103	61 - 135	7	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	40.8		ng/L		109	77 - 137	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.1		ng/L		98	72 - 132	5	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	39.8		ng/L		105	76 - 136	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.9		ng/L		108	81 - 141	2	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	99		50 - 150
13C4 PFHpA	99		50 - 150
13C4 PFOA	95		50 - 150
13C5 PFNA	98		50 - 150
13C2 PFDA	99		50 - 150
13C2 PFUnA	93		50 - 150
13C2 PFDoA	97		50 - 150
13C2 PFTeDA	85		50 - 150
13C3 PFBS	104		50 - 150
18O2 PFHxS	95		50 - 150
13C4 PFOS	96		50 - 150
d3-NMeFOSAA	71		50 - 150
d5-NEtFOSAA	77		50 - 150
13C3 HFPODA	111		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## LCMS

### Prep Batch: 630215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-93900-9	PW-001	Total/NA	Water	3535	
320-93900-10	PW-064	Total/NA	Water	3535	
320-93900-11	PW-117	Total/NA	Water	3535	
MB 320-630215/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-630215/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-630215/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 630703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-93900-9	PW-001	Total/NA	Water	EPA 537(Mod)	630215
320-93900-10	PW-064	Total/NA	Water	EPA 537(Mod)	630215
320-93900-11	PW-117	Total/NA	Water	EPA 537(Mod)	630215
MB 320-630215/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	630215
LCS 320-630215/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	630215
LCSD 320-630215/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	630215

### Prep Batch: 630785

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-93900-1	PW-141	Total/NA	Water	3535	
320-93900-2	PW-5141	Total/NA	Water	3535	
320-93900-3	PW-144	Total/NA	Water	3535	
320-93900-4	PW-049	Total/NA	Water	3535	
320-93900-5	PW-146	Total/NA	Water	3535	
320-93900-6	PW-092	Total/NA	Water	3535	
320-93900-7	PW-112	Total/NA	Water	3535	
320-93900-8	PW-100	Total/NA	Water	3535	
320-93900-12	PW-075	Total/NA	Water	3535	
320-93900-13	PW-103	Total/NA	Water	3535	
MB 320-630785/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-630785/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-630785/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Prep Batch: 631058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-93900-14	PW-109	Total/NA	Water	3535	
320-93900-15	PW-5109	Total/NA	Water	3535	
320-93900-16	PW-098	Total/NA	Water	3535	
320-93900-17	PW-042	Total/NA	Water	3535	
320-93900-18	PW-041	Total/NA	Water	3535	
320-93900-19	PW-087	Total/NA	Water	3535	
MB 320-631058/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-631058/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-631058/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 633612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-93900-14	PW-109	Total/NA	Water	EPA 537(Mod)	631058
320-93900-15	PW-5109	Total/NA	Water	EPA 537(Mod)	631058
320-93900-16	PW-098	Total/NA	Water	EPA 537(Mod)	631058
320-93900-17	PW-042	Total/NA	Water	EPA 537(Mod)	631058
320-93900-18	PW-041	Total/NA	Water	EPA 537(Mod)	631058

Eurofins Sacramento

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## LCMS (Continued)

### Analysis Batch: 633612 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-93900-19	PW-087	Total/NA	Water	EPA 537(Mod)	631058
MB 320-631058/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	631058
LCS 320-631058/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	631058
LCSD 320-631058/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	631058

### Analysis Batch: 634821

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-93900-8	PW-100	Total/NA	Water	EPA 537(Mod)	630785
320-93900-12	PW-075	Total/NA	Water	EPA 537(Mod)	630785
320-93900-13	PW-103	Total/NA	Water	EPA 537(Mod)	630785

### Analysis Batch: 635555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-93900-1	PW-141	Total/NA	Water	EPA 537(Mod)	630785
320-93900-2	PW-5141	Total/NA	Water	EPA 537(Mod)	630785
320-93900-3	PW-144	Total/NA	Water	EPA 537(Mod)	630785
320-93900-4	PW-049	Total/NA	Water	EPA 537(Mod)	630785
320-93900-5	PW-146	Total/NA	Water	EPA 537(Mod)	630785
320-93900-6	PW-092	Total/NA	Water	EPA 537(Mod)	630785
320-93900-7	PW-112	Total/NA	Water	EPA 537(Mod)	630785
MB 320-630785/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	630785
LCS 320-630785/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	630785
LCSD 320-630785/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	630785

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-141**

**Date Collected: 10/31/22 15:15**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.8 mL	10.0 mL	630785	11/07/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635555	11/28/22 13:11	D1R	EET SAC

**Client Sample ID: PW-5141**

**Date Collected: 10/31/22 15:45**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.7 mL	10.0 mL	630785	11/07/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635555	11/28/22 13:22	D1R	EET SAC

**Client Sample ID: PW-144**

**Date Collected: 10/31/22 12:01**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-3**

**Matrix: Water**

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	630785	11/07/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635555	11/28/22 13:32	D1R	EET SAC

**Client Sample ID: PW-049**

**Date Collected: 10/31/22 09:30**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.8 mL	10.0 mL	630785	11/07/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635555	11/28/22 13:42	D1R	EET SAC

**Client Sample ID: PW-146**

**Date Collected: 10/31/22 10:30**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-5**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.2 mL	10.0 mL	630785	11/07/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635555	11/28/22 13:52	D1R	EET SAC

**Client Sample ID: PW-092**

**Date Collected: 10/28/22 09:25**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-6**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.2 mL	10.0 mL	630785	11/07/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635555	11/28/22 14:02	D1R	EET SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-112**

**Date Collected: 10/28/22 10:23**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-7**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.1 mL	10.0 mL	630785	11/07/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635555	11/28/22 14:12	D1R	EET SAC

**Client Sample ID: PW-100**

**Date Collected: 10/26/22 13:40**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-8**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.2 mL	10.0 mL	630785	11/07/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	634821	11/22/22 15:52	K1S	EET SAC

**Client Sample ID: PW-001**

**Date Collected: 10/24/22 13:24**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-9**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.4 mL	10.0 mL	630215	11/04/22 05:12	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	630703	11/07/22 10:40	RS1	EET SAC

**Client Sample ID: PW-064**

**Date Collected: 10/24/22 10:45**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-10**

**Matrix: Water**

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 mL	10.0 mL	630215	11/04/22 05:12	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	630703	11/07/22 10:50	RS1	EET SAC

**Client Sample ID: PW-117**

**Date Collected: 10/24/22 14:06**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-11**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.6 mL	10.0 mL	630215	11/04/22 05:12	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	630703	11/07/22 11:00	RS1	EET SAC

**Client Sample ID: PW-075**

**Date Collected: 10/27/22 14:16**

**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-12**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.1 mL	10.0 mL	630785	11/07/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	634821	11/22/22 16:02	K1S	EET SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Client Sample ID: PW-103

Lab Sample ID: 320-93900-13

Date Collected: 10/27/22 15:19

Matrix: Water

Date Received: 11/02/22 13:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.9 mL	10.0 mL	630785	11/07/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	634821	11/22/22 16:12	K1S	EET SAC

## Client Sample ID: PW-109

Lab Sample ID: 320-93900-14

Date Collected: 10/27/22 13:33

Matrix: Water

Date Received: 11/02/22 13:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.7 mL	10.0 mL	631058	11/08/22 05:33	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	633612	11/17/22 05:43	K1S	EET SAC

## Client Sample ID: PW-5109

Lab Sample ID: 320-93900-15

Date Collected: 10/27/22 14:03

Matrix: Water

Date Received: 11/02/22 13:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.3 mL	10.0 mL	631058	11/08/22 05:33	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	633612	11/17/22 05:54	K1S	EET SAC

## Client Sample ID: PW-098

Lab Sample ID: 320-93900-16

Date Collected: 10/27/22 16:03

Matrix: Water

Date Received: 11/02/22 13:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.8 mL	10.0 mL	631058	11/08/22 05:33	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	633612	11/17/22 06:04	K1S	EET SAC

## Client Sample ID: PW-042

Lab Sample ID: 320-93900-17

Date Collected: 10/26/22 12:31

Matrix: Water

Date Received: 11/02/22 13:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.7 mL	10.0 mL	631058	11/08/22 05:33	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	633612	11/17/22 06:14	K1S	EET SAC

## Client Sample ID: PW-041

Lab Sample ID: 320-93900-18

Date Collected: 10/26/22 13:13

Matrix: Water

Date Received: 11/02/22 13:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.4 mL	10.0 mL	631058	11/08/22 05:33	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	633612	11/17/22 06:24	K1S	EET SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

**Client Sample ID: PW-087**  
**Date Collected: 10/26/22 09:30**  
**Date Received: 11/02/22 13:11**

**Lab Sample ID: 320-93900-19**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.2 mL	10.0 mL	631058	11/08/22 05:33	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	633612	11/17/22 06:34	K1S	EET SAC

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

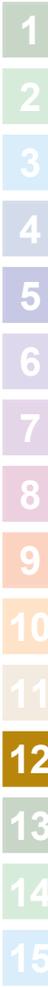
**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-93900-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-93900-1	PW-141	Water	10/31/22 15:15	11/02/22 13:11
320-93900-2	PW-5141	Water	10/31/22 15:45	11/02/22 13:11
320-93900-3	PW-144	Water	10/31/22 12:01	11/02/22 13:11
320-93900-4	PW-049	Water	10/31/22 09:30	11/02/22 13:11
320-93900-5	PW-146	Water	10/31/22 10:30	11/02/22 13:11
320-93900-6	PW-092	Water	10/28/22 09:25	11/02/22 13:11
320-93900-7	PW-112	Water	10/28/22 10:23	11/02/22 13:11
320-93900-8	PW-100	Water	10/26/22 13:40	11/02/22 13:11
320-93900-9	PW-001	Water	10/24/22 13:24	11/02/22 13:11
320-93900-10	PW-064	Water	10/24/22 10:45	11/02/22 13:11
320-93900-11	PW-117	Water	10/24/22 14:06	11/02/22 13:11
320-93900-12	PW-075	Water	10/27/22 14:16	11/02/22 13:11
320-93900-13	PW-103	Water	10/27/22 15:19	11/02/22 13:11
320-93900-14	PW-109	Water	10/27/22 13:33	11/02/22 13:11
320-93900-15	PW-5109	Water	10/27/22 14:03	11/02/22 13:11
320-93900-16	PW-098	Water	10/27/22 16:03	11/02/22 13:11
320-93900-17	PW-042	Water	10/26/22 12:31	11/02/22 13:11
320-93900-18	PW-041	Water	10/26/22 13:13	11/02/22 13:11
320-93900-19	PW-087	Water	10/26/22 09:30	11/02/22 13:11

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Address: David Alltucker  
880 Riverside Parkway  
West Sacramento, CA 95765

TAL-8210

Regulatory Program:  DW  NPDES  RCRA  Other:

Project Manager: <u>Jessa Tibbatts</u> Tell/Email: <u>907-433-8251</u>		Date: _____ of _____ Carrier: _____	
Project Name: <u>Shannon + Wilson</u> Address: <u>5430 Fairbanks St., Suite 3</u> City/State/Zip: <u>Anchorage, AK 99578</u> Phone: <u>907-561-2126</u> Fax: _____		Site Contact: _____ Lab Contact: _____ Filtered Sample (Y/N) _____ Perform MS / MSD (Y/N) _____	
Project Name: <u>AFA DFAS</u> Site: _____ P O # <u>106189</u>		Sampler: _____ For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____ Job / SDG No.: _____	
Sample Identification			
Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	# of Cont.
10/31/22	15:15	G	2
10/31/22	15:45	G	
10/31/22	12:01	G	
10/31/22	9:30	G	
10/31/22	10:30	G	
10/28/22	9:25	G	
10/28/22	10:23	G	
10/26/22	13:40	G	
10/24/22	13:24	G	
10/24/22	10:45	G	
10/24/22	14:06	G	
10/21/22	14:16	G	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other <u>None</u>			
Possible Hazard Identification: _____ Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.			
Special Instructions/QC Requirements & Comments: _____			
Custody Seal No.: <u>1722163/1722162</u>		Cooler Temp. (°C): <u>32</u>	
Company: <u>Shannon + Wilson</u>		Company: <u>DFTA</u>	
Relinquished by: <u>Zach T. Ost</u>		Date/Time: <u>11-2-22 13:11</u>	
Relinquished by: _____		Date/Time: _____	
Relinquished by: _____		Date/Time: _____	



# Chain of Custody Record

592249



Environment Testing  
TestAmerica

Address: David Allthacker  
880 Riverside Parkway  
West Sacramento, CA 95605

Regulatory Program:  DW  NPDES  RCRA  Other:

TAL-8210

<b>Client Contact</b> Company Name: <u>Shannon + Wilson</u> Address: <u>5430 Fairbanks St, Suite 3</u> City/State/Zip: <u>Anchorage, AK 99578</u> Phone: <u>907-561-2120</u> Fax: Project Name: <u>ATA PFAS</u> Site: P O # <u>106189</u>		<b>Site Contact:</b> Lab Contact: Date: _____ of _____ COCs Carrier: _____ Sampler: For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.: _____ Sample Specific Notes: _____			
<b>Project Manager:</b> <u>Jesse Tibbatts</u> Tell/Email: <u>907-433-3251</u> Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Filtered Sample (Y/N) _____ Perform MS / MSD (Y/N) _____ PFAS ONLY: <u>10-0-15</u>			
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.
<u>PW-103</u>	<u>10/27/22</u>	<u>15:19</u>	<u>G</u>	<u>H<sub>2</sub>O</u>	<u>2</u>
<u>PW-109</u>	<u>10/27/22</u>	<u>13:33</u>	<u>G</u>	<u>↓</u>	<u>↓</u>
<u>PW-5109</u>	<u>10/27/22</u>	<u>14:03</u>	<u>G</u>	<u>↓</u>	<u>↓</u>
<u>PW-098</u>	<u>10/27/22</u>	<u>16:03</u>	<u>G</u>	<u>↓</u>	<u>↓</u>
<u>PW-042</u>	<u>10/26/22</u>	<u>12:31</u>	<u>G</u>	<u>↓</u>	<u>↓</u>
<u>PW-041</u>	<u>10/26/22</u>	<u>13:13</u>	<u>G</u>	<u>↓</u>	<u>↓</u>
<u>PW-087</u>	<u>10/26/22</u>	<u>9:30</u>	<u>G</u>	<u>↓</u>	<u>↓</u>
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other <u>None</u> Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Poison B					
<b>Special Instructions/QC Requirements &amp; Comments:</b> Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Relinquished by: <u>Zawnt Ogt</u> Relinquished by: _____ Relinquished by: _____					
Custody Seal No.: <u>1322163/122262</u> Company: <u>Shannon + Wilson</u>		Cooler Temp. (°C): _____ Cor'd: <u>3.2</u> Company: <u>BETCA</u>		Therm ID No.: <u>K11</u> Date/Time: <u>11-2-22 1311</u>	
Received by: _____ Date/Time: _____		Received by: _____ Date/Time: _____		Received in Laboratory by: _____ Date/Time: _____	



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-93900-1

**Login Number: 93900**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Oropeza, Salvador**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1722163/1722162
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	GEL PACKS
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?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Kristen Freiburger	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Associate	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-93900-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	11/30/2022

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 3.2 °C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: The laboratory noted the samplers name was not present on the COC; however, our sampler's name was present and we do not consider the custody to be breached.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-630215.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-93900-1

- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-630785.
- Method 3535: The following samples in preparation batch 320-630215 were observed to have floating particulates present in the sample bottle. PW-001 (320-93900-9)
- Method 3535: The following samples in preparation batch 320-631058 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-109 (320-93900-14), PW-5109 (320-93900-15) and PW-087 (320-93900-19)
- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-631058.

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

- c. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

- b. Are all applicable holding times met?

Yes  No  N/A

Comments:

- c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

### a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

### b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-93900-1

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were not reported due to sample volume.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-93900-1

- v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: N/A; see above.
- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments: N/A; see above.
- vii. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability are not affected; see above.
- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only
- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?  
Yes  No  N/A   
Comments: IDAs were reported for the PFAS project samples.
- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)  
Yes  No  N/A   
Comments:
- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments:
- iv. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The data quality and usability were not affected.
- e. Trip Blanks
- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A   
Comments: A trip blank is not required for PFAS analysis.
- ii. Are all results less than LoQ or RL?  
Yes  No  N/A   
Comments: A trip blank was not submitted with this work order.

- iii. If above LoQ or RL, what samples are affected?  
Comments: N/A; a trip blank was not submitted with this work order.

- iv. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?  
Yes  No  N/A   
Comments: Field duplicate samples *PW-141/PW-5141* and *PW-109/PW-5109* were submitted with this work order.

- ii. Was the duplicate submitted blind to lab?  
Yes  No  N/A   
Comments:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)  
Yes  No  N/A   
Comments: Where calculable, RPDs were within the recommended 30%.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?  
Yes  No  N/A   
Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?  
Yes  No  N/A   
Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.  
Comments: N/A; an equipment blank was not submitted with this work order.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-93900-1

iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

a. Are they defined and appropriate?

Yes  No  N/A

Comments: Other data flags and qualifiers were not required.



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 12/16/2022 9:43:29 AM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-94181-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

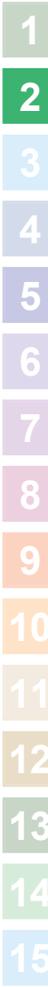
The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed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

## Authorization



Generated  
12/16/2022 9:43:29 AM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	19
QC Sample Results . . . . .	21
QC Association Summary . . . . .	40
Lab Chronicle . . . . .	42
Certification Summary . . . . .	44
Method Summary . . . . .	45
Sample Summary . . . . .	46
Chain of Custody . . . . .	47
Receipt Checklists . . . . .	48

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

---

## Job ID: 320-94181-1

---

### Laboratory: Eurofins Sacramento

#### Narrative

---

#### Job Narrative 320-94181-1

#### Receipt

The samples were received on 11/9/2022 2:56 PM. 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 0.4° C.

#### Receipt Exceptions

The container label for the following sample(s) did not match the information listed on the Chain-of-Custody (COC): Sample 2 time on container 10:25. Sample 3 time on container 11:02. Sample 6 time on container 1430. All labeled per COCPW-133 (320-94181-2), PW-093 (320-94181-3) and PW-129 (320-94181-6).

#### LCMS

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. PW-094 (320-94181-12)

Method EPA 537(Mod): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for several analytes of preparation batch 320-633301 and analytical batch 320-634154 were outside control limits. Sample matrix interference are suspected because the associated laboratory control sample and laboratory control sample duplicate (LCS/LCSD) recovery were within acceptance limits.

Method EPA 537(Mod): Due to the high concentration of several analytes, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-633301 and analytical batch 320-634154 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

Method EPA 537(Mod): The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 320-633301 and analytical batch 320-634313 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected.

Method EPA 537(Mod): Due to the high concentration of Perfluorooctanoic acid (PFOA), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-632195 and analytical batch 320-638034 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

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 320-633306.

Method 3535: The following samples in preparation batch 320-633306 were observed to have floating particulates present in the sample bottle. PW-145 (320-94181-1), PW-133 (320-94181-2) and PW-093 (320-94181-3)

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

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-145**

**Lab Sample ID: 320-94181-1**

No Detections.

**Client Sample ID: PW-133**

**Lab Sample ID: 320-94181-2**

No Detections.

**Client Sample ID: PW-093**

**Lab Sample ID: 320-94181-3**

No Detections.

**Client Sample ID: PW-143**

**Lab Sample ID: 320-94181-4**

No Detections.

**Client Sample ID: PW-099**

**Lab Sample ID: 320-94181-5**

No Detections.

**Client Sample ID: PW-129**

**Lab Sample ID: 320-94181-6**

No Detections.

**Client Sample ID: PW-071**

**Lab Sample ID: 320-94181-7**

No Detections.

**Client Sample ID: PW-124**

**Lab Sample ID: 320-94181-8**

No Detections.

**Client Sample ID: PW-056**

**Lab Sample ID: 320-94181-9**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	8.2		1.9	0.56	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.96	J	1.9	0.24	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA

**Client Sample ID: PW-031**

**Lab Sample ID: 320-94181-10**

No Detections.

**Client Sample ID: PW-147**

**Lab Sample ID: 320-94181-11**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.6	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.20	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

**Client Sample ID: PW-094**

**Lab Sample ID: 320-94181-12**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.37	J I	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-145**

**Lab Sample ID: 320-94181-1**

**Date Collected: 11/04/22 09:42**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/16/22 06:49	11/24/22 14:10	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/16/22 06:49	11/24/22 14:10	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/16/22 06:49	11/24/22 14:10	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/16/22 06:49	11/24/22 14:10	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/16/22 06:49	11/24/22 14:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/16/22 06:49	11/24/22 14:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/16/22 06:49	11/24/22 14:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/16/22 06:49	11/24/22 14:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/16/22 06:49	11/24/22 14:10	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/16/22 06:49	11/24/22 14:10	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/16/22 06:49	11/24/22 14:10	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/16/22 06:49	11/24/22 14:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/16/22 06:49	11/24/22 14:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/16/22 06:49	11/24/22 14:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/16/22 06:49	11/24/22 14:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/16/22 06:49	11/24/22 14:10	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/16/22 06:49	11/24/22 14:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/16/22 06:49	11/24/22 14:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	103		50 - 150	11/16/22 06:49	11/24/22 14:10	1
13C4 PFHpA	97		50 - 150	11/16/22 06:49	11/24/22 14:10	1
13C4 PFOA	96		50 - 150	11/16/22 06:49	11/24/22 14:10	1
13C5 PFNA	95		50 - 150	11/16/22 06:49	11/24/22 14:10	1
13C2 PFDA	95		50 - 150	11/16/22 06:49	11/24/22 14:10	1
13C2 PFUnA	92		50 - 150	11/16/22 06:49	11/24/22 14:10	1
13C2 PFDoA	88		50 - 150	11/16/22 06:49	11/24/22 14:10	1
13C2 PFTeDA	90		50 - 150	11/16/22 06:49	11/24/22 14:10	1
13C3 PFBS	102		50 - 150	11/16/22 06:49	11/24/22 14:10	1
18O2 PFHxS	98		50 - 150	11/16/22 06:49	11/24/22 14:10	1
13C4 PFOS	91		50 - 150	11/16/22 06:49	11/24/22 14:10	1
d3-NMeFOSAA	69		50 - 150	11/16/22 06:49	11/24/22 14:10	1
d5-NEtFOSAA	78		50 - 150	11/16/22 06:49	11/24/22 14:10	1
13C3 HFPO-DA	106		50 - 150	11/16/22 06:49	11/24/22 14:10	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-133**

**Lab Sample ID: 320-94181-2**

**Date Collected: 11/04/22 09:55**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/16/22 06:49	11/24/22 14:20	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/16/22 06:49	11/24/22 14:20	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/16/22 06:49	11/24/22 14:20	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/16/22 06:49	11/24/22 14:20	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/16/22 06:49	11/24/22 14:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/16/22 06:49	11/24/22 14:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		11/16/22 06:49	11/24/22 14:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/16/22 06:49	11/24/22 14:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/16/22 06:49	11/24/22 14:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/16/22 06:49	11/24/22 14:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/16/22 06:49	11/24/22 14:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/16/22 06:49	11/24/22 14:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/16/22 06:49	11/24/22 14:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/16/22 06:49	11/24/22 14:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/16/22 06:49	11/24/22 14:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/16/22 06:49	11/24/22 14:20	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/16/22 06:49	11/24/22 14:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/16/22 06:49	11/24/22 14:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	11/16/22 06:49	11/24/22 14:20	1
13C4 PFHpA	97		50 - 150	11/16/22 06:49	11/24/22 14:20	1
13C4 PFOA	98		50 - 150	11/16/22 06:49	11/24/22 14:20	1
13C5 PFNA	94		50 - 150	11/16/22 06:49	11/24/22 14:20	1
13C2 PFDA	95		50 - 150	11/16/22 06:49	11/24/22 14:20	1
13C2 PFUnA	96		50 - 150	11/16/22 06:49	11/24/22 14:20	1
13C2 PFDoA	88		50 - 150	11/16/22 06:49	11/24/22 14:20	1
13C2 PFTeDA	95		50 - 150	11/16/22 06:49	11/24/22 14:20	1
13C3 PFBS	102		50 - 150	11/16/22 06:49	11/24/22 14:20	1
18O2 PFHxS	95		50 - 150	11/16/22 06:49	11/24/22 14:20	1
13C4 PFOS	93		50 - 150	11/16/22 06:49	11/24/22 14:20	1
d3-NMeFOSAA	72		50 - 150	11/16/22 06:49	11/24/22 14:20	1
d5-NEtFOSAA	80		50 - 150	11/16/22 06:49	11/24/22 14:20	1
13C3 HFPO-DA	110		50 - 150	11/16/22 06:49	11/24/22 14:20	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-093**

**Lab Sample ID: 320-94181-3**

**Date Collected: 11/04/22 10:30**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/16/22 06:49	11/24/22 14:51	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/16/22 06:49	11/24/22 14:51	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/16/22 06:49	11/24/22 14:51	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/16/22 06:49	11/24/22 14:51	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		11/16/22 06:49	11/24/22 14:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/16/22 06:49	11/24/22 14:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		11/16/22 06:49	11/24/22 14:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/16/22 06:49	11/24/22 14:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/16/22 06:49	11/24/22 14:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/16/22 06:49	11/24/22 14:51	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		11/16/22 06:49	11/24/22 14:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/16/22 06:49	11/24/22 14:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/16/22 06:49	11/24/22 14:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/16/22 06:49	11/24/22 14:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/16/22 06:49	11/24/22 14:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/16/22 06:49	11/24/22 14:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/16/22 06:49	11/24/22 14:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/16/22 06:49	11/24/22 14:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	105		50 - 150	11/16/22 06:49	11/24/22 14:51	1
13C4 PFHpA	98		50 - 150	11/16/22 06:49	11/24/22 14:51	1
13C4 PFOA	98		50 - 150	11/16/22 06:49	11/24/22 14:51	1
13C5 PFNA	100		50 - 150	11/16/22 06:49	11/24/22 14:51	1
13C2 PFDA	95		50 - 150	11/16/22 06:49	11/24/22 14:51	1
13C2 PFUnA	97		50 - 150	11/16/22 06:49	11/24/22 14:51	1
13C2 PFDoA	90		50 - 150	11/16/22 06:49	11/24/22 14:51	1
13C2 PFTeDA	96		50 - 150	11/16/22 06:49	11/24/22 14:51	1
13C3 PFBS	99		50 - 150	11/16/22 06:49	11/24/22 14:51	1
18O2 PFHxS	98		50 - 150	11/16/22 06:49	11/24/22 14:51	1
13C4 PFOS	93		50 - 150	11/16/22 06:49	11/24/22 14:51	1
d3-NMeFOSAA	74		50 - 150	11/16/22 06:49	11/24/22 14:51	1
d5-NEtFOSAA	82		50 - 150	11/16/22 06:49	11/24/22 14:51	1
13C3 HFPO-DA	108		50 - 150	11/16/22 06:49	11/24/22 14:51	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-143**

**Lab Sample ID: 320-94181-4**

**Date Collected: 11/01/22 14:15**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/11/22 05:23	12/06/22 01:41	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/11/22 05:23	12/06/22 01:41	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/11/22 05:23	12/06/22 01:41	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/11/22 05:23	12/06/22 01:41	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/11/22 05:23	12/06/22 01:41	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/11/22 05:23	12/06/22 01:41	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/11/22 05:23	12/06/22 01:41	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/11/22 05:23	12/06/22 01:41	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/11/22 05:23	12/06/22 01:41	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/11/22 05:23	12/06/22 01:41	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/11/22 05:23	12/06/22 01:41	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/11/22 05:23	12/06/22 01:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/11/22 05:23	12/06/22 01:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/11/22 05:23	12/06/22 01:41	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/11/22 05:23	12/06/22 01:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/11/22 05:23	12/06/22 01:41	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/11/22 05:23	12/06/22 01:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/11/22 05:23	12/06/22 01:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		50 - 150	11/11/22 05:23	12/06/22 01:41	1
13C4 PFHpA	97		50 - 150	11/11/22 05:23	12/06/22 01:41	1
13C4 PFOA	97		50 - 150	11/11/22 05:23	12/06/22 01:41	1
13C5 PFNA	93		50 - 150	11/11/22 05:23	12/06/22 01:41	1
13C2 PFDA	99		50 - 150	11/11/22 05:23	12/06/22 01:41	1
13C2 PFUnA	98		50 - 150	11/11/22 05:23	12/06/22 01:41	1
13C2 PFDoA	90		50 - 150	11/11/22 05:23	12/06/22 01:41	1
13C2 PFTeDA	98		50 - 150	11/11/22 05:23	12/06/22 01:41	1
13C3 PFBS	102		50 - 150	11/11/22 05:23	12/06/22 01:41	1
18O2 PFHxS	99		50 - 150	11/11/22 05:23	12/06/22 01:41	1
13C4 PFOS	99		50 - 150	11/11/22 05:23	12/06/22 01:41	1
d3-NMeFOSAA	89		50 - 150	11/11/22 05:23	12/06/22 01:41	1
d5-NEtFOSAA	99		50 - 150	11/11/22 05:23	12/06/22 01:41	1
13C3 HFPO-DA	92		50 - 150	11/11/22 05:23	12/06/22 01:41	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-099**

**Lab Sample ID: 320-94181-5**

**Date Collected: 11/04/22 13:15**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/16/22 06:49	11/24/22 15:01	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/16/22 06:49	11/24/22 15:01	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/16/22 06:49	11/24/22 15:01	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/16/22 06:49	11/24/22 15:01	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/16/22 06:49	11/24/22 15:01	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/16/22 06:49	11/24/22 15:01	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/16/22 06:49	11/24/22 15:01	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/16/22 06:49	11/24/22 15:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/16/22 06:49	11/24/22 15:01	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/16/22 06:49	11/24/22 15:01	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/16/22 06:49	11/24/22 15:01	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/16/22 06:49	11/24/22 15:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/16/22 06:49	11/24/22 15:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/16/22 06:49	11/24/22 15:01	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/16/22 06:49	11/24/22 15:01	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/16/22 06:49	11/24/22 15:01	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/16/22 06:49	11/24/22 15:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/16/22 06:49	11/24/22 15:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	106		50 - 150	11/16/22 06:49	11/24/22 15:01	1
13C4 PFHpA	101		50 - 150	11/16/22 06:49	11/24/22 15:01	1
13C4 PFOA	98		50 - 150	11/16/22 06:49	11/24/22 15:01	1
13C5 PFNA	95		50 - 150	11/16/22 06:49	11/24/22 15:01	1
13C2 PFDA	94		50 - 150	11/16/22 06:49	11/24/22 15:01	1
13C2 PFUnA	97		50 - 150	11/16/22 06:49	11/24/22 15:01	1
13C2 PFDoA	93		50 - 150	11/16/22 06:49	11/24/22 15:01	1
13C2 PFTeDA	95		50 - 150	11/16/22 06:49	11/24/22 15:01	1
13C3 PFBS	99		50 - 150	11/16/22 06:49	11/24/22 15:01	1
18O2 PFHxS	97		50 - 150	11/16/22 06:49	11/24/22 15:01	1
13C4 PFOS	92		50 - 150	11/16/22 06:49	11/24/22 15:01	1
d3-NMeFOSAA	73		50 - 150	11/16/22 06:49	11/24/22 15:01	1
d5-NEtFOSAA	83		50 - 150	11/16/22 06:49	11/24/22 15:01	1
13C3 HFPO-DA	104		50 - 150	11/16/22 06:49	11/24/22 15:01	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-129**

**Lab Sample ID: 320-94181-6**

**Date Collected: 11/04/22 14:00**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/16/22 06:49	11/24/22 15:11	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/16/22 06:49	11/24/22 15:11	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/16/22 06:49	11/24/22 15:11	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/16/22 06:49	11/24/22 15:11	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/16/22 06:49	11/24/22 15:11	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/16/22 06:49	11/24/22 15:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/16/22 06:49	11/24/22 15:11	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/16/22 06:49	11/24/22 15:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/16/22 06:49	11/24/22 15:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/16/22 06:49	11/24/22 15:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/16/22 06:49	11/24/22 15:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/16/22 06:49	11/24/22 15:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/16/22 06:49	11/24/22 15:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/16/22 06:49	11/24/22 15:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/16/22 06:49	11/24/22 15:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/16/22 06:49	11/24/22 15:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/16/22 06:49	11/24/22 15:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/16/22 06:49	11/24/22 15:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		50 - 150	11/16/22 06:49	11/24/22 15:11	1
13C4 PFHpA	99		50 - 150	11/16/22 06:49	11/24/22 15:11	1
13C4 PFOA	101		50 - 150	11/16/22 06:49	11/24/22 15:11	1
13C5 PFNA	99		50 - 150	11/16/22 06:49	11/24/22 15:11	1
13C2 PFDA	99		50 - 150	11/16/22 06:49	11/24/22 15:11	1
13C2 PFUnA	95		50 - 150	11/16/22 06:49	11/24/22 15:11	1
13C2 PFDoA	90		50 - 150	11/16/22 06:49	11/24/22 15:11	1
13C2 PFTeDA	99		50 - 150	11/16/22 06:49	11/24/22 15:11	1
13C3 PFBS	99		50 - 150	11/16/22 06:49	11/24/22 15:11	1
18O2 PFHxS	98		50 - 150	11/16/22 06:49	11/24/22 15:11	1
13C4 PFOS	94		50 - 150	11/16/22 06:49	11/24/22 15:11	1
d3-NMeFOSAA	73		50 - 150	11/16/22 06:49	11/24/22 15:11	1
d5-NEtFOSAA	78		50 - 150	11/16/22 06:49	11/24/22 15:11	1
13C3 HFPO-DA	107		50 - 150	11/16/22 06:49	11/24/22 15:11	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-071**

**Lab Sample ID: 320-94181-7**

**Date Collected: 11/04/22 16:38**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/16/22 06:49	11/24/22 15:21	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/16/22 06:49	11/24/22 15:21	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/16/22 06:49	11/24/22 15:21	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/16/22 06:49	11/24/22 15:21	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/16/22 06:49	11/24/22 15:21	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/16/22 06:49	11/24/22 15:21	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/16/22 06:49	11/24/22 15:21	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/16/22 06:49	11/24/22 15:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/16/22 06:49	11/24/22 15:21	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/16/22 06:49	11/24/22 15:21	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/16/22 06:49	11/24/22 15:21	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/16/22 06:49	11/24/22 15:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/16/22 06:49	11/24/22 15:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/16/22 06:49	11/24/22 15:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/16/22 06:49	11/24/22 15:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/16/22 06:49	11/24/22 15:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/16/22 06:49	11/24/22 15:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/16/22 06:49	11/24/22 15:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	106		50 - 150	11/16/22 06:49	11/24/22 15:21	1
13C4 PFHpA	101		50 - 150	11/16/22 06:49	11/24/22 15:21	1
13C4 PFOA	98		50 - 150	11/16/22 06:49	11/24/22 15:21	1
13C5 PFNA	99		50 - 150	11/16/22 06:49	11/24/22 15:21	1
13C2 PFDA	100		50 - 150	11/16/22 06:49	11/24/22 15:21	1
13C2 PFUnA	101		50 - 150	11/16/22 06:49	11/24/22 15:21	1
13C2 PFDoA	89		50 - 150	11/16/22 06:49	11/24/22 15:21	1
13C2 PFTeDA	84		50 - 150	11/16/22 06:49	11/24/22 15:21	1
13C3 PFBS	104		50 - 150	11/16/22 06:49	11/24/22 15:21	1
18O2 PFHxS	98		50 - 150	11/16/22 06:49	11/24/22 15:21	1
13C4 PFOS	93		50 - 150	11/16/22 06:49	11/24/22 15:21	1
d3-NMeFOSAA	71		50 - 150	11/16/22 06:49	11/24/22 15:21	1
d5-NEtFOSAA	79		50 - 150	11/16/22 06:49	11/24/22 15:21	1
13C3 HFPO-DA	108		50 - 150	11/16/22 06:49	11/24/22 15:21	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-124**

**Lab Sample ID: 320-94181-8**

**Date Collected: 11/04/22 15:40**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		11/16/22 06:49	11/24/22 15:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/16/22 06:49	11/24/22 15:32	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		11/16/22 06:49	11/24/22 15:32	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/16/22 06:49	11/24/22 15:32	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/16/22 06:49	11/24/22 15:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/16/22 06:49	11/24/22 15:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		11/16/22 06:49	11/24/22 15:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/16/22 06:49	11/24/22 15:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		11/16/22 06:49	11/24/22 15:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/16/22 06:49	11/24/22 15:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		11/16/22 06:49	11/24/22 15:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		11/16/22 06:49	11/24/22 15:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		11/16/22 06:49	11/24/22 15:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		11/16/22 06:49	11/24/22 15:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/16/22 06:49	11/24/22 15:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/16/22 06:49	11/24/22 15:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/16/22 06:49	11/24/22 15:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/16/22 06:49	11/24/22 15:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	106		50 - 150	11/16/22 06:49	11/24/22 15:32	1
13C4 PFHpA	103		50 - 150	11/16/22 06:49	11/24/22 15:32	1
13C4 PFOA	98		50 - 150	11/16/22 06:49	11/24/22 15:32	1
13C5 PFNA	98		50 - 150	11/16/22 06:49	11/24/22 15:32	1
13C2 PFDA	99		50 - 150	11/16/22 06:49	11/24/22 15:32	1
13C2 PFUnA	101		50 - 150	11/16/22 06:49	11/24/22 15:32	1
13C2 PFDoA	96		50 - 150	11/16/22 06:49	11/24/22 15:32	1
13C2 PFTeDA	95		50 - 150	11/16/22 06:49	11/24/22 15:32	1
13C3 PFBS	109		50 - 150	11/16/22 06:49	11/24/22 15:32	1
18O2 PFHxS	102		50 - 150	11/16/22 06:49	11/24/22 15:32	1
13C4 PFOS	98		50 - 150	11/16/22 06:49	11/24/22 15:32	1
d3-NMeFOSAA	78		50 - 150	11/16/22 06:49	11/24/22 15:32	1
d5-NEtFOSAA	79		50 - 150	11/16/22 06:49	11/24/22 15:32	1
13C3 HFPO-DA	110		50 - 150	11/16/22 06:49	11/24/22 15:32	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-056**

**Lab Sample ID: 320-94181-9**

**Date Collected: 11/07/22 11:21**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	8.2		1.9	0.56	ng/L		11/16/22 05:49	11/19/22 03:24	1
Perfluoroheptanoic acid (PFHpA)	0.96	J	1.9	0.24	ng/L		11/16/22 05:49	11/19/22 03:24	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		11/16/22 05:49	11/19/22 03:24	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/16/22 05:49	11/19/22 03:24	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/16/22 05:49	11/19/22 03:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/16/22 05:49	11/19/22 03:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/16/22 05:49	11/19/22 03:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/16/22 05:49	11/19/22 03:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		11/16/22 05:49	11/19/22 03:24	1
Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.9	0.19	ng/L		11/16/22 05:49	11/19/22 03:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		11/16/22 05:49	11/19/22 03:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		11/16/22 05:49	11/19/22 03:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		11/16/22 05:49	11/19/22 03:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		11/16/22 05:49	11/19/22 03:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/16/22 05:49	11/19/22 03:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		11/16/22 05:49	11/19/22 03:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/16/22 05:49	11/19/22 03:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		11/16/22 05:49	11/19/22 03:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	11/16/22 05:49	11/19/22 03:24	1
13C4 PFHpA	97		50 - 150	11/16/22 05:49	11/19/22 03:24	1
13C4 PFOA	96		50 - 150	11/16/22 05:49	11/19/22 03:24	1
13C5 PFNA	96		50 - 150	11/16/22 05:49	11/19/22 03:24	1
13C2 PFDA	94		50 - 150	11/16/22 05:49	11/19/22 03:24	1
13C2 PFUnA	90		50 - 150	11/16/22 05:49	11/19/22 03:24	1
13C2 PFDoA	86		50 - 150	11/16/22 05:49	11/19/22 03:24	1
13C2 PFTeDA	88		50 - 150	11/16/22 05:49	11/19/22 03:24	1
13C3 PFBS	99		50 - 150	11/16/22 05:49	11/19/22 03:24	1
18O2 PFHxS	93		50 - 150	11/16/22 05:49	11/19/22 03:24	1
13C4 PFOS	87		50 - 150	11/16/22 05:49	11/19/22 03:24	1
d3-NMeFOSAA	82		50 - 150	11/16/22 05:49	11/19/22 03:24	1
d5-NEtFOSAA	89		50 - 150	11/16/22 05:49	11/19/22 03:24	1
13C3 HFPO-DA	97		50 - 150	11/16/22 05:49	11/19/22 03:24	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-031**

**Lab Sample ID: 320-94181-10**

**Date Collected: 11/07/22 13:27**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/16/22 05:49	11/19/22 03:34	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/16/22 05:49	11/19/22 03:34	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/16/22 05:49	11/19/22 03:34	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/16/22 05:49	11/19/22 03:34	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/16/22 05:49	11/19/22 03:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/16/22 05:49	11/19/22 03:34	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/16/22 05:49	11/19/22 03:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/16/22 05:49	11/19/22 03:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/16/22 05:49	11/19/22 03:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/16/22 05:49	11/19/22 03:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/16/22 05:49	11/19/22 03:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/16/22 05:49	11/19/22 03:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/16/22 05:49	11/19/22 03:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/16/22 05:49	11/19/22 03:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/16/22 05:49	11/19/22 03:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/16/22 05:49	11/19/22 03:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/16/22 05:49	11/19/22 03:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/16/22 05:49	11/19/22 03:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		50 - 150	11/16/22 05:49	11/19/22 03:34	1
13C4 PFHpA	97		50 - 150	11/16/22 05:49	11/19/22 03:34	1
13C4 PFOA	95		50 - 150	11/16/22 05:49	11/19/22 03:34	1
13C5 PFNA	103		50 - 150	11/16/22 05:49	11/19/22 03:34	1
13C2 PFDA	101		50 - 150	11/16/22 05:49	11/19/22 03:34	1
13C2 PFUnA	91		50 - 150	11/16/22 05:49	11/19/22 03:34	1
13C2 PFDoA	88		50 - 150	11/16/22 05:49	11/19/22 03:34	1
13C2 PFTeDA	86		50 - 150	11/16/22 05:49	11/19/22 03:34	1
13C3 PFBS	97		50 - 150	11/16/22 05:49	11/19/22 03:34	1
18O2 PFHxS	92		50 - 150	11/16/22 05:49	11/19/22 03:34	1
13C4 PFOS	94		50 - 150	11/16/22 05:49	11/19/22 03:34	1
d3-NMeFOSAA	86		50 - 150	11/16/22 05:49	11/19/22 03:34	1
d5-NEtFOSAA	88		50 - 150	11/16/22 05:49	11/19/22 03:34	1
13C3 HFPO-DA	100		50 - 150	11/16/22 05:49	11/19/22 03:34	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-147**

**Lab Sample ID: 320-94181-11**

**Date Collected: 11/07/22 10:23**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>1.6</b>	<b>J</b>	1.8	0.52	ng/L		11/16/22 05:49	11/19/22 03:44	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/16/22 05:49	11/19/22 03:44	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/16/22 05:49	11/19/22 03:44	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/16/22 05:49	11/19/22 03:44	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/16/22 05:49	11/19/22 03:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/16/22 05:49	11/19/22 03:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/16/22 05:49	11/19/22 03:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/16/22 05:49	11/19/22 03:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/16/22 05:49	11/19/22 03:44	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.20</b>	<b>J</b>	1.8	0.18	ng/L		11/16/22 05:49	11/19/22 03:44	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/16/22 05:49	11/19/22 03:44	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/16/22 05:49	11/19/22 03:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/16/22 05:49	11/19/22 03:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/16/22 05:49	11/19/22 03:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/16/22 05:49	11/19/22 03:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/16/22 05:49	11/19/22 03:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/16/22 05:49	11/19/22 03:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/16/22 05:49	11/19/22 03:44	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	11/16/22 05:49	11/19/22 03:44	1
13C4 PFHpA	92		50 - 150	11/16/22 05:49	11/19/22 03:44	1
13C4 PFOA	92		50 - 150	11/16/22 05:49	11/19/22 03:44	1
13C5 PFNA	96		50 - 150	11/16/22 05:49	11/19/22 03:44	1
13C2 PFDA	97		50 - 150	11/16/22 05:49	11/19/22 03:44	1
13C2 PFUnA	95		50 - 150	11/16/22 05:49	11/19/22 03:44	1
13C2 PFDoA	99		50 - 150	11/16/22 05:49	11/19/22 03:44	1
13C2 PFTeDA	100		50 - 150	11/16/22 05:49	11/19/22 03:44	1
13C3 PFBS	95		50 - 150	11/16/22 05:49	11/19/22 03:44	1
18O2 PFHxS	88		50 - 150	11/16/22 05:49	11/19/22 03:44	1
13C4 PFOS	87		50 - 150	11/16/22 05:49	11/19/22 03:44	1
d3-NMeFOSAA	91		50 - 150	11/16/22 05:49	11/19/22 03:44	1
d5-NEtFOSAA	93		50 - 150	11/16/22 05:49	11/19/22 03:44	1
13C3 HFPO-DA	96		50 - 150	11/16/22 05:49	11/19/22 03:44	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-094**

**Lab Sample ID: 320-94181-12**

**Date Collected: 11/08/22 10:00**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/21/22 06:17	12/04/22 10:16	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/21/22 06:17	12/04/22 10:16	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/21/22 06:17	12/04/22 10:16	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/21/22 06:17	12/04/22 10:16	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/21/22 06:17	12/04/22 10:16	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/21/22 06:17	12/04/22 10:16	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/21/22 06:17	12/04/22 10:16	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/21/22 06:17	12/04/22 10:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/21/22 06:17	12/04/22 10:16	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.37</b>	<b>J I</b>	1.8	0.18	ng/L		11/21/22 06:17	12/04/22 10:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/21/22 06:17	12/04/22 10:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/21/22 06:17	12/04/22 10:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/21/22 06:17	12/04/22 10:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/21/22 06:17	12/04/22 10:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/21/22 06:17	12/04/22 10:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/21/22 06:17	12/04/22 10:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/21/22 06:17	12/04/22 10:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/21/22 06:17	12/04/22 10:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		50 - 150	11/21/22 06:17	12/04/22 10:16	1
13C4 PFHpA	96		50 - 150	11/21/22 06:17	12/04/22 10:16	1
13C4 PFOA	91		50 - 150	11/21/22 06:17	12/04/22 10:16	1
13C5 PFNA	100		50 - 150	11/21/22 06:17	12/04/22 10:16	1
13C2 PFDA	96		50 - 150	11/21/22 06:17	12/04/22 10:16	1
13C2 PFUnA	96		50 - 150	11/21/22 06:17	12/04/22 10:16	1
13C2 PFDoA	87		50 - 150	11/21/22 06:17	12/04/22 10:16	1
13C2 PFTeDA	84		50 - 150	11/21/22 06:17	12/04/22 10:16	1
13C3 PFBS	90		50 - 150	11/21/22 06:17	12/04/22 10:16	1
18O2 PFHxS	89		50 - 150	11/21/22 06:17	12/04/22 10:16	1
13C4 PFOS	93		50 - 150	11/21/22 06:17	12/04/22 10:16	1
d3-NMeFOSAA	81		50 - 150	11/21/22 06:17	12/04/22 10:16	1
d5-NEtFOSAA	81		50 - 150	11/21/22 06:17	12/04/22 10:16	1
13C3 HFPO-DA	82		50 - 150	11/21/22 06:17	12/04/22 10:16	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-93962-A-1-B MS	Matrix Spike		94	100	103	104	106	94	99
320-93962-A-1-B MS - DL	Matrix Spike	83							
320-93962-A-1-C MSD	Matrix Spike Duplicate	78	96	100	110	108	108	101	108
320-93962-A-1-C MSD - DL	Matrix Spike Duplicate	87							
320-94122-A-1-B MS	Matrix Spike	81	91	94	95	99	97	90	77
320-94122-A-1-B MS - DL	Matrix Spike								
320-94122-A-1-C MSD	Matrix Spike Duplicate	76	93	92	91	100	93	90	78
320-94122-A-1-C MSD - DL	Matrix Spike Duplicate								
320-94181-1	PW-145	103	97	96	95	95	92	88	90
320-94181-2	PW-133	102	97	98	94	95	96	88	95
320-94181-3	PW-093	105	98	98	100	95	97	90	96
320-94181-4	PW-143	100	97	97	93	99	98	90	98
320-94181-5	PW-099	106	101	98	95	94	97	93	95
320-94181-6	PW-129	101	99	101	99	99	95	90	99
320-94181-7	PW-071	106	101	98	99	100	101	89	84
320-94181-8	PW-124	106	103	98	98	99	101	96	95
320-94181-9	PW-056	94	97	96	96	94	90	86	88
320-94181-10	PW-031	98	97	95	103	101	91	88	86
320-94181-11	PW-147	95	92	92	96	97	95	99	100
320-94181-12	PW-094	91	96	91	100	96	96	87	84
320-94423-A-4-B MS	Matrix Spike	86	89	95	83	79	83	71	77
320-94423-A-4-C MSD	Matrix Spike Duplicate	91	92	92	98	91	82	77	80
LCS 320-632195/2-A	Lab Control Sample	96	96	95	98	99	98	94	92
LCS 320-633301/2-A	Lab Control Sample	98	93	90	98	100	92	94	90
LCS 320-633306/2-A	Lab Control Sample	107	99	97	100	97	92	89	88
LCS 320-634416/2-A	Lab Control Sample	96	95	96	105	85	98	92	87
LCSD 320-632195/3-A	Lab Control Sample Dup	96	91	93	97	98	97	92	96
LCSD 320-633301/3-A	Lab Control Sample Dup	99	94	93	100	102	101	97	94
LCSD 320-633306/3-A	Lab Control Sample Dup	105	97	96	95	93	94	89	91
LCSD 320-634416/3-A	Lab Control Sample Dup	93	93	93	101	100	97	95	89
MB 320-632195/1-A	Method Blank	98	97	94	96	96	98	94	96
MB 320-633301/1-A	Method Blank	94	91	92	95	100	87	87	89
MB 320-633306/1-A	Method Blank	95	95	97	96	91	94	88	92
MB 320-634416/1-A	Method Blank	84	90	92	95	79	92	85	80

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-93962-A-1-B MS	Matrix Spike	84	102	103	86	92	79
320-93962-A-1-B MS - DL	Matrix Spike						
320-93962-A-1-C MSD	Matrix Spike Duplicate	89	105	108	95	94	86
320-93962-A-1-C MSD - DL	Matrix Spike Duplicate						
320-94122-A-1-B MS	Matrix Spike	92	90	87	97	99	96
320-94122-A-1-B MS - DL	Matrix Spike			95			
320-94122-A-1-C MSD	Matrix Spike Duplicate	89	87	88	92	96	90
320-94122-A-1-C MSD - DL	Matrix Spike Duplicate			89			
320-94181-1	PW-145	102	98	91	69	78	106
320-94181-2	PW-133	102	95	93	72	80	110
320-94181-3	PW-093	99	98	93	74	82	108
320-94181-4	PW-143	102	99	99	89	99	92

Eurofins Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-94181-5	PW-099	99	97	92	73	83	104
320-94181-6	PW-129	99	98	94	73	78	107
320-94181-7	PW-071	104	98	93	71	79	108
320-94181-8	PW-124	109	102	98	78	79	110
320-94181-9	PW-056	99	93	87	82	89	97
320-94181-10	PW-031	97	92	94	86	88	100
320-94181-11	PW-147	95	88	87	91	93	96
320-94181-12	PW-094	90	89	93	81	81	82
320-94423-A-4-B MS	Matrix Spike	87	92	80	70	78	87
320-94423-A-4-C MSD	Matrix Spike Duplicate	88	91	92	75	73	87
LCS 320-632195/2-A	Lab Control Sample	103	98	96	96	101	92
LCS 320-633301/2-A	Lab Control Sample	96	90	89	92	90	102
LCS 320-633306/2-A	Lab Control Sample	104	97	96	69	67	105
LCS 320-634416/2-A	Lab Control Sample	103	102	103	76	84	83
LCSD 320-632195/3-A	Lab Control Sample Dup	99	91	95	100	97	89
LCSD 320-633301/3-A	Lab Control Sample Dup	98	91	96	91	93	104
LCSD 320-633306/3-A	Lab Control Sample Dup	105	98	95	74	75	108
LCSD 320-634416/3-A	Lab Control Sample Dup	100	95	98	95	87	82
MB 320-632195/1-A	Method Blank	104	100	98	97	100	92
MB 320-633301/1-A	Method Blank	91	88	88	85	89	93
MB 320-633306/1-A	Method Blank	100	92	93	70	74	103
MB 320-634416/1-A	Method Blank	95	96	96	74	87	77

**Surrogate Legend**

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-632195/1-A**  
**Matrix: Water**  
**Analysis Batch: 638034**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 632195**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/11/22 05:19	12/05/22 21:28	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/11/22 05:19	12/05/22 21:28	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/11/22 05:19	12/05/22 21:28	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/11/22 05:19	12/05/22 21:28	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/11/22 05:19	12/05/22 21:28	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/11/22 05:19	12/05/22 21:28	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/11/22 05:19	12/05/22 21:28	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/11/22 05:19	12/05/22 21:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/11/22 05:19	12/05/22 21:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/11/22 05:19	12/05/22 21:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/11/22 05:19	12/05/22 21:28	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/11/22 05:19	12/05/22 21:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/11/22 05:19	12/05/22 21:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/11/22 05:19	12/05/22 21:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/11/22 05:19	12/05/22 21:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/11/22 05:19	12/05/22 21:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/11/22 05:19	12/05/22 21:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/11/22 05:19	12/05/22 21:28	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	98		50 - 150	11/11/22 05:19	12/05/22 21:28	1
13C4 PFHpA	97		50 - 150	11/11/22 05:19	12/05/22 21:28	1
13C4 PFOA	94		50 - 150	11/11/22 05:19	12/05/22 21:28	1
13C5 PFNA	96		50 - 150	11/11/22 05:19	12/05/22 21:28	1
13C2 PFDA	96		50 - 150	11/11/22 05:19	12/05/22 21:28	1
13C2 PFUnA	98		50 - 150	11/11/22 05:19	12/05/22 21:28	1
13C2 PFDoA	94		50 - 150	11/11/22 05:19	12/05/22 21:28	1
13C2 PFTeDA	96		50 - 150	11/11/22 05:19	12/05/22 21:28	1
13C3 PFBS	104		50 - 150	11/11/22 05:19	12/05/22 21:28	1
18O2 PFHxS	100		50 - 150	11/11/22 05:19	12/05/22 21:28	1
13C4 PFOS	98		50 - 150	11/11/22 05:19	12/05/22 21:28	1
d3-NMeFOSAA	97		50 - 150	11/11/22 05:19	12/05/22 21:28	1
d5-NEtFOSAA	100		50 - 150	11/11/22 05:19	12/05/22 21:28	1
13C3 HFPO-DA	92		50 - 150	11/11/22 05:19	12/05/22 21:28	1

**Lab Sample ID: LCS 320-632195/2-A**  
**Matrix: Water**  
**Analysis Batch: 638034**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 632195**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	42.9		ng/L		107	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	44.5		ng/L		111	71 - 133
Perfluorononanoic acid (PFNA)	40.0	44.0		ng/L		110	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-632195/2-A**  
**Matrix: Water**  
**Analysis Batch: 638034**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 632195**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	40.8		ng/L		102	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	45.0		ng/L		112	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.0		ng/L		112	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	46.1		ng/L		115	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.7		ng/L		102	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	35.9		ng/L		101	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.5		ng/L		97	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	39.0		ng/L		105	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.1		ng/L		110	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.3		ng/L		106	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	40.5		ng/L		108	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.7		ng/L		99	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	41.0		ng/L		109	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.0		ng/L		119	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	96		50 - 150
13C4 PFHpA	96		50 - 150
13C4 PFOA	95		50 - 150
13C5 PFNA	98		50 - 150
13C2 PFDA	99		50 - 150
13C2 PFUnA	98		50 - 150
13C2 PFDoA	94		50 - 150
13C2 PFTeDA	92		50 - 150
13C3 PFBS	103		50 - 150
18O2 PFHxS	98		50 - 150
13C4 PFOS	96		50 - 150
d3-NMeFOSAA	96		50 - 150
d5-NEtFOSAA	101		50 - 150
13C3 HFPO-DA	92		50 - 150

**Lab Sample ID: LCSD 320-632195/3-A**  
**Matrix: Water**  
**Analysis Batch: 638034**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 632195**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	43.1		ng/L		108	72 - 129	1 30
Perfluoroheptanoic acid (PFHpA)	40.0	42.8		ng/L		107	72 - 130	0 30
Perfluorooctanoic acid (PFOA)	40.0	46.9		ng/L		117	71 - 133	5 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-632195/3-A**  
**Matrix: Water**  
**Analysis Batch: 638034**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 632195**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	44.0		ng/L		110	69 - 130	0	30
Perfluorodecanoic acid (PFDA)	40.0	41.2		ng/L		103	71 - 129	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	42.5		ng/L		106	69 - 133	6	30
Perfluorododecanoic acid (PFDoA)	40.0	47.4		ng/L		118	72 - 134	5	30
Perfluorotridecanoic acid (PFTriA)	40.0	49.4		ng/L		123	65 - 144	7	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.1		ng/L		100	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.7		ng/L		109	72 - 130	7	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.1		ng/L		105	68 - 131	7	30
Perfluorooctanesulfonic acid (PFOS)	37.2	39.1		ng/L		105	65 - 140	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.9		ng/L		110	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.1		ng/L		108	61 - 135	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	40.4		ng/L		108	77 - 137	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.1		ng/L		103	72 - 132	3	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	42.4		ng/L		112	76 - 136	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	46.5		ng/L		123	81 - 141	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	96		50 - 150
13C4 PFHpA	91		50 - 150
13C4 PFOA	93		50 - 150
13C5 PFNA	97		50 - 150
13C2 PFDA	98		50 - 150
13C2 PFUnA	97		50 - 150
13C2 PFDoA	92		50 - 150
13C2 PFTeDA	96		50 - 150
13C3 PFBS	99		50 - 150
18O2 PFHxS	91		50 - 150
13C4 PFOS	95		50 - 150
d3-NMeFOSAA	100		50 - 150
d5-NEtFOSAA	97		50 - 150
13C3 HFPO-DA	89		50 - 150

**Lab Sample ID: 320-93962-A-1-B MS**  
**Matrix: Water**  
**Analysis Batch: 638034**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 632195**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec
				Result	Qualifier				Limits
Perfluoroheptanoic acid (PFHpA)	680		200	907		ng/L		114	72 - 130
Perfluorooctanoic acid (PFOA)	1100		200	1260	4	ng/L		74	71 - 133

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-93962-A-1-B MS**  
**Matrix: Water**  
**Analysis Batch: 638034**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 632195**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorononanoic acid (PFNA)	36		200	255		ng/L		110	69 - 130
Perfluorodecanoic acid (PFDA)	18		200	228		ng/L		105	71 - 129
Perfluoroundecanoic acid (PFUnA)	ND		200	203		ng/L		102	69 - 133
Perfluorododecanoic acid (PFDoA)	ND		200	227		ng/L		114	72 - 134
Perfluorotridecanoic acid (PFTriA)	ND		200	241		ng/L		120	65 - 144
Perfluorotetradecanoic acid (PFTeA)	ND		200	205		ng/L		103	71 - 132
Perfluorobutanesulfonic acid (PFBS)	86		178	306		ng/L		124	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	680		182	911		ng/L		124	68 - 131
Perfluorooctanesulfonic acid (PFOS)	38		186	227		ng/L		101	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		200	228		ng/L		114	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		200	208		ng/L		104	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		187	204		ng/L		109	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		200	250		ng/L		125	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		189	200		ng/L		106	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		189	189		ng/L		100	81 - 141

Isotope Dilution	%Recovery	MS Qualifier	MS Limits
13C4 PFHpA	94		50 - 150
13C4 PFOA	100		50 - 150
13C5 PFNA	103		50 - 150
13C2 PFDA	104		50 - 150
13C2 PFUnA	106		50 - 150
13C2 PFDoA	94		50 - 150
13C2 PFTeDA	99		50 - 150
13C3 PFBS	84		50 - 150
18O2 PFHxS	102		50 - 150
13C4 PFOS	103		50 - 150
d3-NMeFOSAA	86		50 - 150
d5-NEtFOSAA	92		50 - 150
13C3 HFPO-DA	79		50 - 150

**Lab Sample ID: 320-93962-A-1-C MSD**  
**Matrix: Water**  
**Analysis Batch: 638034**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 632195**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	680		200	897		ng/L		109	72 - 130	1	30
Perfluorooctanoic acid (PFOA)	1100		200	1210	4	ng/L		47	71 - 133	4	30
Perfluorononanoic acid (PFNA)	36		200	257		ng/L		111	69 - 130	1	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-93962-A-1-C MSD**

**Matrix: Water**

**Analysis Batch: 638034**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

**Prep Batch: 632195**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
Perfluorodecanoic acid (PFDA)	18		200	229		ng/L		105	71 - 129	0	30
Perfluoroundecanoic acid (PFUnA)	ND		200	214		ng/L		107	69 - 133	5	30
Perfluorododecanoic acid (PFDoA)	ND		200	235		ng/L		118	72 - 134	3	30
Perfluorotridecanoic acid (PFTriA)	ND		200	245		ng/L		123	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)	ND		200	204		ng/L		102	71 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)	86		178	282		ng/L		110	72 - 130	8	30
Perfluorohexanesulfonic acid (PFHxS)	680		182	895		ng/L		116	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)	38		186	222		ng/L		99	65 - 140	2	30
N-methylperfluorooctanesulfonamide	ND		200	202		ng/L		101	65 - 136	12	30
doacetic acid (NMeFOSAA)											
N-ethylperfluorooctanesulfonamide	ND		200	218		ng/L		109	61 - 135	5	30
doacetic acid (NEtFOSAA)											
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		187	208		ng/L		111	77 - 137	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		200	261		ng/L		130	72 - 132	4	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		189	202		ng/L		107	76 - 136	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		189	191		ng/L		101	81 - 141	1	30

Isotope Dilution	MSD	MSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	78		50 - 150
13C4 PFHpA	96		50 - 150
13C4 PFOA	100		50 - 150
13C5 PFNA	110		50 - 150
13C2 PFDA	108		50 - 150
13C2 PFUnA	108		50 - 150
13C2 PFDoA	101		50 - 150
13C2 PFTeDA	108		50 - 150
13C3 PFBS	89		50 - 150
18O2 PFHxS	105		50 - 150
13C4 PFOS	108		50 - 150
d3-NMeFOSAA	95		50 - 150
d5-NEtFOSAA	94		50 - 150
13C3 HFPO-DA	86		50 - 150

**Lab Sample ID: MB 320-633301/1-A**

**Matrix: Water**

**Analysis Batch: 634154**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 633301**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/16/22 05:49	11/19/22 01:02	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/16/22 05:49	11/19/22 01:02	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/16/22 05:49	11/19/22 01:02	1

Eurolins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-633301/1-A**  
**Matrix: Water**  
**Analysis Batch: 634154**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 633301**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/16/22 05:49	11/19/22 01:02	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/16/22 05:49	11/19/22 01:02	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/16/22 05:49	11/19/22 01:02	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/16/22 05:49	11/19/22 01:02	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/16/22 05:49	11/19/22 01:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/16/22 05:49	11/19/22 01:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/16/22 05:49	11/19/22 01:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/16/22 05:49	11/19/22 01:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/16/22 05:49	11/19/22 01:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/16/22 05:49	11/19/22 01:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/16/22 05:49	11/19/22 01:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/16/22 05:49	11/19/22 01:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/16/22 05:49	11/19/22 01:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/16/22 05:49	11/19/22 01:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/16/22 05:49	11/19/22 01:02	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	11/16/22 05:49	11/19/22 01:02	1
13C4 PFHpA	91		50 - 150	11/16/22 05:49	11/19/22 01:02	1
13C4 PFOA	92		50 - 150	11/16/22 05:49	11/19/22 01:02	1
13C5 PFNA	95		50 - 150	11/16/22 05:49	11/19/22 01:02	1
13C2 PFDA	100		50 - 150	11/16/22 05:49	11/19/22 01:02	1
13C2 PFUnA	87		50 - 150	11/16/22 05:49	11/19/22 01:02	1
13C2 PFDoA	87		50 - 150	11/16/22 05:49	11/19/22 01:02	1
13C2 PFTeDA	89		50 - 150	11/16/22 05:49	11/19/22 01:02	1
13C3 PFBS	91		50 - 150	11/16/22 05:49	11/19/22 01:02	1
18O2 PFHxS	88		50 - 150	11/16/22 05:49	11/19/22 01:02	1
13C4 PFOS	88		50 - 150	11/16/22 05:49	11/19/22 01:02	1
d3-NMeFOSAA	85		50 - 150	11/16/22 05:49	11/19/22 01:02	1
d5-NEtFOSAA	89		50 - 150	11/16/22 05:49	11/19/22 01:02	1
13C3 HFPO-DA	93		50 - 150	11/16/22 05:49	11/19/22 01:02	1

**Lab Sample ID: LCS 320-633301/2-A**  
**Matrix: Water**  
**Analysis Batch: 634154**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 633301**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	40.5		ng/L		101	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	45.2		ng/L		113	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	43.8		ng/L		110	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.0		ng/L		105	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	41.5		ng/L		104	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	43.9		ng/L		110	69 - 133

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-633301/2-A**  
**Matrix: Water**  
**Analysis Batch: 634154**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 633301**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	40.0	45.0		ng/L		112	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.7		ng/L		109	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	42.1		ng/L		105	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	33.7		ng/L		95	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.6		ng/L		100	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	40.2		ng/L		108	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.6		ng/L		106	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.7		ng/L		112	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.0		ng/L		110	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.9		ng/L		102	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	39.4		ng/L		104	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.2		ng/L		112	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	98		50 - 150
13C4 PFHpA	93		50 - 150
13C4 PFOA	90		50 - 150
13C5 PFNA	98		50 - 150
13C2 PFDA	100		50 - 150
13C2 PFUnA	92		50 - 150
13C2 PFDoA	94		50 - 150
13C2 PFTeDA	90		50 - 150
13C3 PFBS	96		50 - 150
18O2 PFHxS	90		50 - 150
13C4 PFOS	89		50 - 150
d3-NMeFOSAA	92		50 - 150
d5-NEtFOSAA	90		50 - 150
13C3 HFPO-DA	102		50 - 150

**Lab Sample ID: LCSD 320-633301/3-A**  
**Matrix: Water**  
**Analysis Batch: 634154**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 633301**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	41.5		ng/L		104	72 - 129	2 30
Perfluoroheptanoic acid (PFHpA)	40.0	44.3		ng/L		111	72 - 130	2 30
Perfluorooctanoic acid (PFOA)	40.0	44.9		ng/L		112	71 - 133	2 30
Perfluorononanoic acid (PFNA)	40.0	43.1		ng/L		108	69 - 130	3 30
Perfluorodecanoic acid (PFDA)	40.0	42.8		ng/L		107	71 - 129	3 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-633301/3-A**  
**Matrix: Water**  
**Analysis Batch: 634154**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 633301**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	43.2		ng/L		108	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)	40.0	46.1		ng/L		115	72 - 134	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	45.9		ng/L		115	65 - 144	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	42.3		ng/L		106	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	35.5	35.4		ng/L		100	72 - 130	5	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.7		ng/L		103	68 - 131	3	30
Perfluorooctanesulfonic acid (PFOS)	37.2	40.4		ng/L		109	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	45.4		ng/L		114	65 - 136	7	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.4		ng/L		109	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	42.2		ng/L		113	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.7		ng/L		99	72 - 132	3	30
11-Chloroeicosadecafluoro-3-oxadecane-1-sulfonic acid	37.8	41.8		ng/L		111	76 - 136	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.1		ng/L		106	81 - 141	5	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	99		50 - 150
13C4 PFHpA	94		50 - 150
13C4 PFOA	93		50 - 150
13C5 PFNA	100		50 - 150
13C2 PFDA	102		50 - 150
13C2 PFUnA	101		50 - 150
13C2 PFDoA	97		50 - 150
13C2 PFTeDA	94		50 - 150
13C3 PFBS	98		50 - 150
18O2 PFHxS	91		50 - 150
13C4 PFOS	96		50 - 150
d3-NMeFOSAA	91		50 - 150
d5-NEtFOSAA	93		50 - 150
13C3 HFPO-DA	104		50 - 150

**Lab Sample ID: 320-94122-A-1-B MS**  
**Matrix: Water**  
**Analysis Batch: 634154**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 633301**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec Limits
				Result	Qualifier				
Perfluorohexanoic acid (PFHxA)	150	F2	36.0	173	4	ng/L		54	72 - 129
Perfluoroheptanoic acid (PFHpA)	6.4		36.0	43.8		ng/L		104	72 - 130
Perfluorooctanoic acid (PFOA)	18		36.0	54.6		ng/L		102	71 - 133
Perfluorononanoic acid (PFNA)	3.4		36.0	40.0		ng/L		102	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-94122-A-1-B MS**

**Matrix: Water**

**Analysis Batch: 634154**

**Client Sample ID: Matrix Spike**

**Prep Type: Total/NA**

**Prep Batch: 633301**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier					
Perfluorodecanoic acid (PFDA)	5.8		36.0	44.1		ng/L		106	71 - 129	
Perfluoroundecanoic acid (PFUnA)	1.5	J	36.0	38.6		ng/L		103	69 - 133	
Perfluorododecanoic acid (PFDoA)	1.2	J	36.0	39.4		ng/L		106	72 - 134	
Perfluorotridecanoic acid (PFTriA)	ND		36.0	36.8		ng/L		102	65 - 144	
Perfluorotetradecanoic acid (PFTeA)	ND		36.0	36.3		ng/L		101	71 - 132	
Perfluorobutanesulfonic acid (PFBS)	47	F1 F2	32.0	71.6		ng/L		77	72 - 130	
Perfluorohexanesulfonic acid (PFHxS)	180	F2	32.9	194	4	ng/L		51	68 - 131	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		36.0	38.5		ng/L		107	65 - 136	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		36.0	37.7		ng/L		105	61 - 135	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		33.6	37.7		ng/L		112	77 - 137	
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		36.0	35.1		ng/L		97	72 - 132	
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		34.0	35.7		ng/L		105	76 - 136	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		34.0	36.8		ng/L		108	81 - 141	

Isotope Dilution	MS	MS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	81		50 - 150
13C4 PFHpA	91		50 - 150
13C4 PFOA	94		50 - 150
13C5 PFNA	95		50 - 150
13C2 PFDA	99		50 - 150
13C2 PFUnA	97		50 - 150
13C2 PFDoA	90		50 - 150
13C2 PFTeDA	77		50 - 150
13C3 PFBS	92		50 - 150
18O2 PFHxS	90		50 - 150
13C4 PFOS	87		50 - 150
d3-NMeFOSAA	97		50 - 150
d5-NEtFOSAA	99		50 - 150
13C3 HFPO-DA	96		50 - 150

**Lab Sample ID: 320-94122-A-1-C MSD**

**Matrix: Water**

**Analysis Batch: 634154**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

**Prep Batch: 633301**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	150	F2	36.0	291	4 F2	ng/L		381	72 - 129	51	30	
Perfluoroheptanoic acid (PFHpA)	6.4		36.0	47.7		ng/L		115	72 - 130	9	30	
Perfluorooctanoic acid (PFOA)	18		36.0	61.9		ng/L		122	71 - 133	13	30	
Perfluorononanoic acid (PFNA)	3.4		36.0	43.6		ng/L		112	69 - 130	9	30	
Perfluorodecanoic acid (PFDA)	5.8		36.0	46.0		ng/L		112	71 - 129	4	30	

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-94122-A-1-C MSD**

**Matrix: Water**

**Analysis Batch: 634154**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

**Prep Batch: 633301**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	1.5	J	36.0	40.6		ng/L		109	69 - 133	5	30
Perfluorododecanoic acid (PFDoA)	1.2	J	36.0	43.5		ng/L		117	72 - 134	10	30
Perfluorotridecanoic acid (PFTriA)	ND		36.0	38.1		ng/L		106	65 - 144	4	30
Perfluorotetradecanoic acid (PFTeA)	ND		36.0	39.0		ng/L		108	71 - 132	7	30
Perfluorobutanesulfonic acid (PFBS)	47	F1 F2	32.0	106	F1 F2	ng/L		184	72 - 130	39	30
Perfluorohexanesulfonic acid (PFHxS)	180	F2	32.8	286	4 F2	ng/L		332	68 - 131	38	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		36.0	40.4		ng/L		112	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		36.0	40.0		ng/L		111	61 - 135	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		33.6	37.2		ng/L		111	77 - 137	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		36.0	38.9		ng/L		108	72 - 132	10	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		34.0	36.3		ng/L		107	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		34.0	38.1		ng/L		112	81 - 141	3	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	MSD Limits
13C2 PFHxA	76		50 - 150
13C4 PFHpA	93		50 - 150
13C4 PFOA	92		50 - 150
13C5 PFNA	91		50 - 150
13C2 PFDA	100		50 - 150
13C2 PFUnA	93		50 - 150
13C2 PFDoA	90		50 - 150
13C2 PFTeDA	78		50 - 150
13C3 PFBS	89		50 - 150
18O2 PFHxS	87		50 - 150
13C4 PFOS	88		50 - 150
d3-NMeFOSAA	92		50 - 150
d5-NEtFOSAA	96		50 - 150
13C3 HFPO-DA	90		50 - 150

**Lab Sample ID: MB 320-633306/1-A**

**Matrix: Water**

**Analysis Batch: 635144**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 633306**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/16/22 06:49	11/24/22 12:49	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/16/22 06:49	11/24/22 12:49	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/16/22 06:49	11/24/22 12:49	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/16/22 06:49	11/24/22 12:49	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/16/22 06:49	11/24/22 12:49	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/16/22 06:49	11/24/22 12:49	1

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-633306/1-A**  
**Matrix: Water**  
**Analysis Batch: 635144**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 633306**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/16/22 06:49	11/24/22 12:49	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/16/22 06:49	11/24/22 12:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/16/22 06:49	11/24/22 12:49	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/16/22 06:49	11/24/22 12:49	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/16/22 06:49	11/24/22 12:49	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/16/22 06:49	11/24/22 12:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/16/22 06:49	11/24/22 12:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/16/22 06:49	11/24/22 12:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/16/22 06:49	11/24/22 12:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/16/22 06:49	11/24/22 12:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/16/22 06:49	11/24/22 12:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/16/22 06:49	11/24/22 12:49	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	11/16/22 06:49	11/24/22 12:49	1
13C4 PFHpA	95		50 - 150	11/16/22 06:49	11/24/22 12:49	1
13C4 PFOA	97		50 - 150	11/16/22 06:49	11/24/22 12:49	1
13C5 PFNA	96		50 - 150	11/16/22 06:49	11/24/22 12:49	1
13C2 PFDA	91		50 - 150	11/16/22 06:49	11/24/22 12:49	1
13C2 PFUnA	94		50 - 150	11/16/22 06:49	11/24/22 12:49	1
13C2 PFDoA	88		50 - 150	11/16/22 06:49	11/24/22 12:49	1
13C2 PFTeDA	92		50 - 150	11/16/22 06:49	11/24/22 12:49	1
13C3 PFBS	100		50 - 150	11/16/22 06:49	11/24/22 12:49	1
18O2 PFHxS	92		50 - 150	11/16/22 06:49	11/24/22 12:49	1
13C4 PFOS	93		50 - 150	11/16/22 06:49	11/24/22 12:49	1
d3-NMeFOSAA	70		50 - 150	11/16/22 06:49	11/24/22 12:49	1
d5-NEtFOSAA	74		50 - 150	11/16/22 06:49	11/24/22 12:49	1
13C3 HFPO-DA	103		50 - 150	11/16/22 06:49	11/24/22 12:49	1

**Lab Sample ID: LCS 320-633306/2-A**  
**Matrix: Water**  
**Analysis Batch: 635144**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 633306**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	40.5		ng/L		101	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	43.0		ng/L		108	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	44.1		ng/L		110	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.6		ng/L		107	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	40.1		ng/L		100	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	43.6		ng/L		109	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	43.7		ng/L		109	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.4		ng/L		109	65 - 144

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-633306/2-A**  
**Matrix: Water**  
**Analysis Batch: 635144**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 633306**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorotetradecanoic acid (PFTeA)	40.0	41.3		ng/L		103	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	37.1		ng/L		104	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.2		ng/L		102	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	39.1		ng/L		105	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.7		ng/L		109	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.3		ng/L		106	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	40.7		ng/L		109	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.5		ng/L		109	72 - 132
11-Chloroheicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	40.4		ng/L		107	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.8		ng/L		116	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	107		50 - 150
13C4 PFHpA	99		50 - 150
13C4 PFOA	97		50 - 150
13C5 PFNA	100		50 - 150
13C2 PFDA	97		50 - 150
13C2 PFUnA	92		50 - 150
13C2 PFDoA	89		50 - 150
13C2 PFTeDA	88		50 - 150
13C3 PFBS	104		50 - 150
18O2 PFHxS	97		50 - 150
13C4 PFOS	96		50 - 150
d3-NMeFOSAA	69		50 - 150
d5-NEtFOSAA	67		50 - 150
13C3 HFPO-DA	105		50 - 150

**Lab Sample ID: LCSD 320-633306/3-A**  
**Matrix: Water**  
**Analysis Batch: 635144**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 633306**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec	RPD	RPD Limit
							Limits	RPD	Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.7		ng/L		102	72 - 129	0	30
Perfluoroheptanoic acid (PFHpA)	40.0	42.9		ng/L		107	72 - 130	0	30
Perfluorooctanoic acid (PFOA)	40.0	41.9		ng/L		105	71 - 133	5	30
Perfluorononanoic acid (PFNA)	40.0	44.2		ng/L		111	69 - 130	4	30
Perfluorodecanoic acid (PFDA)	40.0	44.3		ng/L		111	71 - 129	10	30
Perfluoroundecanoic acid (PFUnA)	40.0	43.4		ng/L		108	69 - 133	0	30
Perfluorododecanoic acid (PFDoA)	40.0	44.0		ng/L		110	72 - 134	1	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-633306/3-A**  
**Matrix: Water**  
**Analysis Batch: 635144**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 633306**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorotridecanoic acid (PFTriA)	40.0	42.3		ng/L		106	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.7		ng/L		104	71 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)	35.5	34.5		ng/L		97	72 - 130	7	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.5		ng/L		100	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)	37.2	38.0		ng/L		102	65 - 140	3	30
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	40.0	42.8		ng/L		107	65 - 136	2	30
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	40.0	41.5		ng/L		104	61 - 135	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	43.2		ng/L		116	77 - 137	6	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.7		ng/L		102	72 - 132	7	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	42.1		ng/L		112	76 - 136	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.7		ng/L		121	81 - 141	4	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C2 PFHxA	105		50 - 150
13C4 PFHpA	97		50 - 150
13C4 PFOA	96		50 - 150
13C5 PFNA	95		50 - 150
13C2 PFDA	93		50 - 150
13C2 PFUnA	94		50 - 150
13C2 PFDoA	89		50 - 150
13C2 PFTeDA	91		50 - 150
13C3 PFBS	105		50 - 150
18O2 PFHxS	98		50 - 150
13C4 PFOS	95		50 - 150
d3-NMeFOSAA	74		50 - 150
d5-NEtFOSAA	75		50 - 150
13C3 HFPO-DA	108		50 - 150

**Lab Sample ID: MB 320-634416/1-A**  
**Matrix: Water**  
**Analysis Batch: 637218**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 634416**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/21/22 06:17	12/04/22 09:45	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/21/22 06:17	12/04/22 09:45	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/21/22 06:17	12/04/22 09:45	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/21/22 06:17	12/04/22 09:45	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/21/22 06:17	12/04/22 09:45	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/21/22 06:17	12/04/22 09:45	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/21/22 06:17	12/04/22 09:45	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/21/22 06:17	12/04/22 09:45	1

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-634416/1-A**  
**Matrix: Water**  
**Analysis Batch: 637218**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 634416**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/21/22 06:17	12/04/22 09:45	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/21/22 06:17	12/04/22 09:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/21/22 06:17	12/04/22 09:45	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/21/22 06:17	12/04/22 09:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/21/22 06:17	12/04/22 09:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/21/22 06:17	12/04/22 09:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/21/22 06:17	12/04/22 09:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/21/22 06:17	12/04/22 09:45	1
11-Chloroeicosadecafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/21/22 06:17	12/04/22 09:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/21/22 06:17	12/04/22 09:45	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	84		50 - 150	11/21/22 06:17	12/04/22 09:45	1
13C4 PFHpA	90		50 - 150	11/21/22 06:17	12/04/22 09:45	1
13C4 PFOA	92		50 - 150	11/21/22 06:17	12/04/22 09:45	1
13C5 PFNA	95		50 - 150	11/21/22 06:17	12/04/22 09:45	1
13C2 PFDA	79		50 - 150	11/21/22 06:17	12/04/22 09:45	1
13C2 PFUnA	92		50 - 150	11/21/22 06:17	12/04/22 09:45	1
13C2 PFDoA	85		50 - 150	11/21/22 06:17	12/04/22 09:45	1
13C2 PFTeDA	80		50 - 150	11/21/22 06:17	12/04/22 09:45	1
13C3 PFBS	95		50 - 150	11/21/22 06:17	12/04/22 09:45	1
18O2 PFHxS	96		50 - 150	11/21/22 06:17	12/04/22 09:45	1
13C4 PFOS	96		50 - 150	11/21/22 06:17	12/04/22 09:45	1
d3-NMeFOSAA	74		50 - 150	11/21/22 06:17	12/04/22 09:45	1
d5-NEtFOSAA	87		50 - 150	11/21/22 06:17	12/04/22 09:45	1
13C3 HFPO-DA	77		50 - 150	11/21/22 06:17	12/04/22 09:45	1

**Lab Sample ID: LCS 320-634416/2-A**  
**Matrix: Water**  
**Analysis Batch: 637218**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 634416**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanoic acid (PFHpA)	40.0	44.4		ng/L		111	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	43.7		ng/L		109	71 - 133
Perfluorononanoic acid (PFNA)	40.0	41.4		ng/L		104	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	46.1		ng/L		115	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.8		ng/L		102	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	46.0		ng/L		115	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	42.2		ng/L		105	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	42.6		ng/L		107	71 - 132

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-634416/2-A**  
**Matrix: Water**  
**Analysis Batch: 637218**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 634416**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanesulfonic acid (PFBS)	35.5	36.7		ng/L		103	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.5		ng/L		100	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	40.3		ng/L		108	65 - 140
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	40.0	43.0		ng/L		107	65 - 136
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	40.0	44.3		ng/L		111	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.1		ng/L		105	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.3		ng/L		101	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	39.1		ng/L		103	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	36.7		ng/L		97	81 - 141

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	96		50 - 150
13C4 PFHpA	95		50 - 150
13C4 PFOA	96		50 - 150
13C5 PFNA	105		50 - 150
13C2 PFDA	85		50 - 150
13C2 PFUnA	98		50 - 150
13C2 PFDoA	92		50 - 150
13C2 PFTeDA	87		50 - 150
13C3 PFBS	103		50 - 150
18O2 PFHxS	102		50 - 150
13C4 PFOS	103		50 - 150
d3-NMeFOSAA	76		50 - 150
d5-NEtFOSAA	84		50 - 150
13C3 HFPO-DA	83		50 - 150

**Lab Sample ID: LCSD 320-634416/3-A**  
**Matrix: Water**  
**Analysis Batch: 637218**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 634416**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.2		ng/L		100	72 - 129	0	30
Perfluoroheptanoic acid (PFHpA)	40.0	45.1		ng/L		113	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	44.6		ng/L		112	71 - 133	2	30
Perfluorononanoic acid (PFNA)	40.0	42.1		ng/L		105	69 - 130	2	30
Perfluorodecanoic acid (PFDA)	40.0	45.5		ng/L		114	71 - 129	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.6		ng/L		104	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)	40.0	44.2		ng/L		111	72 - 134	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	39.0		ng/L		98	65 - 144	8	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-634416/3-A**  
**Matrix: Water**  
**Analysis Batch: 637218**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 634416**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorotetradecanoic acid (PFTeA)	40.0	42.8		ng/L		107	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.5		ng/L		108	72 - 130	5	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.3		ng/L		105	68 - 131	5	30
Perfluorooctanesulfonic acid (PFOS)	37.2	39.7		ng/L		107	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.4		ng/L		106	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.9		ng/L		112	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.8		ng/L		112	77 - 137	7	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.7		ng/L		99	72 - 132	2	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	38.6		ng/L		102	76 - 136	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	39.8		ng/L		105	81 - 141	8	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	93		50 - 150
13C4 PFHpA	93		50 - 150
13C4 PFOA	93		50 - 150
13C5 PFNA	101		50 - 150
13C2 PFDA	100		50 - 150
13C2 PFUnA	97		50 - 150
13C2 PFDoA	95		50 - 150
13C2 PFTeDA	89		50 - 150
13C3 PFBS	100		50 - 150
18O2 PFHxS	95		50 - 150
13C4 PFOS	98		50 - 150
d3-NMeFOSAA	95		50 - 150
d5-NEtFOSAA	87		50 - 150
13C3 HFPO-DA	82		50 - 150

**Lab Sample ID: 320-94423-A-4-B MS**  
**Matrix: Water**  
**Analysis Batch: 637218**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 634416**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	ND		37.6	42.1		ng/L		112	72 - 129
Perfluoroheptanoic acid (PFHpA)	0.31	J	37.6	44.1		ng/L		116	72 - 130
Perfluorooctanoic acid (PFOA)	ND		37.6	40.3		ng/L		107	71 - 133
Perfluorononanoic acid (PFNA)	ND		37.6	40.7		ng/L		108	69 - 130
Perfluorodecanoic acid (PFDA)	ND		37.6	41.1		ng/L		109	71 - 129
Perfluoroundecanoic acid (PFUnA)	ND		37.6	40.3		ng/L		107	69 - 133
Perfluorododecanoic acid (PFDoA)	ND		37.6	42.5		ng/L		113	72 - 134

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-94423-A-4-B MS**  
**Matrix: Water**  
**Analysis Batch: 637218**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 634416**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier					
Perfluorotridecanoic acid (PFTriA)	ND		37.6	41.1		ng/L		109		65 - 144
Perfluorotetradecanoic acid (PFTeA)	ND		37.6	41.6		ng/L		111		71 - 132
Perfluorobutanesulfonic acid (PFBS)	0.82	J	33.4	38.2		ng/L		112		72 - 130
Perfluorohexanesulfonic acid (PFHxS)	ND		34.3	36.8		ng/L		107		68 - 131
Perfluorooctanesulfonic acid (PFOS)	ND		34.9	40.1		ng/L		115		65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		37.6	40.9		ng/L		109		65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		37.6	41.6		ng/L		111		61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		35.1	37.7		ng/L		107		77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		37.6	38.4		ng/L		102		72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		35.5	34.5		ng/L		97		76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		35.5	42.9		ng/L		121		81 - 141

Isotope Dilution	MS	MS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	86		50 - 150
13C4 PFHpA	89		50 - 150
13C4 PFOA	95		50 - 150
13C5 PFNA	83		50 - 150
13C2 PFDA	79		50 - 150
13C2 PFUnA	83		50 - 150
13C2 PFDoA	71		50 - 150
13C2 PFTeDA	77		50 - 150
13C3 PFBS	87		50 - 150
18O2 PFHxS	92		50 - 150
13C4 PFOS	80		50 - 150
d3-NMeFOSAA	70		50 - 150
d5-NEtFOSAA	78		50 - 150
13C3 HFPO-DA	87		50 - 150

**Lab Sample ID: 320-94423-A-4-C MSD**  
**Matrix: Water**  
**Analysis Batch: 637218**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 634416**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		38.1	38.9		ng/L		102		72 - 129	8	30
Perfluoroheptanoic acid (PFHpA)	0.31	J	38.1	41.2		ng/L		107		72 - 130	7	30
Perfluorooctanoic acid (PFOA)	ND		38.1	40.0		ng/L		105		71 - 133	1	30
Perfluorononanoic acid (PFNA)	ND		38.1	39.8		ng/L		104		69 - 130	2	30
Perfluorodecanoic acid (PFDA)	ND		38.1	43.2		ng/L		113		71 - 129	5	30
Perfluoroundecanoic acid (PFUnA)	ND		38.1	39.6		ng/L		104		69 - 133	2	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-94423-A-4-C MSD**

**Matrix: Water**

**Analysis Batch: 637218**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

**Prep Batch: 634416**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorododecanoic acid (PFDoA)	ND		38.1	42.6		ng/L		112	72 - 134	0	30
Perfluorotridecanoic acid (PFTriA)	ND		38.1	39.3		ng/L		103	65 - 144	4	30
Perfluorotetradecanoic acid (PFTeA)	ND		38.1	40.7		ng/L		107	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)	0.82	J	33.8	36.8		ng/L		106	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	ND		34.7	35.8		ng/L		103	68 - 131	3	30
Perfluorooctanesulfonic acid (PFOS)	ND		35.4	37.7		ng/L		106	65 - 140	6	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		38.1	39.2		ng/L		103	65 - 136	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		38.1	42.1		ng/L		110	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		35.6	36.9		ng/L		104	77 - 137	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		38.1	37.1		ng/L		98	72 - 132	3	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		35.9	31.1		ng/L		87	76 - 136	10	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		35.9	37.7		ng/L		105	81 - 141	13	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	MSD Limits
13C2 PFHxA	91		50 - 150
13C4 PFHpA	92		50 - 150
13C4 PFOA	92		50 - 150
13C5 PFNA	98		50 - 150
13C2 PFDA	91		50 - 150
13C2 PFUnA	82		50 - 150
13C2 PFDoA	77		50 - 150
13C2 PFTeDA	80		50 - 150
13C3 PFBS	88		50 - 150
18O2 PFHxS	91		50 - 150
13C4 PFOS	92		50 - 150
d3-NMeFOSAA	75		50 - 150
d5-NEtFOSAA	73		50 - 150
13C3 HFPO-DA	87		50 - 150

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL

**Lab Sample ID: 320-93962-A-1-B MS**

**Matrix: Water**

**Analysis Batch: 638849**

**Client Sample ID: Matrix Spike**

**Prep Type: Total/NA**

**Prep Batch: 632195**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA) - DL	4300		200	4570	4	ng/L		132	72 - 129

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - DL (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
13C2 PFHxA - DL	83		50 - 150

**Lab Sample ID: 320-93962-A-1-C MSD**  
**Matrix: Water**  
**Analysis Batch: 638849**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 632195**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorohexanoic acid (PFHxA) - DL	4300		200	4190	4	ng/L		-58	72 - 129	9	30

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
13C2 PFHxA - DL	87		50 - 150

**Lab Sample ID: 320-94122-A-1-B MS**  
**Matrix: Water**  
**Analysis Batch: 634313**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 633301**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>
Perfluorooctanesulfonic acid (PFOS) - DL	570	F2	33.5	484	4	ng/L		-246	65 - 140

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
13C4 PFOS - DL	95		50 - 150

**Lab Sample ID: 320-94122-A-1-C MSD**  
**Matrix: Water**  
**Analysis Batch: 634313**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 633301**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorooctanesulfonic acid (PFOS) - DL	570	F2	33.5	944	4 F2	ng/L		1129	65 - 140	64	30

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
13C4 PFOS - DL	89		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## LCMS

### Prep Batch: 632195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94181-4	PW-143	Total/NA	Water	3535	
MB 320-632195/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-632195/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-632195/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
320-93962-A-1-B MS - DL	Matrix Spike	Total/NA	Water	3535	
320-93962-A-1-B MS	Matrix Spike	Total/NA	Water	3535	
320-93962-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	3535	
320-93962-A-1-C MSD - DL	Matrix Spike Duplicate	Total/NA	Water	3535	

### Prep Batch: 633301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94181-9	PW-056	Total/NA	Water	3535	
320-94181-10	PW-031	Total/NA	Water	3535	
320-94181-11	PW-147	Total/NA	Water	3535	
MB 320-633301/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-633301/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-633301/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
320-94122-A-1-B MS	Matrix Spike	Total/NA	Water	3535	
320-94122-A-1-B MS - DL	Matrix Spike	Total/NA	Water	3535	
320-94122-A-1-C MSD - DL	Matrix Spike Duplicate	Total/NA	Water	3535	
320-94122-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	3535	

### Prep Batch: 633306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94181-1	PW-145	Total/NA	Water	3535	
320-94181-2	PW-133	Total/NA	Water	3535	
320-94181-3	PW-093	Total/NA	Water	3535	
320-94181-5	PW-099	Total/NA	Water	3535	
320-94181-6	PW-129	Total/NA	Water	3535	
320-94181-7	PW-071	Total/NA	Water	3535	
320-94181-8	PW-124	Total/NA	Water	3535	
MB 320-633306/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-633306/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-633306/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 634154

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94181-9	PW-056	Total/NA	Water	EPA 537(Mod)	633301
320-94181-10	PW-031	Total/NA	Water	EPA 537(Mod)	633301
320-94181-11	PW-147	Total/NA	Water	EPA 537(Mod)	633301
MB 320-633301/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	633301
LCS 320-633301/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	633301
LCSD 320-633301/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	633301
320-94122-A-1-B MS	Matrix Spike	Total/NA	Water	EPA 537(Mod)	633301
320-94122-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	633301

### Analysis Batch: 634313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94122-A-1-B MS - DL	Matrix Spike	Total/NA	Water	EPA 537(Mod)	633301
320-94122-A-1-C MSD - DL	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	633301

Eurofins Sacramento

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## LCMS

### Prep Batch: 634416

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94181-12	PW-094	Total/NA	Water	3535	
MB 320-634416/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-634416/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-634416/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
320-94423-A-4-B MS	Matrix Spike	Total/NA	Water	3535	
320-94423-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Water	3535	

### Analysis Batch: 635144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94181-1	PW-145	Total/NA	Water	EPA 537(Mod)	633306
320-94181-2	PW-133	Total/NA	Water	EPA 537(Mod)	633306
320-94181-3	PW-093	Total/NA	Water	EPA 537(Mod)	633306
320-94181-5	PW-099	Total/NA	Water	EPA 537(Mod)	633306
320-94181-6	PW-129	Total/NA	Water	EPA 537(Mod)	633306
320-94181-7	PW-071	Total/NA	Water	EPA 537(Mod)	633306
320-94181-8	PW-124	Total/NA	Water	EPA 537(Mod)	633306
MB 320-633306/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	633306
LCS 320-633306/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	633306
LCSD 320-633306/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	633306

### Analysis Batch: 637218

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94181-12	PW-094	Total/NA	Water	EPA 537(Mod)	634416
MB 320-634416/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	634416
LCS 320-634416/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	634416
LCSD 320-634416/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	634416
320-94423-A-4-B MS	Matrix Spike	Total/NA	Water	EPA 537(Mod)	634416
320-94423-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	634416

### Analysis Batch: 638034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94181-4	PW-143	Total/NA	Water	EPA 537(Mod)	632195
MB 320-632195/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	632195
LCS 320-632195/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	632195
LCSD 320-632195/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	632195
320-93962-A-1-B MS	Matrix Spike	Total/NA	Water	EPA 537(Mod)	632195
320-93962-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	632195

### Analysis Batch: 638849

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-93962-A-1-B MS - DL	Matrix Spike	Total/NA	Water	EPA 537(Mod)	632195
320-93962-A-1-C MSD - DL	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	632195

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Client Sample ID: PW-145

Date Collected: 11/04/22 09:42

Date Received: 11/09/22 14:56

## Lab Sample ID: 320-94181-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.7 mL	10.0 mL	633306	11/16/22 06:49	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635144	11/24/22 14:10	K1S	EET SAC

## Client Sample ID: PW-133

Date Collected: 11/04/22 09:55

Date Received: 11/09/22 14:56

## Lab Sample ID: 320-94181-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.1 mL	10.0 mL	633306	11/16/22 06:49	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635144	11/24/22 14:20	K1S	EET SAC

## Client Sample ID: PW-093

Date Collected: 11/04/22 10:30

Date Received: 11/09/22 14:56

## Lab Sample ID: 320-94181-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.4 mL	10.0 mL	633306	11/16/22 06:49	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635144	11/24/22 14:51	K1S	EET SAC

## Client Sample ID: PW-143

Date Collected: 11/01/22 14:15

Date Received: 11/09/22 14:56

## Lab Sample ID: 320-94181-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.5 mL	10.0 mL	632195	11/11/22 05:23	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	638034	12/06/22 01:41	RS1	EET SAC

## Client Sample ID: PW-099

Date Collected: 11/04/22 13:15

Date Received: 11/09/22 14:56

## Lab Sample ID: 320-94181-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.2 mL	10.0 mL	633306	11/16/22 06:49	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635144	11/24/22 15:01	K1S	EET SAC

## Client Sample ID: PW-129

Date Collected: 11/04/22 14:00

Date Received: 11/09/22 14:56

## Lab Sample ID: 320-94181-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276 mL	10.0 mL	633306	11/16/22 06:49	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635144	11/24/22 15:11	K1S	EET SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

**Client Sample ID: PW-071**

**Lab Sample ID: 320-94181-7**

**Date Collected: 11/04/22 16:38**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

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 mL	10.0 mL	633306	11/16/22 06:49	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635144	11/24/22 15:21	K1S	EET SAC

**Client Sample ID: PW-124**

**Lab Sample ID: 320-94181-8**

**Date Collected: 11/04/22 15:40**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.9 mL	10.0 mL	633306	11/16/22 06:49	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635144	11/24/22 15:32	K1S	EET SAC

**Client Sample ID: PW-056**

**Lab Sample ID: 320-94181-9**

**Date Collected: 11/07/22 11:21**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.9 mL	10.0 mL	633301	11/16/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	634154	11/19/22 03:24	K1S	EET SAC

**Client Sample ID: PW-031**

**Lab Sample ID: 320-94181-10**

**Date Collected: 11/07/22 13:27**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

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 mL	10.0 mL	633301	11/16/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	634154	11/19/22 03:34	K1S	EET SAC

**Client Sample ID: PW-147**

**Lab Sample ID: 320-94181-11**

**Date Collected: 11/07/22 10:23**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			277.6 mL	10.0 mL	633301	11/16/22 05:49	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	634154	11/19/22 03:44	K1S	EET SAC

**Client Sample ID: PW-094**

**Lab Sample ID: 320-94181-12**

**Date Collected: 11/08/22 10:00**

**Matrix: Water**

**Date Received: 11/09/22 14:56**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.2 mL	10.0 mL	634416	11/21/22 06:17	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	637218	12/04/22 10:16	K1S	EET SAC

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94181-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-94181-1	PW-145	Water	11/04/22 09:42	11/09/22 14:56
320-94181-2	PW-133	Water	11/04/22 09:55	11/09/22 14:56
320-94181-3	PW-093	Water	11/04/22 10:30	11/09/22 14:56
320-94181-4	PW-143	Water	11/01/22 14:15	11/09/22 14:56
320-94181-5	PW-099	Water	11/04/22 13:15	11/09/22 14:56
320-94181-6	PW-129	Water	11/04/22 14:00	11/09/22 14:56
320-94181-7	PW-071	Water	11/04/22 16:38	11/09/22 14:56
320-94181-8	PW-124	Water	11/04/22 15:40	11/09/22 14:56
320-94181-9	PW-056	Water	11/07/22 11:21	11/09/22 14:56
320-94181-10	PW-031	Water	11/07/22 13:27	11/09/22 14:56
320-94181-11	PW-147	Water	11/07/22 10:23	11/09/22 14:56
320-94181-12	PW-094	Water	11/08/22 10:00	11/09/22 14:56

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

**Chain of Custody Record**

<b>Client Contact</b>		<b>Report To: Jessa Tibbetts</b>		<b>Site Contact:</b>		<b>Date:</b>		<b>COC No:</b>	
Shannon & Wilson Inc. 5430 Fairbanks Street, Suite 3 Anchorage, AK 99578 Phone: 907-561-2120 FAX: Project Name: AIA PFAS Site: P O # 106189-003		Tel/Fax: 907-433-3251 Analysis Turnaround Time Calendar (C) or Work Days (W) TAT If different from Below <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Lab Contact: PFAS QSM 53, Tab. B-15		Carrier: <b>Goldstreak</b>		Job No. 106189-003 COCs	
				Filtered Sample		SDG No.		Specific Notes:	
<b>Sample Identification</b>		<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type</b>	<b>Matrix</b>	<b># of Cont.</b>			
PW-145		11-4-22	9:42	G	W	2			
PW-133		11-4-22	9:55						
PW-093		11-4-22	10:30						
PW-143		11-1-22	14:15						
PW-099		11-4-22	13:15						
PW-129		11-4-22	14:00						
PW-071		11-4-22	16:38						
PW-124		11-4-22	15:40						
PW-056		11-7-22	11:21						
PW-031		11-7-22	13:27						
PW-147		11-7-22	10:23						
PW-094		11-8-22	10:00						
Preservation Used: (1= Ice; 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other) <input checked="" type="checkbox"/> X Possible Hazard Identification: <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown									
Special Instructions/QC Requirements & Comments: Level II Data Package Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For _____ Months									
Relinquished by: <i>Ma Kp</i>		Company: <b>StW</b>		Date/Time: <b>11-8-22 10:30</b>		Received by: <i>[Signature]</i>		Company: <b>EETCA</b>	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-94181-1

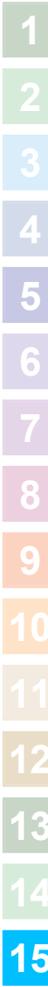
**Login Number: 94181**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Pratali, Sandra 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	1722165
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?	False	Not requested on COC.
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
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	



# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Jessa Tibbetts	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-994181-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	12/16/2022

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 0.4°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: The container label for the following sample(s) did not match the information listed on the Chain-of-Custody (COC): Sample 2 time on container 10:25. Sample 3 time on container 11:02. Sample 6 time on container 1430. All labeled per COC: PW-133 (320-94181-2), PW-093 (320-94181-3) and PW-129 (320-94181-6). This did not impact the sample integrity.
- The laboratory noted the samplers name was not present on the COC; however, our sampler's signature was present, and we do not consider the custody to be breached.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-994181-1

**b. Are there discrepancies, errors, or QC failures identified by the lab?**

Yes  No  N/A

Comments: The laboratory case narrative noted the following:

- Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. PW-094 (320-94181-12).
- Method EPA 537(Mod): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for several analytes of preparation batch 320-633301 and analytical batch 320-634154 were outside control limits. Sample matrix interference are suspected because the associated laboratory control sample and laboratory control sample duplicate (LCS/LCSD) recovery were within acceptance limits.
- Method EPA 537(Mod): Due to the high concentration of several analytes, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-633301 and analytical batch 320-634154 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.
- Method EPA 537(Mod): The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 320-633301 and analytical batch 320-634313 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected.
- Method EPA 537(Mod): Due to the high concentration of Perfluorooctanoic acid (PFOA), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-632195 and analytical batch 320-638034 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.
- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-633306.
- Method 3535: The following samples in preparation batch 320-633306 were observed to have floating particulates present in the sample bottle. PW-145 (320-94181-1), PW-133 (320-94181-2) and PW-093 (320-94181-3).

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

**c. What is the effect on data quality/usability according to the case narrative?**

Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?  
Yes  No  N/A   
Comments:
- b. Are all applicable holding times met?  
Yes  No  N/A   
Comments:
- c. Are all soils reported on a dry weight basis?  
Yes  No  N/A   
Comments: Soil samples were not submitted with this work order.
- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?  
Yes  No  N/A   
Comments:
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

- a. Method Blank
- i. Was one method blank reported per matrix, analysis, and 20 samples?  
Yes  No  N/A   
Comments:
- ii. Are all method blank results less than LOQ (or RL)?  
Yes  No   
Comments:
- iii. If above LoQ or RL, what samples are affected?  
Comments: N/A.
- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments: N/A; see above.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-994181-1

v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-994181-1

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were reported for Prep Batches 632195, 633301, 633306, and 634416.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

- Method EPA 537(Mod): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for several analytes of preparation batch 320-633301 and analytical batch 320-634154 were outside control limits. Sample matrix interference are suspected because the associated laboratory control sample and laboratory control sample duplicate (LCS/LCSD) recovery were within acceptance limits.
- Method EPA 537(Mod): Due to the high concentration of several analytes, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-633301 and analytical batch 320-634154 could not be evaluated for accuracy. The associated laboratory control sample (LCS) met acceptance criteria.
- Method EPA 537(Mod): Due to the high concentration of Perfluorooctanoic acid (PFOA), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-632195 and analytical batch 320-638034 could not be evaluated for accuracy. The associated laboratory control sample (LCS) met acceptance criteria.

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-994181-1

Comments:

- Method EPA 537(Mod): Due to the high concentration of several analytes, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-633301 and analytical batch 320-634154 could not be evaluated for precision. The associated laboratory control sample (LCS) met acceptance criteria.
- Method EPA 537(Mod): The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 320-633301 and analytical batch 320-634313 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected.
- Method EPA 537(Mod): Due to the high concentration of Perfluorooctanoic acid (PFOA), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-632195 and analytical batch 320-638034 could not be evaluated for precision. The associated laboratory control sample (LCS) met acceptance criteria.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: None; MS/MSD failures only apply to the sample that was spiked and the samples used by the laboratory do not belong to this project sample set. Results are not affected. LCS/LCSD information is referenced to assess the accuracy and precision.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: The LCS/LCSD results for the project samples met acceptance criteria and do not require flagging.

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments: IDAs were reported for the PFAS project samples.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-994181-1

Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: The data quality and usability were not affected.

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments: A trip blank is not required for PFAS analysis.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: A trip blank was not submitted with this work order.

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. A field duplicate was not collected with the samples in this work order.

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments:

CS Site Name: AIA Anchorage Airport Sitewide PFAS

Lab Report No.: 320-994181-1

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: N/A; see above.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

- iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

- a. Are they defined and appropriate?

Yes  No  N/A

Comments: The laboratory applied an "I" flag due to QC failure with the transition mass ratio. We consider the result estimated and have applied a "J" flag for the PFBS result for sample *PW-094*.



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 12/12/2022 12:15:06 PM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-94386-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
12/12/2022 12:15:06 PM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	8
Isotope Dilution Summary . . . . .	20
QC Sample Results . . . . .	22
QC Association Summary . . . . .	31
Lab Chronicle . . . . .	33
Certification Summary . . . . .	36
Method Summary . . . . .	37
Sample Summary . . . . .	38
Chain of Custody . . . . .	39
Receipt Checklists . . . . .	40

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

---

## Job ID: 320-94386-1

---

### Laboratory: Eurofins Sacramento

#### Narrative

---

#### Job Narrative 320-94386-1

#### Receipt

The samples were received on 11/15/2022 3:04 PM. 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 0.9° C.

#### LCMS

Method EPA 537(Mod): Due to the high concentration of Perfluorohexanoic acid (PFHxA), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-634418 and analytical batch 320-635218 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

Method EPA 537(Mod): The matrix spike (MS) recovery for Perfluorobutanesulfonic acid (PFBS) preparation batch 320-634418 and analytical batch 320-635218 was outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method EPA 537(Mod): The following samples PW-551 (320-94386-1), PW-142 (320-94386-2), PW-154 (320-94386-3), PW-5106 (320-94386-4), PW-149 (320-94386-5), PW-106 (320-94386-6), PW-053 (320-94386-7), PW-078 (320-94386-8), PW-051 (320-94386-9) and PW-057 (320-94386-10), were analyzed in an analytical batch which exceeded the 10 sample limit. The bracketing continuing calibration verifications are in control for the affected samples. There is no adverse impact on the data, due to this anomaly.

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 in preparation batch 320-634418 were light brown in color prior to extraction. PW-551 (320-94386-1) and PW-051 (320-94386-9)

Method 3535: The following samples in preparation batch 320-634418 were observed to have floating particulates present in the sample bottle. PW-551 (320-94386-1), PW-5106 (320-94386-4), PW-106 (320-94386-6) and PW-051 (320-94386-9)

Method 3535: Due to the excess amount of floating particulates, the following samples were centrifuged and decanted into new 250 mL container: PW-551 (320-94386-1) and PW-051 (320-94386-9). After centrifuging and decanting, the samples were fortified with IDA and then extracted. 320-634418

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-634419.

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

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Client Sample ID: PW-551

Lab Sample ID: 320-94386-1

No Detections.

## Client Sample ID: PW-142

Lab Sample ID: 320-94386-2

No Detections.

## Client Sample ID: PW-154

Lab Sample ID: 320-94386-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	1.5	J	1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-5106

Lab Sample ID: 320-94386-4

No Detections.

## Client Sample ID: PW-149

Lab Sample ID: 320-94386-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.78	J	1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.0	J	1.7	0.73	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.26	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.74	J	1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-106

Lab Sample ID: 320-94386-6

No Detections.

## Client Sample ID: PW-053

Lab Sample ID: 320-94386-7

No Detections.

## Client Sample ID: PW-078

Lab Sample ID: 320-94386-8

No Detections.

## Client Sample ID: PW-051

Lab Sample ID: 320-94386-9

No Detections.

## Client Sample ID: PW-057

Lab Sample ID: 320-94386-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.0	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-123

Lab Sample ID: 320-94386-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.27	J B	1.7	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.29	J B	1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.29	J B	1.7	0.27	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.40	J B	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	0.24	J	1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-126

Lab Sample ID: 320-94386-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorononanoic acid (PFNA)	0.27	J B	1.8	0.25	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.36	J B	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-126 (Continued)**

**Lab Sample ID: 320-94386-12**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	0.22	J	1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-551**

**Lab Sample ID: 320-94386-1**

**Date Collected: 11/09/22 10:45**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		11/21/22 06:32	11/24/22 02:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		11/21/22 06:32	11/24/22 02:02	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		11/21/22 06:32	11/24/22 02:02	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		11/21/22 06:32	11/24/22 02:02	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		11/21/22 06:32	11/24/22 02:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		11/21/22 06:32	11/24/22 02:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		11/21/22 06:32	11/24/22 02:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		11/21/22 06:32	11/24/22 02:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		11/21/22 06:32	11/24/22 02:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/21/22 06:32	11/24/22 02:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		11/21/22 06:32	11/24/22 02:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		11/21/22 06:32	11/24/22 02:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		11/21/22 06:32	11/24/22 02:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.3	ng/L		11/21/22 06:32	11/24/22 02:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		11/21/22 06:32	11/24/22 02:02	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		11/21/22 06:32	11/24/22 02:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		11/21/22 06:32	11/24/22 02:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	11/21/22 06:32	11/24/22 02:02	1
13C4 PFHpA	94		50 - 150	11/21/22 06:32	11/24/22 02:02	1
13C4 PFOA	93		50 - 150	11/21/22 06:32	11/24/22 02:02	1
13C5 PFNA	109		50 - 150	11/21/22 06:32	11/24/22 02:02	1
13C2 PFDA	103		50 - 150	11/21/22 06:32	11/24/22 02:02	1
13C2 PFUnA	97		50 - 150	11/21/22 06:32	11/24/22 02:02	1
13C2 PFDoA	87		50 - 150	11/21/22 06:32	11/24/22 02:02	1
13C2 PFTeDA	96		50 - 150	11/21/22 06:32	11/24/22 02:02	1
13C3 PFBS	85		50 - 150	11/21/22 06:32	11/24/22 02:02	1
18O2 PFHxS	90		50 - 150	11/21/22 06:32	11/24/22 02:02	1
13C4 PFOS	102		50 - 150	11/21/22 06:32	11/24/22 02:02	1
d3-NMeFOSAA	98		50 - 150	11/21/22 06:32	11/24/22 02:02	1
d5-NEt FOSAA	89		50 - 150	11/21/22 06:32	11/24/22 02:02	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/21/22 06:32	12/04/22 16:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	94		50 - 150	11/21/22 06:32	12/04/22 16:11	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-142**

**Lab Sample ID: 320-94386-2**

**Date Collected: 11/10/22 12:03**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.51	ng/L		11/21/22 06:32	11/24/22 02:12	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		11/21/22 06:32	11/24/22 02:12	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		11/21/22 06:32	11/24/22 02:12	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		11/21/22 06:32	11/24/22 02:12	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		11/21/22 06:32	11/24/22 02:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		11/21/22 06:32	11/24/22 02:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		11/21/22 06:32	11/24/22 02:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/21/22 06:32	11/24/22 02:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		11/21/22 06:32	11/24/22 02:12	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		11/21/22 06:32	11/24/22 02:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.50	ng/L		11/21/22 06:32	11/24/22 02:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		11/21/22 06:32	11/24/22 02:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		11/21/22 06:32	11/24/22 02:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		11/21/22 06:32	11/24/22 02:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		11/21/22 06:32	11/24/22 02:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		11/21/22 06:32	11/24/22 02:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		11/21/22 06:32	11/24/22 02:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		50 - 150	11/21/22 06:32	11/24/22 02:12	1
13C4 PFHpA	90		50 - 150	11/21/22 06:32	11/24/22 02:12	1
13C4 PFOA	91		50 - 150	11/21/22 06:32	11/24/22 02:12	1
13C5 PFNA	108		50 - 150	11/21/22 06:32	11/24/22 02:12	1
13C2 PFDA	101		50 - 150	11/21/22 06:32	11/24/22 02:12	1
13C2 PFUnA	96		50 - 150	11/21/22 06:32	11/24/22 02:12	1
13C2 PFDoA	93		50 - 150	11/21/22 06:32	11/24/22 02:12	1
13C2 PFTeDA	102		50 - 150	11/21/22 06:32	11/24/22 02:12	1
13C3 PFBS	93		50 - 150	11/21/22 06:32	11/24/22 02:12	1
18O2 PFHxS	89		50 - 150	11/21/22 06:32	11/24/22 02:12	1
13C4 PFOS	103		50 - 150	11/21/22 06:32	11/24/22 02:12	1
d3-NMeFOSAA	97		50 - 150	11/21/22 06:32	11/24/22 02:12	1
d5-NEt FOSAA	88		50 - 150	11/21/22 06:32	11/24/22 02:12	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/21/22 06:32	12/04/22 16:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	95		50 - 150	11/21/22 06:32	12/04/22 16:21	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-154**

**Lab Sample ID: 320-94386-3**

**Date Collected: 11/10/22 11:15**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		11/21/22 06:32	11/24/22 02:22	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		11/21/22 06:32	11/24/22 02:22	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		11/21/22 06:32	11/24/22 02:22	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		11/21/22 06:32	11/24/22 02:22	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		11/21/22 06:32	11/24/22 02:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		11/21/22 06:32	11/24/22 02:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		11/21/22 06:32	11/24/22 02:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/21/22 06:32	11/24/22 02:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		11/21/22 06:32	11/24/22 02:22	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		11/21/22 06:32	11/24/22 02:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		11/21/22 06:32	11/24/22 02:22	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>1.5</b>	<b>J</b>	1.7	0.46	ng/L		11/21/22 06:32	11/24/22 02:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		11/21/22 06:32	11/24/22 02:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		11/21/22 06:32	11/24/22 02:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		11/21/22 06:32	11/24/22 02:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		11/21/22 06:32	11/24/22 02:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		11/21/22 06:32	11/24/22 02:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	11/21/22 06:32	11/24/22 02:22	1
13C4 PFHpA	95		50 - 150	11/21/22 06:32	11/24/22 02:22	1
13C4 PFOA	94		50 - 150	11/21/22 06:32	11/24/22 02:22	1
13C5 PFNA	112		50 - 150	11/21/22 06:32	11/24/22 02:22	1
13C2 PFDA	103		50 - 150	11/21/22 06:32	11/24/22 02:22	1
13C2 PFUnA	93		50 - 150	11/21/22 06:32	11/24/22 02:22	1
13C2 PFDoA	95		50 - 150	11/21/22 06:32	11/24/22 02:22	1
13C2 PFTeDA	97		50 - 150	11/21/22 06:32	11/24/22 02:22	1
13C3 PFBS	91		50 - 150	11/21/22 06:32	11/24/22 02:22	1
18O2 PFHxS	91		50 - 150	11/21/22 06:32	11/24/22 02:22	1
13C4 PFOS	108		50 - 150	11/21/22 06:32	11/24/22 02:22	1
d3-NMeFOSAA	98		50 - 150	11/21/22 06:32	11/24/22 02:22	1
d5-NEt FOSAA	88		50 - 150	11/21/22 06:32	11/24/22 02:22	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		11/21/22 06:32	12/04/22 16:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	87		50 - 150	11/21/22 06:32	12/04/22 16:31	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-5106**

**Lab Sample ID: 320-94386-4**

**Date Collected: 11/09/22 11:35**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/21/22 06:32	11/24/22 02:33	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/21/22 06:32	11/24/22 02:33	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/21/22 06:32	11/24/22 02:33	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/21/22 06:32	11/24/22 02:33	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/21/22 06:32	11/24/22 02:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/21/22 06:32	11/24/22 02:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/21/22 06:32	11/24/22 02:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/21/22 06:32	11/24/22 02:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/21/22 06:32	11/24/22 02:33	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/21/22 06:32	11/24/22 02:33	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/21/22 06:32	11/24/22 02:33	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/21/22 06:32	11/24/22 02:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		11/21/22 06:32	11/24/22 02:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		11/21/22 06:32	11/24/22 02:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/21/22 06:32	11/24/22 02:33	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/21/22 06:32	11/24/22 02:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/21/22 06:32	11/24/22 02:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	11/21/22 06:32	11/24/22 02:33	1
13C4 PFHpA	93		50 - 150	11/21/22 06:32	11/24/22 02:33	1
13C4 PFOA	100		50 - 150	11/21/22 06:32	11/24/22 02:33	1
13C5 PFNA	112		50 - 150	11/21/22 06:32	11/24/22 02:33	1
13C2 PFDA	106		50 - 150	11/21/22 06:32	11/24/22 02:33	1
13C2 PFUnA	97		50 - 150	11/21/22 06:32	11/24/22 02:33	1
13C2 PFDoA	93		50 - 150	11/21/22 06:32	11/24/22 02:33	1
13C2 PFTeDA	102		50 - 150	11/21/22 06:32	11/24/22 02:33	1
13C3 PFBS	92		50 - 150	11/21/22 06:32	11/24/22 02:33	1
18O2 PFHxS	94		50 - 150	11/21/22 06:32	11/24/22 02:33	1
13C4 PFOS	110		50 - 150	11/21/22 06:32	11/24/22 02:33	1
d3-NMeFOSAA	101		50 - 150	11/21/22 06:32	11/24/22 02:33	1
d5-NEt FOSAA	85		50 - 150	11/21/22 06:32	11/24/22 02:33	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/21/22 06:32	12/04/22 16:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	93		50 - 150	11/21/22 06:32	12/04/22 16:42	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-149**

**Lab Sample ID: 320-94386-5**

**Date Collected: 11/10/22 12:30**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.78</b>	<b>J</b>	1.7	0.50	ng/L		11/21/22 06:32	11/24/22 02:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		11/21/22 06:32	11/24/22 02:43	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.0</b>	<b>J</b>	1.7	0.73	ng/L		11/21/22 06:32	11/24/22 02:43	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		11/21/22 06:32	11/24/22 02:43	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		11/21/22 06:32	11/24/22 02:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		11/21/22 06:32	11/24/22 02:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		11/21/22 06:32	11/24/22 02:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/21/22 06:32	11/24/22 02:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		11/21/22 06:32	11/24/22 02:43	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.26</b>	<b>J</b>	1.7	0.17	ng/L		11/21/22 06:32	11/24/22 02:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		11/21/22 06:32	11/24/22 02:43	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.74</b>	<b>J</b>	1.7	0.46	ng/L		11/21/22 06:32	11/24/22 02:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		11/21/22 06:32	11/24/22 02:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		11/21/22 06:32	11/24/22 02:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		11/21/22 06:32	11/24/22 02:43	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		11/21/22 06:32	11/24/22 02:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		11/21/22 06:32	11/24/22 02:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	11/21/22 06:32	11/24/22 02:43	1
13C4 PFHpA	92		50 - 150	11/21/22 06:32	11/24/22 02:43	1
13C4 PFOA	95		50 - 150	11/21/22 06:32	11/24/22 02:43	1
13C5 PFNA	110		50 - 150	11/21/22 06:32	11/24/22 02:43	1
13C2 PFDA	104		50 - 150	11/21/22 06:32	11/24/22 02:43	1
13C2 PFUnA	96		50 - 150	11/21/22 06:32	11/24/22 02:43	1
13C2 PFDoA	94		50 - 150	11/21/22 06:32	11/24/22 02:43	1
13C2 PFTeDA	98		50 - 150	11/21/22 06:32	11/24/22 02:43	1
13C3 PFBS	95		50 - 150	11/21/22 06:32	11/24/22 02:43	1
18O2 PFHxS	96		50 - 150	11/21/22 06:32	11/24/22 02:43	1
13C4 PFOS	110		50 - 150	11/21/22 06:32	11/24/22 02:43	1
d3-NMeFOSAA	100		50 - 150	11/21/22 06:32	11/24/22 02:43	1
d5-NEt FOSAA	86		50 - 150	11/21/22 06:32	11/24/22 02:43	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		11/21/22 06:32	12/04/22 17:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	96		50 - 150	11/21/22 06:32	12/04/22 17:12	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-106**

**Lab Sample ID: 320-94386-6**

**Date Collected: 11/09/22 11:05**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		11/21/22 06:32	11/24/22 02:53	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/21/22 06:32	11/24/22 02:53	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		11/21/22 06:32	11/24/22 02:53	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/21/22 06:32	11/24/22 02:53	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		11/21/22 06:32	11/24/22 02:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		11/21/22 06:32	11/24/22 02:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/21/22 06:32	11/24/22 02:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/21/22 06:32	11/24/22 02:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		11/21/22 06:32	11/24/22 02:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/21/22 06:32	11/24/22 02:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/21/22 06:32	11/24/22 02:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		11/21/22 06:32	11/24/22 02:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		11/21/22 06:32	11/24/22 02:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		11/21/22 06:32	11/24/22 02:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/21/22 06:32	11/24/22 02:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		11/21/22 06:32	11/24/22 02:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		11/21/22 06:32	11/24/22 02:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		50 - 150	11/21/22 06:32	11/24/22 02:53	1
13C4 PFHpA	89		50 - 150	11/21/22 06:32	11/24/22 02:53	1
13C4 PFOA	87		50 - 150	11/21/22 06:32	11/24/22 02:53	1
13C5 PFNA	106		50 - 150	11/21/22 06:32	11/24/22 02:53	1
13C2 PFDA	103		50 - 150	11/21/22 06:32	11/24/22 02:53	1
13C2 PFUnA	95		50 - 150	11/21/22 06:32	11/24/22 02:53	1
13C2 PFDoA	87		50 - 150	11/21/22 06:32	11/24/22 02:53	1
13C2 PFTeDA	97		50 - 150	11/21/22 06:32	11/24/22 02:53	1
13C3 PFBS	88		50 - 150	11/21/22 06:32	11/24/22 02:53	1
18O2 PFHxS	92		50 - 150	11/21/22 06:32	11/24/22 02:53	1
13C4 PFOS	107		50 - 150	11/21/22 06:32	11/24/22 02:53	1
d3-NMeFOSAA	93		50 - 150	11/21/22 06:32	11/24/22 02:53	1
d5-NEt FOSAA	85		50 - 150	11/21/22 06:32	11/24/22 02:53	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/21/22 06:32	12/04/22 17:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	87		50 - 150	11/21/22 06:32	12/04/22 17:22	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-053**

**Lab Sample ID: 320-94386-7**

**Date Collected: 11/09/22 13:14**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/21/22 06:32	11/24/22 03:03	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/21/22 06:32	11/24/22 03:03	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/21/22 06:32	11/24/22 03:03	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/21/22 06:32	11/24/22 03:03	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/21/22 06:32	11/24/22 03:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/21/22 06:32	11/24/22 03:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/21/22 06:32	11/24/22 03:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/21/22 06:32	11/24/22 03:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/21/22 06:32	11/24/22 03:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/21/22 06:32	11/24/22 03:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/21/22 06:32	11/24/22 03:03	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/21/22 06:32	11/24/22 03:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/21/22 06:32	11/24/22 03:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/21/22 06:32	11/24/22 03:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/21/22 06:32	11/24/22 03:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/21/22 06:32	11/24/22 03:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/21/22 06:32	11/24/22 03:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	11/21/22 06:32	11/24/22 03:03	1
13C4 PFHpA	95		50 - 150	11/21/22 06:32	11/24/22 03:03	1
13C4 PFOA	101		50 - 150	11/21/22 06:32	11/24/22 03:03	1
13C5 PFNA	116		50 - 150	11/21/22 06:32	11/24/22 03:03	1
13C2 PFDA	102		50 - 150	11/21/22 06:32	11/24/22 03:03	1
13C2 PFUnA	101		50 - 150	11/21/22 06:32	11/24/22 03:03	1
13C2 PFDoA	93		50 - 150	11/21/22 06:32	11/24/22 03:03	1
13C2 PFTeDA	86		50 - 150	11/21/22 06:32	11/24/22 03:03	1
13C3 PFBS	95		50 - 150	11/21/22 06:32	11/24/22 03:03	1
18O2 PFHxS	93		50 - 150	11/21/22 06:32	11/24/22 03:03	1
13C4 PFOS	108		50 - 150	11/21/22 06:32	11/24/22 03:03	1
d3-NMeFOSAA	101		50 - 150	11/21/22 06:32	11/24/22 03:03	1
d5-NEt FOSAA	90		50 - 150	11/21/22 06:32	11/24/22 03:03	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/21/22 06:32	12/04/22 17:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	94		50 - 150	11/21/22 06:32	12/04/22 17:32	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-078**

**Lab Sample ID: 320-94386-8**

**Date Collected: 11/09/22 12:20**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/21/22 06:32	11/24/22 03:13	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/21/22 06:32	11/24/22 03:13	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/21/22 06:32	11/24/22 03:13	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/21/22 06:32	11/24/22 03:13	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/21/22 06:32	11/24/22 03:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/21/22 06:32	11/24/22 03:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/21/22 06:32	11/24/22 03:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/21/22 06:32	11/24/22 03:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/21/22 06:32	11/24/22 03:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/21/22 06:32	11/24/22 03:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/21/22 06:32	11/24/22 03:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/21/22 06:32	11/24/22 03:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/21/22 06:32	11/24/22 03:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/21/22 06:32	11/24/22 03:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/21/22 06:32	11/24/22 03:13	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/21/22 06:32	11/24/22 03:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/21/22 06:32	11/24/22 03:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	11/21/22 06:32	11/24/22 03:13	1
13C4 PFHpA	89		50 - 150	11/21/22 06:32	11/24/22 03:13	1
13C4 PFOA	99		50 - 150	11/21/22 06:32	11/24/22 03:13	1
13C5 PFNA	112		50 - 150	11/21/22 06:32	11/24/22 03:13	1
13C2 PFDA	103		50 - 150	11/21/22 06:32	11/24/22 03:13	1
13C2 PFUnA	96		50 - 150	11/21/22 06:32	11/24/22 03:13	1
13C2 PFDoA	86		50 - 150	11/21/22 06:32	11/24/22 03:13	1
13C2 PFTeDA	95		50 - 150	11/21/22 06:32	11/24/22 03:13	1
13C3 PFBS	94		50 - 150	11/21/22 06:32	11/24/22 03:13	1
18O2 PFHxS	93		50 - 150	11/21/22 06:32	11/24/22 03:13	1
13C4 PFOS	113		50 - 150	11/21/22 06:32	11/24/22 03:13	1
d3-NMeFOSAA	97		50 - 150	11/21/22 06:32	11/24/22 03:13	1
d5-NEt FOSAA	87		50 - 150	11/21/22 06:32	11/24/22 03:13	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/21/22 06:32	12/04/22 17:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	93		50 - 150	11/21/22 06:32	12/04/22 17:42	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-051**

**Lab Sample ID: 320-94386-9**

**Date Collected: 11/09/22 10:15**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		11/21/22 06:32	11/24/22 03:23	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/21/22 06:32	11/24/22 03:23	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		11/21/22 06:32	11/24/22 03:23	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/21/22 06:32	11/24/22 03:23	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		11/21/22 06:32	11/24/22 03:23	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/21/22 06:32	11/24/22 03:23	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		11/21/22 06:32	11/24/22 03:23	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/21/22 06:32	11/24/22 03:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		11/21/22 06:32	11/24/22 03:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/21/22 06:32	11/24/22 03:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		11/21/22 06:32	11/24/22 03:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		11/21/22 06:32	11/24/22 03:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		11/21/22 06:32	11/24/22 03:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		11/21/22 06:32	11/24/22 03:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/21/22 06:32	11/24/22 03:23	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		11/21/22 06:32	11/24/22 03:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		11/21/22 06:32	11/24/22 03:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	11/21/22 06:32	11/24/22 03:23	1
13C4 PFHpA	96		50 - 150	11/21/22 06:32	11/24/22 03:23	1
13C4 PFOA	101		50 - 150	11/21/22 06:32	11/24/22 03:23	1
13C5 PFNA	114		50 - 150	11/21/22 06:32	11/24/22 03:23	1
13C2 PFDA	109		50 - 150	11/21/22 06:32	11/24/22 03:23	1
13C2 PFUnA	99		50 - 150	11/21/22 06:32	11/24/22 03:23	1
13C2 PFDoA	98		50 - 150	11/21/22 06:32	11/24/22 03:23	1
13C2 PFTeDA	105		50 - 150	11/21/22 06:32	11/24/22 03:23	1
13C3 PFBS	95		50 - 150	11/21/22 06:32	11/24/22 03:23	1
18O2 PFHxS	97		50 - 150	11/21/22 06:32	11/24/22 03:23	1
13C4 PFOS	113		50 - 150	11/21/22 06:32	11/24/22 03:23	1
d3-NMeFOSAA	108		50 - 150	11/21/22 06:32	11/24/22 03:23	1
d5-NEt FOSAA	90		50 - 150	11/21/22 06:32	11/24/22 03:23	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		11/21/22 06:32	12/04/22 17:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	87		50 - 150	11/21/22 06:32	12/04/22 17:52	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-057**

**Lab Sample ID: 320-94386-10**

**Date Collected: 11/10/22 14:15**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>1.0</b>	<b>J</b>	1.9	0.54	ng/L		11/21/22 06:32	11/24/22 03:53	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/21/22 06:32	11/24/22 03:53	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/21/22 06:32	11/24/22 03:53	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/21/22 06:32	11/24/22 03:53	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/21/22 06:32	11/24/22 03:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/21/22 06:32	11/24/22 03:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/21/22 06:32	11/24/22 03:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/21/22 06:32	11/24/22 03:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/21/22 06:32	11/24/22 03:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/21/22 06:32	11/24/22 03:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/21/22 06:32	11/24/22 03:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/21/22 06:32	11/24/22 03:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/21/22 06:32	11/24/22 03:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/21/22 06:32	11/24/22 03:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/21/22 06:32	11/24/22 03:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/21/22 06:32	11/24/22 03:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/21/22 06:32	11/24/22 03:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	11/21/22 06:32	11/24/22 03:53	1
13C4 PFHpA	94		50 - 150	11/21/22 06:32	11/24/22 03:53	1
13C4 PFOA	96		50 - 150	11/21/22 06:32	11/24/22 03:53	1
13C5 PFNA	115		50 - 150	11/21/22 06:32	11/24/22 03:53	1
13C2 PFDA	101		50 - 150	11/21/22 06:32	11/24/22 03:53	1
13C2 PFUnA	96		50 - 150	11/21/22 06:32	11/24/22 03:53	1
13C2 PFDoA	93		50 - 150	11/21/22 06:32	11/24/22 03:53	1
13C2 PFTeDA	99		50 - 150	11/21/22 06:32	11/24/22 03:53	1
13C3 PFBS	89		50 - 150	11/21/22 06:32	11/24/22 03:53	1
18O2 PFHxS	93		50 - 150	11/21/22 06:32	11/24/22 03:53	1
13C4 PFOS	107		50 - 150	11/21/22 06:32	11/24/22 03:53	1
d3-NMeFOSAA	98		50 - 150	11/21/22 06:32	11/24/22 03:53	1
d5-NEtFOSAA	89		50 - 150	11/21/22 06:32	11/24/22 03:53	1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/21/22 06:32	12/04/22 18:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	92		50 - 150	11/21/22 06:32	12/04/22 18:02	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-123**

**Lab Sample ID: 320-94386-11**

**Date Collected: 11/08/22 14:00**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		11/21/22 07:24	11/27/22 18:39	1
<b>Perfluoroheptanoic acid (PFHpA)</b>	<b>0.27</b>	<b>J B</b>	1.7	0.22	ng/L		11/21/22 07:24	11/27/22 18:39	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		11/21/22 07:24	11/27/22 18:39	1
<b>Perfluorononanoic acid (PFNA)</b>	<b>0.29</b>	<b>J B</b>	1.7	0.23	ng/L		11/21/22 07:24	11/27/22 18:39	1
<b>Perfluorodecanoic acid (PFDA)</b>	<b>0.29</b>	<b>J B</b>	1.7	0.27	ng/L		11/21/22 07:24	11/27/22 18:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		11/21/22 07:24	11/27/22 18:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		11/21/22 07:24	11/27/22 18:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/21/22 07:24	11/27/22 18:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		11/21/22 07:24	11/27/22 18:39	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.40</b>	<b>J B</b>	1.7	0.17	ng/L		11/21/22 07:24	11/27/22 18:39	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		11/21/22 07:24	11/27/22 18:39	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		11/21/22 07:24	11/27/22 18:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		11/21/22 07:24	11/27/22 18:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		11/21/22 07:24	11/27/22 18:39	1
<b>9-Chlorohexadecafluoro-3-oxonane-1-sulfonic acid</b>	<b>0.24</b>	<b>J</b>	1.7	0.21	ng/L		11/21/22 07:24	11/27/22 18:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/21/22 07:24	11/27/22 18:39	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		11/21/22 07:24	11/27/22 18:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		11/21/22 07:24	11/27/22 18:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		50 - 150	11/21/22 07:24	11/27/22 18:39	1
13C4 PFHpA	89		50 - 150	11/21/22 07:24	11/27/22 18:39	1
13C4 PFOA	89		50 - 150	11/21/22 07:24	11/27/22 18:39	1
13C5 PFNA	104		50 - 150	11/21/22 07:24	11/27/22 18:39	1
13C2 PFDA	97		50 - 150	11/21/22 07:24	11/27/22 18:39	1
13C2 PFUnA	84		50 - 150	11/21/22 07:24	11/27/22 18:39	1
13C2 PFDoA	76		50 - 150	11/21/22 07:24	11/27/22 18:39	1
13C2 PFTeDA	72		50 - 150	11/21/22 07:24	11/27/22 18:39	1
13C3 PFBS	79		50 - 150	11/21/22 07:24	11/27/22 18:39	1
18O2 PFHxS	86		50 - 150	11/21/22 07:24	11/27/22 18:39	1
13C4 PFOS	92		50 - 150	11/21/22 07:24	11/27/22 18:39	1
d3-NMeFOSAA	76		50 - 150	11/21/22 07:24	11/27/22 18:39	1
d5-NEtFOSAA	76		50 - 150	11/21/22 07:24	11/27/22 18:39	1
13C3 HFPO-DA	75		50 - 150	11/21/22 07:24	11/27/22 18:39	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-126**

**Lab Sample ID: 320-94386-12**

**Date Collected: 11/08/22 15:15**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/21/22 07:24	11/27/22 18:49	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/21/22 07:24	11/27/22 18:49	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/21/22 07:24	11/27/22 18:49	1
<b>Perfluorononanoic acid (PFNA)</b>	<b>0.27</b>	<b>J B</b>	1.8	0.25	ng/L		11/21/22 07:24	11/27/22 18:49	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/21/22 07:24	11/27/22 18:49	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/21/22 07:24	11/27/22 18:49	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/21/22 07:24	11/27/22 18:49	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/21/22 07:24	11/27/22 18:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/21/22 07:24	11/27/22 18:49	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.36</b>	<b>J B</b>	1.8	0.18	ng/L		11/21/22 07:24	11/27/22 18:49	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/21/22 07:24	11/27/22 18:49	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/21/22 07:24	11/27/22 18:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/21/22 07:24	11/27/22 18:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/21/22 07:24	11/27/22 18:49	1
<b>9-Chlorohexadecafluoro-3-oxonane-1-sulfonic acid</b>	<b>0.22</b>	<b>J</b>	1.8	0.22	ng/L		11/21/22 07:24	11/27/22 18:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/21/22 07:24	11/27/22 18:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/21/22 07:24	11/27/22 18:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/21/22 07:24	11/27/22 18:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		50 - 150	11/21/22 07:24	11/27/22 18:49	1
13C4 PFHpA	92		50 - 150	11/21/22 07:24	11/27/22 18:49	1
13C4 PFOA	88		50 - 150	11/21/22 07:24	11/27/22 18:49	1
13C5 PFNA	109		50 - 150	11/21/22 07:24	11/27/22 18:49	1
13C2 PFDA	103		50 - 150	11/21/22 07:24	11/27/22 18:49	1
13C2 PFUnA	92		50 - 150	11/21/22 07:24	11/27/22 18:49	1
13C2 PFDoA	89		50 - 150	11/21/22 07:24	11/27/22 18:49	1
13C2 PFTeDA	83		50 - 150	11/21/22 07:24	11/27/22 18:49	1
13C3 PFBS	82		50 - 150	11/21/22 07:24	11/27/22 18:49	1
18O2 PFHxS	86		50 - 150	11/21/22 07:24	11/27/22 18:49	1
13C4 PFOS	100		50 - 150	11/21/22 07:24	11/27/22 18:49	1
d3-NMeFOSAA	88		50 - 150	11/21/22 07:24	11/27/22 18:49	1
d5-NEtFOSAA	88		50 - 150	11/21/22 07:24	11/27/22 18:49	1
13C3 HFPO-DA	73		50 - 150	11/21/22 07:24	11/27/22 18:49	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-94216-A-3-C MS	Matrix Spike	80	86	92	107	102	100	96	99
320-94216-A-3-C MS - RA	Matrix Spike								
320-94216-A-3-D MSD	Matrix Spike Duplicate	78	84	90	108	104	95	84	89
320-94216-A-3-D MSD - RA	Matrix Spike Duplicate								
320-94386-1	PW-551	88	94	93	109	103	97	87	96
320-94386-1 - RA	PW-551								
320-94386-2	PW-142	96	90	91	108	101	96	93	102
320-94386-2 - RA	PW-142								
320-94386-3	PW-154	97	95	94	112	103	93	95	97
320-94386-3 - RA	PW-154								
320-94386-4	PW-5106	94	93	100	112	106	97	93	102
320-94386-4 - RA	PW-5106								
320-94386-5	PW-149	93	92	95	110	104	96	94	98
320-94386-5 - RA	PW-149								
320-94386-6	PW-106	90	89	87	106	103	95	87	97
320-94386-6 - RA	PW-106								
320-94386-7	PW-053	97	95	101	116	102	101	93	86
320-94386-7 - RA	PW-053								
320-94386-8	PW-078	93	89	99	112	103	96	86	95
320-94386-8 - RA	PW-078								
320-94386-9	PW-051	95	96	101	114	109	99	98	105
320-94386-9 - RA	PW-051								
320-94386-10	PW-057	94	94	96	115	101	96	93	99
320-94386-10 - RA	PW-057								
320-94386-11	PW-123	92	89	89	104	97	84	76	72
320-94386-12	PW-126	96	92	88	109	103	92	89	83
LCS 320-634418/2-A	Lab Control Sample	89	89	92	109	97	96	85	89
LCS 320-634418/2-A - RA	Lab Control Sample								
LCS 320-634419/2-A	Lab Control Sample	89	92	93	105	100	86	84	76
LCS 320-634418/3-A	Lab Control Sample Dup	90	93	93	105	98	91	76	82
LCS 320-634418/3-A - RA	Lab Control Sample Dup								
LCS 320-634419/3-A	Lab Control Sample Dup	104	98	95	116	107	109	99	88
MB 320-634418/1-A	Method Blank	88	88	90	102	100	91	84	86
MB 320-634418/1-A - RA	Method Blank								
MB 320-634419/1-A	Method Blank	108	102	92	116	106	104	89	77

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-94216-A-3-C MS	Matrix Spike	79	90	109	91	82	
320-94216-A-3-C MS - RA	Matrix Spike						74
320-94216-A-3-D MSD	Matrix Spike Duplicate	87	84	103	88	76	
320-94216-A-3-D MSD - RA	Matrix Spike Duplicate						76
320-94386-1	PW-551	85	90	102	98	89	
320-94386-1 - RA	PW-551						94
320-94386-2	PW-142	93	89	103	97	88	
320-94386-2 - RA	PW-142						95
320-94386-3	PW-154	91	91	108	98	88	
320-94386-3 - RA	PW-154						87
320-94386-4	PW-5106	92	94	110	101	85	

Eurolins Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-94386-1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)**

**Matrix: Water**

**Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-94386-4 - RA	PW-5106						93
320-94386-5	PW-149	95	96	110	100	86	
320-94386-5 - RA	PW-149						96
320-94386-6	PW-106	88	92	107	93	85	
320-94386-6 - RA	PW-106						87
320-94386-7	PW-053	95	93	108	101	90	
320-94386-7 - RA	PW-053						94
320-94386-8	PW-078	94	93	113	97	87	
320-94386-8 - RA	PW-078						93
320-94386-9	PW-051	95	97	113	108	90	
320-94386-9 - RA	PW-051						87
320-94386-10	PW-057	89	93	107	98	89	
320-94386-10 - RA	PW-057						92
320-94386-11	PW-123	79	86	92	76	76	75
320-94386-12	PW-126	82	86	100	88	88	73
LCS 320-634418/2-A	Lab Control Sample	83	89	93	96	81	
LCS 320-634418/2-A - RA	Lab Control Sample						92
LCS 320-634419/2-A	Lab Control Sample	78	91	97	80	76	83
LCSD 320-634418/3-A	Lab Control Sample Dup	88	91	95	96	82	
LCSD 320-634418/3-A - RA	Lab Control Sample Dup						97
LCSD 320-634419/3-A	Lab Control Sample Dup	87	92	106	92	93	93
MB 320-634418/1-A	Method Blank	84	89	102	91	77	
MB 320-634418/1-A - RA	Method Blank						92
MB 320-634419/1-A	Method Blank	86	90	102	87	88	89

**Surrogate Legend**

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-634418/1-A**  
**Matrix: Water**  
**Analysis Batch: 635218**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 634418**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/21/22 06:32	11/23/22 23:51	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/21/22 06:32	11/23/22 23:51	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/21/22 06:32	11/23/22 23:51	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/21/22 06:32	11/23/22 23:51	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/21/22 06:32	11/23/22 23:51	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/21/22 06:32	11/23/22 23:51	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/21/22 06:32	11/23/22 23:51	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/21/22 06:32	11/23/22 23:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/21/22 06:32	11/23/22 23:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/21/22 06:32	11/23/22 23:51	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/21/22 06:32	11/23/22 23:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/21/22 06:32	11/23/22 23:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/21/22 06:32	11/23/22 23:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/21/22 06:32	11/23/22 23:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/21/22 06:32	11/23/22 23:51	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/21/22 06:32	11/23/22 23:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/21/22 06:32	11/23/22 23:51	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	88		50 - 150	11/21/22 06:32	11/23/22 23:51	1
13C4 PFHpA	88		50 - 150	11/21/22 06:32	11/23/22 23:51	1
13C4 PFOA	90		50 - 150	11/21/22 06:32	11/23/22 23:51	1
13C5 PFNA	102		50 - 150	11/21/22 06:32	11/23/22 23:51	1
13C2 PFDA	100		50 - 150	11/21/22 06:32	11/23/22 23:51	1
13C2 PFUnA	91		50 - 150	11/21/22 06:32	11/23/22 23:51	1
13C2 PFDoA	84		50 - 150	11/21/22 06:32	11/23/22 23:51	1
13C2 PFTeDA	86		50 - 150	11/21/22 06:32	11/23/22 23:51	1
13C3 PFBS	84		50 - 150	11/21/22 06:32	11/23/22 23:51	1
18O2 PFHxS	89		50 - 150	11/21/22 06:32	11/23/22 23:51	1
13C4 PFOS	102		50 - 150	11/21/22 06:32	11/23/22 23:51	1
d3-NMeFOSAA	91		50 - 150	11/21/22 06:32	11/23/22 23:51	1
d5-NEtFOSAA	77		50 - 150	11/21/22 06:32	11/23/22 23:51	1

**Lab Sample ID: LCS 320-634418/2-A**  
**Matrix: Water**  
**Analysis Batch: 635218**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 634418**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits
		Result	Qualifier				
Perfluorohexanoic acid (PFHxA)	40.0	39.7		ng/L		99	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	44.1		ng/L		110	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	43.5		ng/L		109	71 - 133
Perfluorononanoic acid (PFNA)	40.0	39.9		ng/L		100	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	44.2		ng/L		111	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.0		ng/L		105	69 - 133

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-634418/2-A**  
**Matrix: Water**  
**Analysis Batch: 635218**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 634418**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	40.0	46.2		ng/L		115	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	45.9		ng/L		115	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	41.8		ng/L		104	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	38.3		ng/L		108	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.7		ng/L		103	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	40.8		ng/L		110	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.9		ng/L		110	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.9		ng/L		112	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	37.5		ng/L		100	77 - 137
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	35.5		ng/L		94	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	39.5		ng/L		105	81 - 141

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	89		50 - 150
13C4 PFHpA	89		50 - 150
13C4 PFOA	92		50 - 150
13C5 PFNA	109		50 - 150
13C2 PFDA	97		50 - 150
13C2 PFUnA	96		50 - 150
13C2 PFDoA	85		50 - 150
13C2 PFTeDA	89		50 - 150
13C3 PFBS	83		50 - 150
18O2 PFHxS	89		50 - 150
13C4 PFOS	93		50 - 150
d3-NMeFOSAA	96		50 - 150
d5-NEtFOSAA	81		50 - 150

**Lab Sample ID: LCSD 320-634418/3-A**  
**Matrix: Water**  
**Analysis Batch: 635218**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 634418**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.6		ng/L		102	72 - 129	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	39.4		ng/L		99	72 - 130	11	30
Perfluorooctanoic acid (PFOA)	40.0	42.6		ng/L		106	71 - 133	2	30
Perfluorononanoic acid (PFNA)	40.0	43.5		ng/L		109	69 - 130	9	30
Perfluorodecanoic acid (PFDA)	40.0	40.6		ng/L		102	71 - 129	8	30
Perfluoroundecanoic acid (PFUnA)	40.0	40.7		ng/L		102	69 - 133	3	30
Perfluorododecanoic acid (PFDoA)	40.0	44.8		ng/L		112	72 - 134	3	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-634418/3-A**  
**Matrix: Water**  
**Analysis Batch: 635218**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 634418**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorotridecanoic acid (PFTriA)	40.0	45.2		ng/L		113	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.1		ng/L		103	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.6		ng/L		109	72 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.4		ng/L		100	68 - 131	3	30
Perfluorooctanesulfonic acid (PFOS)	37.2	40.8		ng/L		110	65 - 140	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.4		ng/L		101	65 - 136	8	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.8		ng/L		105	61 - 135	7	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	40.8		ng/L		109	77 - 137	8	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	31.4		ng/L		83	76 - 136	12	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	37.6		ng/L		100	81 - 141	5	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	90		50 - 150
13C4 PFHpA	93		50 - 150
13C4 PFOA	93		50 - 150
13C5 PFNA	105		50 - 150
13C2 PFDA	98		50 - 150
13C2 PFUnA	91		50 - 150
13C2 PFDoA	76		50 - 150
13C2 PFTeDA	82		50 - 150
13C3 PFBS	88		50 - 150
18O2 PFHxS	91		50 - 150
13C4 PFOS	95		50 - 150
d3-NMeFOSAA	96		50 - 150
d5-NEtFOSAA	82		50 - 150

**Lab Sample ID: 320-94216-A-3-C MS**  
**Matrix: Water**  
**Analysis Batch: 635218**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 634418**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	250		36.1	279	4	ng/L		93	72 - 129
Perfluoroheptanoic acid (PFHpA)	53		36.1	91.7		ng/L		108	72 - 130
Perfluorooctanoic acid (PFOA)	86		36.1	126		ng/L		111	71 - 133
Perfluorononanoic acid (PFNA)	4.3		36.1	43.1		ng/L		107	69 - 130
Perfluorodecanoic acid (PFDA)	0.29	J	36.1	43.0		ng/L		118	71 - 129
Perfluoroundecanoic acid (PFUnA)	ND		36.1	34.7		ng/L		96	69 - 133
Perfluorododecanoic acid (PFDoA)	ND		36.1	38.0		ng/L		105	72 - 134
Perfluorotridecanoic acid (PFTriA)	ND		36.1	37.4		ng/L		104	65 - 144

Eurofins Sacramento



# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-94216-A-3-D MSD**

**Matrix: Water**

**Analysis Batch: 635218**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

**Prep Batch: 634418**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	54	F1	31.9	85.1		ng/L		96	72 - 130	13	30
Perfluorohexanesulfonic acid (PFHxS)	73		32.7	110		ng/L		113	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)	13		33.4	48.4		ng/L		106	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		35.9	40.1		ng/L		112	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		35.9	40.8		ng/L		114	61 - 135	10	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		33.5	34.5		ng/L		103	77 - 137	6	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		33.9	28.8		ng/L		85	76 - 136	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		33.9	29.3		ng/L		87	81 - 141	4	30
		<b>MSD</b>	<b>MSD</b>								
<b>Isotope Dilution</b>		<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>							
13C2 PFHxA		78		50 - 150							
13C4 PFHpA		84		50 - 150							
13C4 PFOA		90		50 - 150							
13C5 PFNA		108		50 - 150							
13C2 PFDA		104		50 - 150							
13C2 PFUnA		95		50 - 150							
13C2 PFDoA		84		50 - 150							
13C2 PFTeDA		89		50 - 150							
13C3 PFBS		87		50 - 150							
18O2 PFHxS		84		50 - 150							
13C4 PFOS		103		50 - 150							
d3-NMeFOSAA		88		50 - 150							
d5-NEtFOSAA		76		50 - 150							

**Lab Sample ID: MB 320-634419/1-A**

**Matrix: Water**

**Analysis Batch: 635406**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 634419**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/21/22 06:43	11/27/22 14:56	1
Perfluoroheptanoic acid (PFHpA)	0.257	J	2.0	0.25	ng/L		11/21/22 06:43	11/27/22 14:56	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/21/22 06:43	11/27/22 14:56	1
Perfluorononanoic acid (PFNA)	0.281	J	2.0	0.27	ng/L		11/21/22 06:43	11/27/22 14:56	1
Perfluorodecanoic acid (PFDA)	0.328	J	2.0	0.31	ng/L		11/21/22 06:43	11/27/22 14:56	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/21/22 06:43	11/27/22 14:56	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/21/22 06:43	11/27/22 14:56	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/21/22 06:43	11/27/22 14:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/21/22 06:43	11/27/22 14:56	1
Perfluorobutanesulfonic acid (PFBS)	0.273	J	2.0	0.20	ng/L		11/21/22 06:43	11/27/22 14:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/21/22 06:43	11/27/22 14:56	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/21/22 06:43	11/27/22 14:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/21/22 06:43	11/27/22 14:56	1

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-634419/1-A**  
**Matrix: Water**  
**Analysis Batch: 635406**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 634419**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/21/22 06:43	11/27/22 14:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/21/22 06:43	11/27/22 14:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/21/22 06:43	11/27/22 14:56	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/21/22 06:43	11/27/22 14:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/21/22 06:43	11/27/22 14:56	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	108		50 - 150	11/21/22 06:43	11/27/22 14:56	1
13C4 PFHpA	102		50 - 150	11/21/22 06:43	11/27/22 14:56	1
13C4 PFOA	92		50 - 150	11/21/22 06:43	11/27/22 14:56	1
13C5 PFNA	116		50 - 150	11/21/22 06:43	11/27/22 14:56	1
13C2 PFDA	106		50 - 150	11/21/22 06:43	11/27/22 14:56	1
13C2 PFUnA	104		50 - 150	11/21/22 06:43	11/27/22 14:56	1
13C2 PFDoA	89		50 - 150	11/21/22 06:43	11/27/22 14:56	1
13C2 PFTeDA	77		50 - 150	11/21/22 06:43	11/27/22 14:56	1
13C3 PFBS	86		50 - 150	11/21/22 06:43	11/27/22 14:56	1
18O2 PFHxS	90		50 - 150	11/21/22 06:43	11/27/22 14:56	1
13C4 PFOS	102		50 - 150	11/21/22 06:43	11/27/22 14:56	1
d3-NMeFOSAA	87		50 - 150	11/21/22 06:43	11/27/22 14:56	1
d5-NEtFOSAA	88		50 - 150	11/21/22 06:43	11/27/22 14:56	1
13C3 HFPO-DA	89		50 - 150	11/21/22 06:43	11/27/22 14:56	1

**Lab Sample ID: LCS 320-634419/2-A**  
**Matrix: Water**  
**Analysis Batch: 635406**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 634419**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	39.5		ng/L		99	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	43.3		ng/L		108	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	45.0		ng/L		113	71 - 133
Perfluorononanoic acid (PFNA)	40.0	44.0		ng/L		110	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	42.1		ng/L		105	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.2		ng/L		103	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.4		ng/L		114	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	45.3		ng/L		113	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.6		ng/L		102	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	40.3		ng/L		114	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.3		ng/L		99	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	37.2		ng/L		100	65 - 140

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-634419/2-A**  
**Matrix: Water**  
**Analysis Batch: 635406**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 634419**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.1		ng/L		105	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.9		ng/L		102	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.2		ng/L		105	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.7		ng/L		102	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	35.2		ng/L		93	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	38.5		ng/L		102	81 - 141

Isotope Dilution	LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	89		50 - 150
13C4 PFHpA	92		50 - 150
13C4 PFOA	93		50 - 150
13C5 PFNA	105		50 - 150
13C2 PFDA	100		50 - 150
13C2 PFUnA	86		50 - 150
13C2 PFDoA	84		50 - 150
13C2 PFTeDA	76		50 - 150
13C3 PFBS	78		50 - 150
18O2 PFHxS	91		50 - 150
13C4 PFOS	97		50 - 150
d3-NMeFOSAA	80		50 - 150
d5-NEtFOSAA	76		50 - 150
13C3 HFPO-DA	83		50 - 150

**Lab Sample ID: LCSD 320-634419/3-A**  
**Matrix: Water**  
**Analysis Batch: 635406**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 634419**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	
								RPD	Limit
Perfluorohexanoic acid (PFHxA)	40.0	38.3		ng/L		96	72 - 129	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.6		ng/L		109	72 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	43.3		ng/L		108	71 - 133	4	30
Perfluorononanoic acid (PFNA)	40.0	43.0		ng/L		108	69 - 130	2	30
Perfluorodecanoic acid (PFDA)	40.0	41.2		ng/L		103	71 - 129	2	30
Perfluoroundecanoic acid (PFUnA)	40.0	38.4		ng/L		96	69 - 133	7	30
Perfluorododecanoic acid (PFDoA)	40.0	43.0		ng/L		107	72 - 134	6	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.8		ng/L		110	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.7		ng/L		104	71 - 132	3	30
Perfluorobutanesulfonic acid (PFBS)	35.5	40.2		ng/L		113	72 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.3		ng/L		100	68 - 131	0	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS D 320-634419/3-A**  
**Matrix: Water**  
**Analysis Batch: 635406**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 634419**

Analyte	Spike Added	LCS D Result	LCS D Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	37.2	37.7		ng/L		101	65 - 140	1	30
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	40.0	43.0		ng/L		108	65 - 136	2	30
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	40.0	40.6		ng/L		101	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.7		ng/L		106	77 - 137	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.5		ng/L		101	72 - 132	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	36.7		ng/L		97	76 - 136	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	36.4		ng/L		96	81 - 141	6	30

Isotope Dilution	LCS D %Recovery	LCS D Qualifier	Limits
13C2 PFHxA	104		50 - 150
13C4 PFHpA	98		50 - 150
13C4 PFOA	95		50 - 150
13C5 PFNA	116		50 - 150
13C2 PFDA	107		50 - 150
13C2 PFUnA	109		50 - 150
13C2 PFDoA	99		50 - 150
13C2 PFTeDA	88		50 - 150
13C3 PFBS	87		50 - 150
18O2 PFHxS	92		50 - 150
13C4 PFOS	106		50 - 150
d3-NMeFOSAA	92		50 - 150
d5-NEtFOSAA	93		50 - 150
13C3 HFPO-DA	93		50 - 150

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA

**Lab Sample ID: MB 320-634418/1-A**  
**Matrix: Water**  
**Analysis Batch: 637212**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 634418**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) - RA	ND		4.0	1.5	ng/L		11/21/22 06:32	12/04/22 15:10	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA - RA	92		50 - 150	11/21/22 06:32	12/04/22 15:10	1

**Lab Sample ID: LCS 320-634418/2-A**  
**Matrix: Water**  
**Analysis Batch: 637212**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 634418**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) - RA	40.0	40.2		ng/L		101	72 - 132

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 - RA (Continued)

<i>Isotope Dilution</i>	<i>LCS</i> <i>%Recovery</i>	<i>LCS</i> <i>Qualifier</i>	<i>Limits</i>
13C3 HFPO-DA - RA	92		50 - 150

**Lab Sample ID: LCSD 320-634418/3-A**  
**Matrix: Water**  
**Analysis Batch: 637212**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 634418**

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD</i> <i>Result</i>	<i>LCSD</i> <i>Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec</i> <i>Limits</i>	<i>RPD</i>	<i>RPD</i> <i>Limit</i>
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) - RA	40.0	38.3		ng/L		96	72 - 132	5	30

<i>Isotope Dilution</i>	<i>LCSD</i> <i>%Recovery</i>	<i>LCSD</i> <i>Qualifier</i>	<i>Limits</i>
13C3 HFPO-DA - RA	97		50 - 150

**Lab Sample ID: 320-94216-A-3-C MS**  
**Matrix: Water**  
**Analysis Batch: 637212**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 634418**

<i>Analyte</i>	<i>Sample</i> <i>Result</i>	<i>Sample</i> <i>Qualifier</i>	<i>Spike</i> <i>Added</i>	<i>MS</i> <i>Result</i>	<i>MS</i> <i>Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec</i> <i>Limits</i>
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) - RA	ND		36.1	36.8		ng/L		102	72 - 132

<i>Isotope Dilution</i>	<i>MS</i> <i>%Recovery</i>	<i>MS</i> <i>Qualifier</i>	<i>Limits</i>
13C3 HFPO-DA - RA	74		50 - 150

**Lab Sample ID: 320-94216-A-3-D MSD**  
**Matrix: Water**  
**Analysis Batch: 637212**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 634418**

<i>Analyte</i>	<i>Sample</i> <i>Result</i>	<i>Sample</i> <i>Qualifier</i>	<i>Spike</i> <i>Added</i>	<i>MSD</i> <i>Result</i>	<i>MSD</i> <i>Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec</i> <i>Limits</i>	<i>RPD</i>	<i>RPD</i> <i>Limit</i>
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) - RA	ND		35.9	34.8		ng/L		97	72 - 132	5	30

<i>Isotope Dilution</i>	<i>MSD</i> <i>%Recovery</i>	<i>MSD</i> <i>Qualifier</i>	<i>Limits</i>
13C3 HFPO-DA - RA	76		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## LCMS

### Prep Batch: 634418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94386-1 - RA	PW-551	Total/NA	Water	3535	
320-94386-1	PW-551	Total/NA	Water	3535	
320-94386-2	PW-142	Total/NA	Water	3535	
320-94386-2 - RA	PW-142	Total/NA	Water	3535	
320-94386-3 - RA	PW-154	Total/NA	Water	3535	
320-94386-3	PW-154	Total/NA	Water	3535	
320-94386-4 - RA	PW-5106	Total/NA	Water	3535	
320-94386-4	PW-5106	Total/NA	Water	3535	
320-94386-5 - RA	PW-149	Total/NA	Water	3535	
320-94386-5	PW-149	Total/NA	Water	3535	
320-94386-6	PW-106	Total/NA	Water	3535	
320-94386-6 - RA	PW-106	Total/NA	Water	3535	
320-94386-7 - RA	PW-053	Total/NA	Water	3535	
320-94386-7	PW-053	Total/NA	Water	3535	
320-94386-8	PW-078	Total/NA	Water	3535	
320-94386-8 - RA	PW-078	Total/NA	Water	3535	
320-94386-9 - RA	PW-051	Total/NA	Water	3535	
320-94386-9	PW-051	Total/NA	Water	3535	
320-94386-10	PW-057	Total/NA	Water	3535	
320-94386-10 - RA	PW-057	Total/NA	Water	3535	
MB 320-634418/1-A	Method Blank	Total/NA	Water	3535	
MB 320-634418/1-A - RA	Method Blank	Total/NA	Water	3535	
LCS 320-634418/2-A - RA	Lab Control Sample	Total/NA	Water	3535	
LCS 320-634418/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-634418/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
LCSD 320-634418/3-A - RA	Lab Control Sample Dup	Total/NA	Water	3535	
320-94216-A-3-C MS - RA	Matrix Spike	Total/NA	Water	3535	
320-94216-A-3-C MS	Matrix Spike	Total/NA	Water	3535	
320-94216-A-3-D MSD - RA	Matrix Spike Duplicate	Total/NA	Water	3535	
320-94216-A-3-D MSD	Matrix Spike Duplicate	Total/NA	Water	3535	

### Prep Batch: 634419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94386-11	PW-123	Total/NA	Water	3535	
320-94386-12	PW-126	Total/NA	Water	3535	
MB 320-634419/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-634419/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-634419/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 635218

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94386-1	PW-551	Total/NA	Water	EPA 537(Mod)	634418
320-94386-2	PW-142	Total/NA	Water	EPA 537(Mod)	634418
320-94386-3	PW-154	Total/NA	Water	EPA 537(Mod)	634418
320-94386-4	PW-5106	Total/NA	Water	EPA 537(Mod)	634418
320-94386-5	PW-149	Total/NA	Water	EPA 537(Mod)	634418
320-94386-6	PW-106	Total/NA	Water	EPA 537(Mod)	634418
320-94386-7	PW-053	Total/NA	Water	EPA 537(Mod)	634418
320-94386-8	PW-078	Total/NA	Water	EPA 537(Mod)	634418
320-94386-9	PW-051	Total/NA	Water	EPA 537(Mod)	634418
320-94386-10	PW-057	Total/NA	Water	EPA 537(Mod)	634418

Eurofins Sacramento

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## LCMS (Continued)

### Analysis Batch: 635218 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-634418/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	634418
LCS 320-634418/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	634418
LCSD 320-634418/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	634418
320-94216-A-3-C MS	Matrix Spike	Total/NA	Water	EPA 537(Mod)	634418
320-94216-A-3-D MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	634418

### Analysis Batch: 635406

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94386-11	PW-123	Total/NA	Water	EPA 537(Mod)	634419
320-94386-12	PW-126	Total/NA	Water	EPA 537(Mod)	634419
MB 320-634419/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	634419
LCS 320-634419/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	634419
LCSD 320-634419/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	634419

### Analysis Batch: 637212

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94386-1 - RA	PW-551	Total/NA	Water	EPA 537(Mod)	634418
320-94386-2 - RA	PW-142	Total/NA	Water	EPA 537(Mod)	634418
320-94386-3 - RA	PW-154	Total/NA	Water	EPA 537(Mod)	634418
320-94386-4 - RA	PW-5106	Total/NA	Water	EPA 537(Mod)	634418
320-94386-5 - RA	PW-149	Total/NA	Water	EPA 537(Mod)	634418
320-94386-6 - RA	PW-106	Total/NA	Water	EPA 537(Mod)	634418
320-94386-7 - RA	PW-053	Total/NA	Water	EPA 537(Mod)	634418
320-94386-8 - RA	PW-078	Total/NA	Water	EPA 537(Mod)	634418
320-94386-9 - RA	PW-051	Total/NA	Water	EPA 537(Mod)	634418
320-94386-10 - RA	PW-057	Total/NA	Water	EPA 537(Mod)	634418
MB 320-634418/1-A - RA	Method Blank	Total/NA	Water	EPA 537(Mod)	634418
LCS 320-634418/2-A - RA	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	634418
LCSD 320-634418/3-A - RA	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	634418
320-94216-A-3-C MS - RA	Matrix Spike	Total/NA	Water	EPA 537(Mod)	634418
320-94216-A-3-D MSD - RA	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	634418

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-551**

**Lab Sample ID: 320-94386-1**

**Date Collected: 11/09/22 10:45**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.5 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635218	11/24/22 02:02	S1M	EET SAC
Total/NA	Prep	3535	RA		258.5 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)	RA	1	1 mL	1 mL	637212	12/04/22 16:11	S1M	EET SAC

**Client Sample ID: PW-142**

**Lab Sample ID: 320-94386-2**

**Date Collected: 11/10/22 12:03**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			286.6 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635218	11/24/22 02:12	S1M	EET SAC
Total/NA	Prep	3535	RA		286.6 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)	RA	1	1 mL	1 mL	637212	12/04/22 16:21	S1M	EET SAC

**Client Sample ID: PW-154**

**Lab Sample ID: 320-94386-3**

**Date Collected: 11/10/22 11:15**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			292.8 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635218	11/24/22 02:22	S1M	EET SAC
Total/NA	Prep	3535	RA		292.8 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)	RA	1	1 mL	1 mL	637212	12/04/22 16:31	S1M	EET SAC

**Client Sample ID: PW-5106**

**Lab Sample ID: 320-94386-4**

**Date Collected: 11/09/22 11:35**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635218	11/24/22 02:33	S1M	EET SAC
Total/NA	Prep	3535	RA		268 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)	RA	1	1 mL	1 mL	637212	12/04/22 16:42	S1M	EET SAC

**Client Sample ID: PW-149**

**Lab Sample ID: 320-94386-5**

**Date Collected: 11/10/22 12:30**

**Matrix: Water**

**Date Received: 11/15/22 15:04**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			291.7 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635218	11/24/22 02:43	S1M	EET SAC
Total/NA	Prep	3535	RA		291.7 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)	RA	1	1 mL	1 mL	637212	12/04/22 17:12	S1M	EET SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Client Sample ID: PW-106

Lab Sample ID: 320-94386-6

Date Collected: 11/09/22 11:05

Matrix: Water

Date Received: 11/15/22 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.9 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635218	11/24/22 02:53	S1M	EET SAC
Total/NA	Prep	3535	RA		281.9 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)	RA	1	1 mL	1 mL	637212	12/04/22 17:22	S1M	EET SAC

## Client Sample ID: PW-053

Lab Sample ID: 320-94386-7

Date Collected: 11/09/22 13:14

Matrix: Water

Date Received: 11/15/22 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.5 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635218	11/24/22 03:03	S1M	EET SAC
Total/NA	Prep	3535	RA		269.5 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)	RA	1	1 mL	1 mL	637212	12/04/22 17:32	S1M	EET SAC

## Client Sample ID: PW-078

Lab Sample ID: 320-94386-8

Date Collected: 11/09/22 12:20

Matrix: Water

Date Received: 11/15/22 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.9 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635218	11/24/22 03:13	S1M	EET SAC
Total/NA	Prep	3535	RA		272.9 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)	RA	1	1 mL	1 mL	637212	12/04/22 17:42	S1M	EET SAC

## Client Sample ID: PW-051

Lab Sample ID: 320-94386-9

Date Collected: 11/09/22 10:15

Matrix: Water

Date Received: 11/15/22 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254.7 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635218	11/24/22 03:23	S1M	EET SAC
Total/NA	Prep	3535	RA		254.7 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)	RA	1	1 mL	1 mL	637212	12/04/22 17:52	S1M	EET SAC

## Client Sample ID: PW-057

Lab Sample ID: 320-94386-10

Date Collected: 11/10/22 14:15

Matrix: Water

Date Received: 11/15/22 15:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.3 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635218	11/24/22 03:53	S1M	EET SAC
Total/NA	Prep	3535	RA		269.3 mL	10.0 mL	634418	11/21/22 06:32	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)	RA	1	1 mL	1 mL	637212	12/04/22 18:02	S1M	EET SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

**Client Sample ID: PW-123**

**Date Collected: 11/08/22 14:00**

**Date Received: 11/15/22 15:04**

**Lab Sample ID: 320-94386-11**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			288.4 mL	10.0 mL	634419	11/21/22 07:24	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635406	11/27/22 18:39	RS1	EET SAC

**Client Sample ID: PW-126**

**Date Collected: 11/08/22 15:15**

**Date Received: 11/15/22 15:04**

**Lab Sample ID: 320-94386-12**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.5 mL	10.0 mL	634419	11/21/22 07:24	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	635406	11/27/22 18:49	RS1	EET SAC

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94386-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-94386-1	PW-551	Water	11/09/22 10:45	11/15/22 15:04
320-94386-2	PW-142	Water	11/10/22 12:03	11/15/22 15:04
320-94386-3	PW-154	Water	11/10/22 11:15	11/15/22 15:04
320-94386-4	PW-5106	Water	11/09/22 11:35	11/15/22 15:04
320-94386-5	PW-149	Water	11/10/22 12:30	11/15/22 15:04
320-94386-6	PW-106	Water	11/09/22 11:05	11/15/22 15:04
320-94386-7	PW-053	Water	11/09/22 13:14	11/15/22 15:04
320-94386-8	PW-078	Water	11/09/22 12:20	11/15/22 15:04
320-94386-9	PW-051	Water	11/09/22 10:15	11/15/22 15:04
320-94386-10	PW-057	Water	11/10/22 14:15	11/15/22 15:04
320-94386-11	PW-123	Water	11/08/22 14:00	11/15/22 15:04
320-94386-12	PW-126	Water	11/08/22 15:15	11/15/22 15:04

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

<b>Client Contact</b>		<b>Report To: Jessa Tibbetts</b>		<b>Site Contact:</b>		<b>Date:</b>	
Shannon & Wilson Inc.		Tel/Fax: 907-433-3251		Lab Contact: <b>Goldstreak</b>		COC No: _____ of _____ COCs	
5430 Fairbanks Street, Suite 3		Analysis Turnaround Time		Carrier:		Job No. 106189-003	
Anchorage, AK 99578		Calendar (C) or Work Days (W)		PFAS QSM 53, Tab. B-15		SDG No.	
Phone: 907-561-2120		TAT if different from Below		Filtered Sample		Sample Specific Notes:	
FAX:		<input checked="" type="checkbox"/> 2 weeks					
Project Name: AIA PFAS		<input type="checkbox"/> 1 week					
Site:		<input type="checkbox"/> 2 days					
P O # 106189-003		<input type="checkbox"/> 1 day					
Sample Identification		Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	
PW-551		11-9-22	10:45	G	W	2	X
PW-142		11-10-22	12:03				X
PW-154		11-10-22	11:15				X
PW-5106		11-9-22	11:35				X
PW-149		11-10-22	12:30				X
PW-106		11-9-22	11:05				X
PW-053		11-9-22	13:14				X
PW-078		11-9-22	12:20				X
PW-051		11-1-22	10:15				X
PW-057		11-10-22	14:15				X
PW-123		11-8-22	14:00				X
PW-126		11-8-22	15:15				X
Preservation Used: <input type="checkbox"/> Ice, <input type="checkbox"/> HCl, <input type="checkbox"/> H2SO4, <input type="checkbox"/> HNO3, <input type="checkbox"/> 5=NaOH, <input type="checkbox"/> 6= Other Possible Hazard Identification: <input type="checkbox"/> Non-Hazard, <input type="checkbox"/> Flammable, <input type="checkbox"/> Skin Irritant, <input type="checkbox"/> Poison B, <input checked="" type="checkbox"/> Unknown							
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For _____ Months							
Relinquished by: <i>Mark</i>		Company: <b>STW</b>		Received by: <i>[Signature]</i>		Company: <b>ERTCA</b>	
Relinquished by:		Date/Time: 11-14-22 8:00		Received by:		Date/Time: 11-15-22 15:04	
Relinquished by:		Date/Time:		Received by:		Date/Time:	



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-94386-1

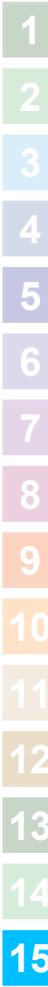
**Login Number: 94386**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Pratali, Sandra A**

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



# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Jessa Tibbetts	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-94386-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	12/12/2022

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 0.9 °C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: The laboratory noted the samplers name was not present on the COC; however, our sampler's signature was present, and we do not consider the custody to be breached.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method EPA 537(Mod): Due to the high concentration of Perfluorohexanoic acid (PFHxA), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-634418 and analytical batch 320-

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-94386-1

635218 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

- Method EPA 537(Mod): The matrix spike (MS) recovery for Perfluorobutanesulfonic acid (PFBS) preparation batch 320-634418 and analytical batch 320-635218 was outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.
- Method EPA 537(Mod): The following samples PW-551 (320-94386-1), PW-142 (320-94386-2), PW-154 (320-94386-3), PW-5106 (320-94386-4), PW-149 (320-94386-5), PW-106 (320-94386-6), PW-053 (320-94386-7), PW-078 (320-94386-8), PW-051 (320-94386-9) and PW-057 (320-94386-10), were analyzed in an analytical batch which exceeded the 10 sample limit. The bracketing continuing calibration verifications are in control for the affected samples. There is no adverse impact on the data, due to this anomaly.
- Method 3535: The following samples in preparation batch 320-634418 were light brown in color prior to extraction. PW-551 (320-94386-1) and PW-051 (320-94386-9)
- Method 3535: The following samples in preparation batch 320-634418 were observed to have floating particulates present in the sample bottle. PW-551 (320-94386-1), PW-5106 (320-94386-4), PW-106 (320-94386-6) and PW-051 (320-94386-9)
- Method 3535: Due to the excess amount of floating particulates, the following samples were centrifuged and decanted into new 250 mL container: PW-551 (320-94386-1) and PW-051 (320-94386-9). After centrifuging and decanting, the samples were fortified with IDA and then extracted. 320-634418
- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-634419.

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

- c. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

- b. Are all applicable holding times met?  
Yes  No  N/A   
Comments:
- c. Are all soils reported on a dry weight basis?  
Yes  No  N/A   
Comments: Soil samples were not submitted with this work order.
- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?  
Yes  No  N/A   
Comments:
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

- a. Method Blank
- i. Was one method blank reported per matrix, analysis, and 20 samples?  
Yes  No  N/A   
Comments:
- ii. Are all method blank results less than LOQ (or RL)?  
Yes  No   
Comments: Yes, however the following estimated concentrations were measured below the LOQ in the method blank associated with preparatory batch 634419:  
perfluoroheptanoic acid (PFHpA) 0.257 ng/L  
perfluorononanoic acid (PFNA) 0.281 ng/L  
perfluorodecanoic acid (PFDA) 0.328 ng/L  
perfluorobutanesulfonic acid (PFBS) 0.273 ng/L
- iii. If above LoQ or RL, what samples are affected?  
Comments: Samples PW-123 and PW-126 are associated with preparatory batch 634418 and potentially affected.
- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments: Estimated concentrations of perfluorononanoic acid (PFNA), and perfluorobutanesulfonic acid (PFBS) were measured in samples PW-

123 and PW-126. Estimated concentration of perfluoroheptanoic acid (PFHpA) and perfluorodecanoic acid (PFDA) were also detected in Sample PW-123.

v. Data quality or usability affected?

Yes  No  N/A

Comments: The detected results are less than 10 times the method blank detections, and are also reported as estimated concentrations below the LOQ. Therefore, all project sample results for the analytes listed above are considered non-detect, reported as UB at the LOQ.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were reported for preparatory batch 634418.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

Method EPA 537(Mod): The matrix spike (MS) recovery for perfluorobutanesulfonic acid (PFBS) for preparation batch 320-634418 and analytical batch 320-635218 was outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: None; MS/MSD failures only apply to the sample that was spiked and the sample used by the laboratory does not belong to this project sample set. Results are not affected. LCS/LCSD information is referenced to assess the accuracy and precision.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-94386-1

Yes  No  N/A

Comments: The LCS for the project samples met acceptance criteria and do not require flagging.

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments: IDAs were reported for the PFAS project samples.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: The data quality and usability were not affected.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments: A trip blank is not required for PFAS analysis.

ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: A trip blank was not submitted with this work order.

iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: Field duplicate samples *PW-051/PW-551* and *PW-106/PW-5106* were submitted with this work order.

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: Where calculable, RPDs were within the recommended 30%.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

- iv. Are data quality or usability affected?

Yes  No  N/A

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS  
**Lab Report No.:** 320-94386-1

Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

a. Are they defined and appropriate?

Yes  No  N/A

Comments: Other data flags and qualifiers were not required.

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

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 1/9/2023 12:24:11 PM

**JOB DESCRIPTION**

AIA PFAS

**JOB NUMBER**

320-94638-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
1/9/2023 12:24:11 PM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	20
QC Sample Results . . . . .	22
QC Association Summary . . . . .	32
Lab Chronicle . . . . .	34
Certification Summary . . . . .	37
Method Summary . . . . .	38
Sample Summary . . . . .	39
Chain of Custody . . . . .	40
Receipt Checklists . . . . .	42

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

---

## Job ID: 320-94638-1

---

### Laboratory: Eurofins Sacramento

#### Narrative

---

#### Job Narrative 320-94638-1

#### Receipt

The samples were received on 11/22/2022 2:52 PM. 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 0.6° C.

#### LCMS

Method EPA 537(Mod): The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 320-635703 and analytical batch 320-643342 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method EPA 537(Mod): Results for samples (280-169191-A-3-A), (280-169191-A-3-D MS) and (280-169191-A-3-E MSD) 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

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: (320-95656-A-4-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. (320-95656-A-4-A)

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 in preparation batch 320-635703 were light yellow in color prior to extraction. PW-081 (320-94638-8) and PW-005 (320-94638-9)

Method 3535: The following samples in preparation batch 320-635703 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-081 (320-94638-8) and PW-005 (320-94638-9)

Method 3535: The following sample was re-prepared outside of preparation holding time due to re-prep needed for result confirmation PW-101 (320-94638-5). preparation batch 320-644337

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

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-203**

**Lab Sample ID: 320-94638-1**

No Detections.

**Client Sample ID: PW-204**

**Lab Sample ID: 320-94638-2**

No Detections.

**Client Sample ID: PW-5101**

**Lab Sample ID: 320-94638-3**

No Detections.

**Client Sample ID: PW-062**

**Lab Sample ID: 320-94638-4**

No Detections.

**Client Sample ID: PW-101**

**Lab Sample ID: 320-94638-5**

No Detections.

**Client Sample ID: PW-095**

**Lab Sample ID: 320-94638-6**

No Detections.

**Client Sample ID: PW-140**

**Lab Sample ID: 320-94638-7**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.60	J	1.7	0.50	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.42	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.85	J	1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.50	J	1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

**Client Sample ID: PW-081**

**Lab Sample ID: 320-94638-8**

No Detections.

**Client Sample ID: PW-005**

**Lab Sample ID: 320-94638-9**

No Detections.

**Client Sample ID: PW-059**

**Lab Sample ID: 320-94638-10**

No Detections.

**Client Sample ID: PW-139**

**Lab Sample ID: 320-94638-11**

No Detections.

**Client Sample ID: PW-201**

**Lab Sample ID: 320-94638-12**

No Detections.

**Client Sample ID: PW-200**

**Lab Sample ID: 320-94638-13**

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-203**

**Lab Sample ID: 320-94638-1**

**Date Collected: 11/19/22 14:02**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		11/28/22 12:28	12/22/22 08:22	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/28/22 12:28	12/22/22 08:22	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		11/28/22 12:28	12/22/22 08:22	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/28/22 12:28	12/22/22 08:22	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		11/28/22 12:28	12/22/22 08:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.96	ng/L		11/28/22 12:28	12/22/22 08:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		11/28/22 12:28	12/22/22 08:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		11/28/22 12:28	12/22/22 08:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		11/28/22 12:28	12/22/22 08:22	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/28/22 12:28	12/22/22 08:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		11/28/22 12:28	12/22/22 08:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		11/28/22 12:28	12/22/22 08:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		11/28/22 12:28	12/22/22 08:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		11/28/22 12:28	12/22/22 08:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/28/22 12:28	12/22/22 08:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/28/22 12:28	12/22/22 08:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		11/28/22 12:28	12/22/22 08:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		11/28/22 12:28	12/22/22 08:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		50 - 150	11/28/22 12:28	12/22/22 08:22	
13C4 PFHpA	96		50 - 150	11/28/22 12:28	12/22/22 08:22	
13C4 PFOA	96		50 - 150	11/28/22 12:28	12/22/22 08:22	
13C5 PFNA	93		50 - 150	11/28/22 12:28	12/22/22 08:22	
13C2 PFDA	90		50 - 150	11/28/22 12:28	12/22/22 08:22	
13C2 PFUnA	86		50 - 150	11/28/22 12:28	12/22/22 08:22	
13C2 PFDoA	86		50 - 150	11/28/22 12:28	12/22/22 08:22	
13C2 PFTeDA	100		50 - 150	11/28/22 12:28	12/22/22 08:22	
13C3 PFBS	99		50 - 150	11/28/22 12:28	12/22/22 08:22	
18O2 PFHxS	105		50 - 150	11/28/22 12:28	12/22/22 08:22	
13C4 PFOS	90		50 - 150	11/28/22 12:28	12/22/22 08:22	
d3-NMeFOSAA	70		50 - 150	11/28/22 12:28	12/22/22 08:22	
d5-NEtFOSAA	78		50 - 150	11/28/22 12:28	12/22/22 08:22	
13C3 HFPO-DA	96		50 - 150	11/28/22 12:28	12/22/22 08:22	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-204**

**Lab Sample ID: 320-94638-2**

**Date Collected: 11/19/22 16:58**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		11/28/22 12:28	12/22/22 08:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		11/28/22 12:28	12/22/22 08:32	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.73	ng/L		11/28/22 12:28	12/22/22 08:32	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		11/28/22 12:28	12/22/22 08:32	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		11/28/22 12:28	12/22/22 08:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		11/28/22 12:28	12/22/22 08:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		11/28/22 12:28	12/22/22 08:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/28/22 12:28	12/22/22 08:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		11/28/22 12:28	12/22/22 08:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		11/28/22 12:28	12/22/22 08:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		11/28/22 12:28	12/22/22 08:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		11/28/22 12:28	12/22/22 08:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		11/28/22 12:28	12/22/22 08:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		11/28/22 12:28	12/22/22 08:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		11/28/22 12:28	12/22/22 08:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		11/28/22 12:28	12/22/22 08:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		11/28/22 12:28	12/22/22 08:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		11/28/22 12:28	12/22/22 08:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	11/28/22 12:28	12/22/22 08:32	
13C4 PFHpA	96		50 - 150	11/28/22 12:28	12/22/22 08:32	
13C4 PFOA	96		50 - 150	11/28/22 12:28	12/22/22 08:32	
13C5 PFNA	93		50 - 150	11/28/22 12:28	12/22/22 08:32	
13C2 PFDA	90		50 - 150	11/28/22 12:28	12/22/22 08:32	
13C2 PFUnA	92		50 - 150	11/28/22 12:28	12/22/22 08:32	
13C2 PFDoA	87		50 - 150	11/28/22 12:28	12/22/22 08:32	
13C2 PFTeDA	96		50 - 150	11/28/22 12:28	12/22/22 08:32	
13C3 PFBS	98		50 - 150	11/28/22 12:28	12/22/22 08:32	
18O2 PFHxS	102		50 - 150	11/28/22 12:28	12/22/22 08:32	
13C4 PFOS	92		50 - 150	11/28/22 12:28	12/22/22 08:32	
d3-NMeFOSAA	67		50 - 150	11/28/22 12:28	12/22/22 08:32	
d5-NEtFOSAA	80		50 - 150	11/28/22 12:28	12/22/22 08:32	
13C3 HFPO-DA	93		50 - 150	11/28/22 12:28	12/22/22 08:32	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-5101**

**Lab Sample ID: 320-94638-3**

**Date Collected: 11/21/22 09:50**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		11/28/22 12:28	12/22/22 08:42	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/28/22 12:28	12/22/22 08:42	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		11/28/22 12:28	12/22/22 08:42	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/28/22 12:28	12/22/22 08:42	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		11/28/22 12:28	12/22/22 08:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		11/28/22 12:28	12/22/22 08:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/28/22 12:28	12/22/22 08:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/28/22 12:28	12/22/22 08:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		11/28/22 12:28	12/22/22 08:42	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/28/22 12:28	12/22/22 08:42	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/28/22 12:28	12/22/22 08:42	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		11/28/22 12:28	12/22/22 08:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		11/28/22 12:28	12/22/22 08:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		11/28/22 12:28	12/22/22 08:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/28/22 12:28	12/22/22 08:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/28/22 12:28	12/22/22 08:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		11/28/22 12:28	12/22/22 08:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		11/28/22 12:28	12/22/22 08:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	11/28/22 12:28	12/22/22 08:42	
13C4 PFHpA	102		50 - 150	11/28/22 12:28	12/22/22 08:42	
13C4 PFOA	96		50 - 150	11/28/22 12:28	12/22/22 08:42	
13C5 PFNA	96		50 - 150	11/28/22 12:28	12/22/22 08:42	
13C2 PFDA	96		50 - 150	11/28/22 12:28	12/22/22 08:42	
13C2 PFUnA	94		50 - 150	11/28/22 12:28	12/22/22 08:42	
13C2 PFDoA	93		50 - 150	11/28/22 12:28	12/22/22 08:42	
13C2 PFTeDA	97		50 - 150	11/28/22 12:28	12/22/22 08:42	
13C3 PFBS	104		50 - 150	11/28/22 12:28	12/22/22 08:42	
18O2 PFHxS	112		50 - 150	11/28/22 12:28	12/22/22 08:42	
13C4 PFOS	93		50 - 150	11/28/22 12:28	12/22/22 08:42	
d3-NMeFOSAA	77		50 - 150	11/28/22 12:28	12/22/22 08:42	
d5-NEtFOSAA	81		50 - 150	11/28/22 12:28	12/22/22 08:42	
13C3 HFPO-DA	98		50 - 150	11/28/22 12:28	12/22/22 08:42	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-062**

**Lab Sample ID: 320-94638-4**

**Date Collected: 11/21/22 10:00**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		11/28/22 12:28	12/22/22 08:52	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/28/22 12:28	12/22/22 08:52	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		11/28/22 12:28	12/22/22 08:52	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/28/22 12:28	12/22/22 08:52	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		11/28/22 12:28	12/22/22 08:52	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		11/28/22 12:28	12/22/22 08:52	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/28/22 12:28	12/22/22 08:52	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		11/28/22 12:28	12/22/22 08:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		11/28/22 12:28	12/22/22 08:52	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/28/22 12:28	12/22/22 08:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		11/28/22 12:28	12/22/22 08:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		11/28/22 12:28	12/22/22 08:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		11/28/22 12:28	12/22/22 08:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		11/28/22 12:28	12/22/22 08:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/28/22 12:28	12/22/22 08:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/28/22 12:28	12/22/22 08:52	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		11/28/22 12:28	12/22/22 08:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		11/28/22 12:28	12/22/22 08:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	11/28/22 12:28	12/22/22 08:52	
13C4 PFHpA	97		50 - 150	11/28/22 12:28	12/22/22 08:52	
13C4 PFOA	97		50 - 150	11/28/22 12:28	12/22/22 08:52	
13C5 PFNA	92		50 - 150	11/28/22 12:28	12/22/22 08:52	
13C2 PFDA	88		50 - 150	11/28/22 12:28	12/22/22 08:52	
13C2 PFUnA	92		50 - 150	11/28/22 12:28	12/22/22 08:52	
13C2 PFDoA	82		50 - 150	11/28/22 12:28	12/22/22 08:52	
13C2 PFTeDA	89		50 - 150	11/28/22 12:28	12/22/22 08:52	
13C3 PFBS	101		50 - 150	11/28/22 12:28	12/22/22 08:52	
18O2 PFHxS	100		50 - 150	11/28/22 12:28	12/22/22 08:52	
13C4 PFOS	89		50 - 150	11/28/22 12:28	12/22/22 08:52	
d3-NMeFOSAA	73		50 - 150	11/28/22 12:28	12/22/22 08:52	
d5-NEtFOSAA	75		50 - 150	11/28/22 12:28	12/22/22 08:52	
13C3 HFPO-DA	96		50 - 150	11/28/22 12:28	12/22/22 08:52	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-101**

**Lab Sample ID: 320-94638-5**

**Date Collected: 11/21/22 09:20**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND	H	1.9	0.55	ng/L		01/04/23 05:16	01/05/23 02:15	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.9	0.24	ng/L		01/04/23 05:16	01/05/23 02:15	1
Perfluorooctanoic acid (PFOA)	ND	H	1.9	0.81	ng/L		01/04/23 05:16	01/05/23 02:15	1
Perfluorononanoic acid (PFNA)	ND	H	1.9	0.26	ng/L		01/04/23 05:16	01/05/23 02:15	1
Perfluorodecanoic acid (PFDA)	ND	H	1.9	0.30	ng/L		01/04/23 05:16	01/05/23 02:15	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.9	1.1	ng/L		01/04/23 05:16	01/05/23 02:15	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.9	0.53	ng/L		01/04/23 05:16	01/05/23 02:15	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.9	1.2	ng/L		01/04/23 05:16	01/05/23 02:15	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.9	0.70	ng/L		01/04/23 05:16	01/05/23 02:15	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.9	0.19	ng/L		01/04/23 05:16	01/05/23 02:15	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.9	0.54	ng/L		01/04/23 05:16	01/05/23 02:15	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.9	0.52	ng/L		01/04/23 05:16	01/05/23 02:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	4.8	1.1	ng/L		01/04/23 05:16	01/05/23 02:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	4.8	1.2	ng/L		01/04/23 05:16	01/05/23 02:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND	H	1.9	0.23	ng/L		01/04/23 05:16	01/05/23 02:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	3.8	1.4	ng/L		01/04/23 05:16	01/05/23 02:15	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND	H	1.9	0.31	ng/L		01/04/23 05:16	01/05/23 02:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.9	0.38	ng/L		01/04/23 05:16	01/05/23 02:15	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		50 - 150	01/04/23 05:16	01/05/23 02:15	:
13C4 PFHpA	106		50 - 150	01/04/23 05:16	01/05/23 02:15	:
13C4 PFOA	102		50 - 150	01/04/23 05:16	01/05/23 02:15	:
13C5 PFNA	110		50 - 150	01/04/23 05:16	01/05/23 02:15	:
13C2 PFDA	103		50 - 150	01/04/23 05:16	01/05/23 02:15	:
13C2 PFUnA	114		50 - 150	01/04/23 05:16	01/05/23 02:15	:
13C2 PFDoA	101		50 - 150	01/04/23 05:16	01/05/23 02:15	:
13C2 PFTeDA	110		50 - 150	01/04/23 05:16	01/05/23 02:15	:
13C3 PFBS	92		50 - 150	01/04/23 05:16	01/05/23 02:15	:
18O2 PFHxS	98		50 - 150	01/04/23 05:16	01/05/23 02:15	:
13C4 PFOS	93		50 - 150	01/04/23 05:16	01/05/23 02:15	:
d3-NMeFOSAA	98		50 - 150	01/04/23 05:16	01/05/23 02:15	:
d5-NEtFOSAA	104		50 - 150	01/04/23 05:16	01/05/23 02:15	:
13C3 HFPO-DA	109		50 - 150	01/04/23 05:16	01/05/23 02:15	:

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-095**

**Lab Sample ID: 320-94638-6**

**Date Collected: 11/19/22 16:08**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		11/28/22 12:28	12/22/22 09:12	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/28/22 12:28	12/22/22 09:12	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		11/28/22 12:28	12/22/22 09:12	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/28/22 12:28	12/22/22 09:12	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		11/28/22 12:28	12/22/22 09:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		11/28/22 12:28	12/22/22 09:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/28/22 12:28	12/22/22 09:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/28/22 12:28	12/22/22 09:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		11/28/22 12:28	12/22/22 09:12	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/28/22 12:28	12/22/22 09:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		11/28/22 12:28	12/22/22 09:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		11/28/22 12:28	12/22/22 09:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		11/28/22 12:28	12/22/22 09:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		11/28/22 12:28	12/22/22 09:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/28/22 12:28	12/22/22 09:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/28/22 12:28	12/22/22 09:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		11/28/22 12:28	12/22/22 09:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		11/28/22 12:28	12/22/22 09:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	112		50 - 150	11/28/22 12:28	12/22/22 09:12	
13C4 PFHpA	109		50 - 150	11/28/22 12:28	12/22/22 09:12	
13C4 PFOA	101		50 - 150	11/28/22 12:28	12/22/22 09:12	
13C5 PFNA	108		50 - 150	11/28/22 12:28	12/22/22 09:12	
13C2 PFDA	105		50 - 150	11/28/22 12:28	12/22/22 09:12	
13C2 PFUnA	104		50 - 150	11/28/22 12:28	12/22/22 09:12	
13C2 PFDoA	102		50 - 150	11/28/22 12:28	12/22/22 09:12	
13C2 PFTeDA	106		50 - 150	11/28/22 12:28	12/22/22 09:12	
13C3 PFBS	113		50 - 150	11/28/22 12:28	12/22/22 09:12	
18O2 PFHxS	115		50 - 150	11/28/22 12:28	12/22/22 09:12	
13C4 PFOS	107		50 - 150	11/28/22 12:28	12/22/22 09:12	
d3-NMeFOSAA	88		50 - 150	11/28/22 12:28	12/22/22 09:12	
d5-NEtFOSAA	86		50 - 150	11/28/22 12:28	12/22/22 09:12	
13C3 HFPO-DA	102		50 - 150	11/28/22 12:28	12/22/22 09:12	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-140**

**Lab Sample ID: 320-94638-7**

**Date Collected: 11/18/22 11:05**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.60</b>	<b>J</b>	1.7	0.50	ng/L		11/28/22 12:28	12/22/22 09:22	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		11/28/22 12:28	12/22/22 09:22	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		11/28/22 12:28	12/22/22 09:22	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		11/28/22 12:28	12/22/22 09:22	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		11/28/22 12:28	12/22/22 09:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		11/28/22 12:28	12/22/22 09:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		11/28/22 12:28	12/22/22 09:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		11/28/22 12:28	12/22/22 09:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		11/28/22 12:28	12/22/22 09:22	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.42</b>	<b>J</b>	1.7	0.17	ng/L		11/28/22 12:28	12/22/22 09:22	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.85</b>	<b>J</b>	1.7	0.49	ng/L		11/28/22 12:28	12/22/22 09:22	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.50</b>	<b>J</b>	1.7	0.47	ng/L		11/28/22 12:28	12/22/22 09:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		11/28/22 12:28	12/22/22 09:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		11/28/22 12:28	12/22/22 09:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		11/28/22 12:28	12/22/22 09:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/28/22 12:28	12/22/22 09:22	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		11/28/22 12:28	12/22/22 09:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		11/28/22 12:28	12/22/22 09:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		50 - 150	11/28/22 12:28	12/22/22 09:22	
13C4 PFHpA	96		50 - 150	11/28/22 12:28	12/22/22 09:22	
13C4 PFOA	95		50 - 150	11/28/22 12:28	12/22/22 09:22	
13C5 PFNA	92		50 - 150	11/28/22 12:28	12/22/22 09:22	
13C2 PFDA	89		50 - 150	11/28/22 12:28	12/22/22 09:22	
13C2 PFUnA	86		50 - 150	11/28/22 12:28	12/22/22 09:22	
13C2 PFDoA	87		50 - 150	11/28/22 12:28	12/22/22 09:22	
13C2 PFTeDA	101		50 - 150	11/28/22 12:28	12/22/22 09:22	
13C3 PFBS	97		50 - 150	11/28/22 12:28	12/22/22 09:22	
18O2 PFHxS	100		50 - 150	11/28/22 12:28	12/22/22 09:22	
13C4 PFOS	90		50 - 150	11/28/22 12:28	12/22/22 09:22	
d3-NMeFOSAA	69		50 - 150	11/28/22 12:28	12/22/22 09:22	
d5-NEtFOSAA	72		50 - 150	11/28/22 12:28	12/22/22 09:22	
13C3 HFPO-DA	89		50 - 150	11/28/22 12:28	12/22/22 09:22	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-081**

**Lab Sample ID: 320-94638-8**

**Date Collected: 11/15/22 11:28**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		11/28/22 12:28	12/22/22 09:33	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/28/22 12:28	12/22/22 09:33	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		11/28/22 12:28	12/22/22 09:33	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/28/22 12:28	12/22/22 09:33	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		11/28/22 12:28	12/22/22 09:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.96	ng/L		11/28/22 12:28	12/22/22 09:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		11/28/22 12:28	12/22/22 09:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		11/28/22 12:28	12/22/22 09:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		11/28/22 12:28	12/22/22 09:33	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/28/22 12:28	12/22/22 09:33	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		11/28/22 12:28	12/22/22 09:33	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		11/28/22 12:28	12/22/22 09:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		11/28/22 12:28	12/22/22 09:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		11/28/22 12:28	12/22/22 09:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/28/22 12:28	12/22/22 09:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		11/28/22 12:28	12/22/22 09:33	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		11/28/22 12:28	12/22/22 09:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		11/28/22 12:28	12/22/22 09:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		50 - 150	11/28/22 12:28	12/22/22 09:33	
13C4 PFHpA	89		50 - 150	11/28/22 12:28	12/22/22 09:33	
13C4 PFOA	94		50 - 150	11/28/22 12:28	12/22/22 09:33	
13C5 PFNA	87		50 - 150	11/28/22 12:28	12/22/22 09:33	
13C2 PFDA	86		50 - 150	11/28/22 12:28	12/22/22 09:33	
13C2 PFUnA	87		50 - 150	11/28/22 12:28	12/22/22 09:33	
13C2 PFDoA	83		50 - 150	11/28/22 12:28	12/22/22 09:33	
13C2 PFTeDA	97		50 - 150	11/28/22 12:28	12/22/22 09:33	
13C3 PFBS	93		50 - 150	11/28/22 12:28	12/22/22 09:33	
18O2 PFHxS	97		50 - 150	11/28/22 12:28	12/22/22 09:33	
13C4 PFOS	92		50 - 150	11/28/22 12:28	12/22/22 09:33	
d3-NMeFOSAA	72		50 - 150	11/28/22 12:28	12/22/22 09:33	
d5-NEtFOSAA	75		50 - 150	11/28/22 12:28	12/22/22 09:33	
13C3 HFPO-DA	90		50 - 150	11/28/22 12:28	12/22/22 09:33	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-005**

**Lab Sample ID: 320-94638-9**

**Date Collected: 11/18/22 15:42**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		11/28/22 12:28	12/22/22 10:03	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		11/28/22 12:28	12/22/22 10:03	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		11/28/22 12:28	12/22/22 10:03	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		11/28/22 12:28	12/22/22 10:03	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		11/28/22 12:28	12/22/22 10:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		11/28/22 12:28	12/22/22 10:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		11/28/22 12:28	12/22/22 10:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		11/28/22 12:28	12/22/22 10:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		11/28/22 12:28	12/22/22 10:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		11/28/22 12:28	12/22/22 10:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		11/28/22 12:28	12/22/22 10:03	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		11/28/22 12:28	12/22/22 10:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/28/22 12:28	12/22/22 10:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/28/22 12:28	12/22/22 10:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		11/28/22 12:28	12/22/22 10:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/28/22 12:28	12/22/22 10:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		11/28/22 12:28	12/22/22 10:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		11/28/22 12:28	12/22/22 10:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		50 - 150	11/28/22 12:28	12/22/22 10:03	
13C4 PFHpA	98		50 - 150	11/28/22 12:28	12/22/22 10:03	
13C4 PFOA	97		50 - 150	11/28/22 12:28	12/22/22 10:03	
13C5 PFNA	90		50 - 150	11/28/22 12:28	12/22/22 10:03	
13C2 PFDA	93		50 - 150	11/28/22 12:28	12/22/22 10:03	
13C2 PFUnA	92		50 - 150	11/28/22 12:28	12/22/22 10:03	
13C2 PFDoA	80		50 - 150	11/28/22 12:28	12/22/22 10:03	
13C2 PFTeDA	100		50 - 150	11/28/22 12:28	12/22/22 10:03	
13C3 PFBS	99		50 - 150	11/28/22 12:28	12/22/22 10:03	
18O2 PFHxS	101		50 - 150	11/28/22 12:28	12/22/22 10:03	
13C4 PFOS	93		50 - 150	11/28/22 12:28	12/22/22 10:03	
d3-NMeFOSAA	73		50 - 150	11/28/22 12:28	12/22/22 10:03	
d5-NEtFOSAA	77		50 - 150	11/28/22 12:28	12/22/22 10:03	
13C3 HFPO-DA	92		50 - 150	11/28/22 12:28	12/22/22 10:03	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-059**

**Lab Sample ID: 320-94638-10**

**Date Collected: 11/16/22 09:12**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/28/22 12:28	12/22/22 10:13	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/28/22 12:28	12/22/22 10:13	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/28/22 12:28	12/22/22 10:13	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/28/22 12:28	12/22/22 10:13	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		11/28/22 12:28	12/22/22 10:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/28/22 12:28	12/22/22 10:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		11/28/22 12:28	12/22/22 10:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/28/22 12:28	12/22/22 10:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/28/22 12:28	12/22/22 10:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/28/22 12:28	12/22/22 10:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		11/28/22 12:28	12/22/22 10:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/28/22 12:28	12/22/22 10:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/28/22 12:28	12/22/22 10:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/28/22 12:28	12/22/22 10:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/28/22 12:28	12/22/22 10:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/28/22 12:28	12/22/22 10:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/28/22 12:28	12/22/22 10:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/28/22 12:28	12/22/22 10:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	11/28/22 12:28	12/22/22 10:13	
13C4 PFHpA	100		50 - 150	11/28/22 12:28	12/22/22 10:13	
13C4 PFOA	98		50 - 150	11/28/22 12:28	12/22/22 10:13	
13C5 PFNA	86		50 - 150	11/28/22 12:28	12/22/22 10:13	
13C2 PFDA	92		50 - 150	11/28/22 12:28	12/22/22 10:13	
13C2 PFUnA	94		50 - 150	11/28/22 12:28	12/22/22 10:13	
13C2 PFDoA	83		50 - 150	11/28/22 12:28	12/22/22 10:13	
13C2 PFTeDA	99		50 - 150	11/28/22 12:28	12/22/22 10:13	
13C3 PFBS	99		50 - 150	11/28/22 12:28	12/22/22 10:13	
18O2 PFHxS	99		50 - 150	11/28/22 12:28	12/22/22 10:13	
13C4 PFOS	92		50 - 150	11/28/22 12:28	12/22/22 10:13	
d3-NMeFOSAA	73		50 - 150	11/28/22 12:28	12/22/22 10:13	
d5-NEtFOSAA	75		50 - 150	11/28/22 12:28	12/22/22 10:13	
13C3 HFPO-DA	94		50 - 150	11/28/22 12:28	12/22/22 10:13	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-139**

**Lab Sample ID: 320-94638-11**

**Date Collected: 11/18/22 09:45**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/28/22 12:28	12/22/22 10:23	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/28/22 12:28	12/22/22 10:23	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		11/28/22 12:28	12/22/22 10:23	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/28/22 12:28	12/22/22 10:23	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/28/22 12:28	12/22/22 10:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		11/28/22 12:28	12/22/22 10:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		11/28/22 12:28	12/22/22 10:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/28/22 12:28	12/22/22 10:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		11/28/22 12:28	12/22/22 10:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/28/22 12:28	12/22/22 10:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/28/22 12:28	12/22/22 10:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		11/28/22 12:28	12/22/22 10:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/28/22 12:28	12/22/22 10:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/28/22 12:28	12/22/22 10:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/28/22 12:28	12/22/22 10:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		11/28/22 12:28	12/22/22 10:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/28/22 12:28	12/22/22 10:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/28/22 12:28	12/22/22 10:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	11/28/22 12:28	12/22/22 10:23	
13C4 PFHpA	97		50 - 150	11/28/22 12:28	12/22/22 10:23	
13C4 PFOA	96		50 - 150	11/28/22 12:28	12/22/22 10:23	
13C5 PFNA	93		50 - 150	11/28/22 12:28	12/22/22 10:23	
13C2 PFDA	91		50 - 150	11/28/22 12:28	12/22/22 10:23	
13C2 PFUnA	91		50 - 150	11/28/22 12:28	12/22/22 10:23	
13C2 PFDoA	90		50 - 150	11/28/22 12:28	12/22/22 10:23	
13C2 PFTeDA	101		50 - 150	11/28/22 12:28	12/22/22 10:23	
13C3 PFBS	97		50 - 150	11/28/22 12:28	12/22/22 10:23	
18O2 PFHxS	101		50 - 150	11/28/22 12:28	12/22/22 10:23	
13C4 PFOS	98		50 - 150	11/28/22 12:28	12/22/22 10:23	
d3-NMeFOSAA	71		50 - 150	11/28/22 12:28	12/22/22 10:23	
d5-NEtFOSAA	78		50 - 150	11/28/22 12:28	12/22/22 10:23	
13C3 HFPO-DA	97		50 - 150	11/28/22 12:28	12/22/22 10:23	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-201**

**Lab Sample ID: 320-94638-12**

**Date Collected: 11/18/22 10:20**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		11/28/22 12:28	12/22/22 10:33	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		11/28/22 12:28	12/22/22 10:33	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		11/28/22 12:28	12/22/22 10:33	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		11/28/22 12:28	12/22/22 10:33	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		11/28/22 12:28	12/22/22 10:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		11/28/22 12:28	12/22/22 10:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		11/28/22 12:28	12/22/22 10:33	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/28/22 12:28	12/22/22 10:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		11/28/22 12:28	12/22/22 10:33	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/28/22 12:28	12/22/22 10:33	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		11/28/22 12:28	12/22/22 10:33	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		11/28/22 12:28	12/22/22 10:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		11/28/22 12:28	12/22/22 10:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		11/28/22 12:28	12/22/22 10:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		11/28/22 12:28	12/22/22 10:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		11/28/22 12:28	12/22/22 10:33	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/28/22 12:28	12/22/22 10:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		11/28/22 12:28	12/22/22 10:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		50 - 150	11/28/22 12:28	12/22/22 10:33	
13C4 PFHpA	100		50 - 150	11/28/22 12:28	12/22/22 10:33	
13C4 PFOA	100		50 - 150	11/28/22 12:28	12/22/22 10:33	
13C5 PFNA	96		50 - 150	11/28/22 12:28	12/22/22 10:33	
13C2 PFDA	91		50 - 150	11/28/22 12:28	12/22/22 10:33	
13C2 PFUnA	98		50 - 150	11/28/22 12:28	12/22/22 10:33	
13C2 PFDoA	87		50 - 150	11/28/22 12:28	12/22/22 10:33	
13C2 PFTeDA	103		50 - 150	11/28/22 12:28	12/22/22 10:33	
13C3 PFBS	102		50 - 150	11/28/22 12:28	12/22/22 10:33	
18O2 PFHxS	102		50 - 150	11/28/22 12:28	12/22/22 10:33	
13C4 PFOS	94		50 - 150	11/28/22 12:28	12/22/22 10:33	
d3-NMeFOSAA	71		50 - 150	11/28/22 12:28	12/22/22 10:33	
d5-NEtFOSAA	81		50 - 150	11/28/22 12:28	12/22/22 10:33	
13C3 HFPO-DA	98		50 - 150	11/28/22 12:28	12/22/22 10:33	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-200**

**Lab Sample ID: 320-94638-13**

**Date Collected: 11/18/22 09:13**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		11/28/22 12:28	12/22/22 10:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		11/28/22 12:28	12/22/22 10:43	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		11/28/22 12:28	12/22/22 10:43	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		11/28/22 12:28	12/22/22 10:43	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		11/28/22 12:28	12/22/22 10:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		11/28/22 12:28	12/22/22 10:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		11/28/22 12:28	12/22/22 10:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		11/28/22 12:28	12/22/22 10:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		11/28/22 12:28	12/22/22 10:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		11/28/22 12:28	12/22/22 10:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		11/28/22 12:28	12/22/22 10:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		11/28/22 12:28	12/22/22 10:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		11/28/22 12:28	12/22/22 10:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		11/28/22 12:28	12/22/22 10:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		11/28/22 12:28	12/22/22 10:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		11/28/22 12:28	12/22/22 10:43	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		11/28/22 12:28	12/22/22 10:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		11/28/22 12:28	12/22/22 10:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		50 - 150	11/28/22 12:28	12/22/22 10:43	
13C4 PFHpA	97		50 - 150	11/28/22 12:28	12/22/22 10:43	
13C4 PFOA	96		50 - 150	11/28/22 12:28	12/22/22 10:43	
13C5 PFNA	94		50 - 150	11/28/22 12:28	12/22/22 10:43	
13C2 PFDA	95		50 - 150	11/28/22 12:28	12/22/22 10:43	
13C2 PFUnA	90		50 - 150	11/28/22 12:28	12/22/22 10:43	
13C2 PFDoA	89		50 - 150	11/28/22 12:28	12/22/22 10:43	
13C2 PFTeDA	99		50 - 150	11/28/22 12:28	12/22/22 10:43	
13C3 PFBS	102		50 - 150	11/28/22 12:28	12/22/22 10:43	
18O2 PFHxS	102		50 - 150	11/28/22 12:28	12/22/22 10:43	
13C4 PFOS	93		50 - 150	11/28/22 12:28	12/22/22 10:43	
d3-NMeFOSAA	69		50 - 150	11/28/22 12:28	12/22/22 10:43	
d5-NEtFOSAA	75		50 - 150	11/28/22 12:28	12/22/22 10:43	
13C3 HFPO-DA	94		50 - 150	11/28/22 12:28	12/22/22 10:43	

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
280-169191-A-3-D MS	Matrix Spike	98	92	96	93	101	105	92	86
280-169191-A-3-E MSD	Matrix Spike Duplicate	99	98	101	100	104	106	91	86
320-94638-1	PW-203	96	96	96	93	90	86	86	100
320-94638-2	PW-204	97	96	96	93	90	92	87	96
320-94638-3	PW-5101	102	102	96	96	96	94	93	97
320-94638-4	PW-062	97	97	97	92	88	92	82	89
320-94638-5	PW-101	99	106	102	110	103	114	101	110
320-94638-6	PW-095	112	109	101	108	105	104	102	106
320-94638-7	PW-140	100	96	95	92	89	86	87	101
320-94638-8	PW-081	96	89	94	87	86	87	83	97
320-94638-9	PW-005	99	98	97	90	93	92	80	100
320-94638-10	PW-059	94	100	98	86	92	94	83	99
320-94638-11	PW-139	97	97	96	93	91	91	90	101
320-94638-12	PW-201	96	100	100	96	91	98	87	103
320-94638-13	PW-200	100	97	96	94	95	90	89	99
320-95656-A-4-B MS	Matrix Spike	96	99	101	99	97	96	72	54
320-95656-A-4-C MSD	Matrix Spike Duplicate	98	100	105	105	99	103	84	62
LCS 320-635703/2-A	Lab Control Sample	99	99	98	98	102	103	95	103
LCS 320-644337/2-A	Lab Control Sample	96	96	100	106	99	106	96	103
LCSD 320-635703/25-A	Lab Control Sample Dup	97	95	95	96	102	102	91	97
LCSD 320-644337/3-A	Lab Control Sample Dup	107	104	107	106	103	115	99	96
MB 320-635703/1-A	Method Blank	97	94	95	97	100	97	89	94
MB 320-644337/1-A	Method Blank	97	97	102	105	100	108	95	100

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
280-169191-A-3-D MS	Matrix Spike	98	85	93	120	126	89
280-169191-A-3-E MSD	Matrix Spike Duplicate	94	95	96	118	112	103
320-94638-1	PW-203	99	105	90	70	78	96
320-94638-2	PW-204	98	102	92	67	80	93
320-94638-3	PW-5101	104	112	93	77	81	98
320-94638-4	PW-062	101	100	89	73	75	96
320-94638-5	PW-101	92	98	93	98	104	109
320-94638-6	PW-095	113	115	107	83	86	102
320-94638-7	PW-140	97	100	90	69	72	89
320-94638-8	PW-081	93	97	92	72	75	90
320-94638-9	PW-005	99	101	93	73	77	92
320-94638-10	PW-059	99	99	92	73	75	94
320-94638-11	PW-139	97	101	98	71	78	97
320-94638-12	PW-201	102	102	94	71	81	98
320-94638-13	PW-200	102	102	93	69	75	94
320-95656-A-4-B MS	Matrix Spike	91	93	89	84	88	101
320-95656-A-4-C MSD	Matrix Spike Duplicate	87	93	92	87	95	97
LCS 320-635703/2-A	Lab Control Sample	95	94	91	115	109	102
LCS 320-644337/2-A	Lab Control Sample	94	96	89	97	95	103
LCSD 320-635703/25-A	Lab Control Sample Dup	95	93	91	111	104	94
LCSD 320-644337/3-A	Lab Control Sample Dup	94	98	95	93	94	106
MB 320-635703/1-A	Method Blank	92	90	89	108	108	92
MB 320-644337/1-A	Method Blank	92	96	95	94	93	100

Eurofins Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Surrogate Legend

---

PFHxA = 13C2 PFHxA  
C4PFHA = 13C4 PFHpA  
PFOA = 13C4 PFOA  
PFNA = 13C5 PFNA  
PFDA = 13C2 PFDA  
PFUnA = 13C2 PFUnA  
PFDoA = 13C2 PFDoA  
PFTDA = 13C2 PFTeDA  
C3PFBS = 13C3 PFBS  
PFHxS = 18O2 PFHxS  
PFOS = 13C4 PFOS  
d3NMFOS = d3-NMeFOSAA  
d5NEFOS = d5-NEtFOSAA  
HFPODA = 13C3 HFPO-DA

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-635703/1-A**  
**Matrix: Water**  
**Analysis Batch: 643342**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 635703**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		11/28/22 12:28	12/28/22 23:29	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		11/28/22 12:28	12/28/22 23:29	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		11/28/22 12:28	12/28/22 23:29	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		11/28/22 12:28	12/28/22 23:29	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		11/28/22 12:28	12/28/22 23:29	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		11/28/22 12:28	12/28/22 23:29	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		11/28/22 12:28	12/28/22 23:29	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		11/28/22 12:28	12/28/22 23:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		11/28/22 12:28	12/28/22 23:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		11/28/22 12:28	12/28/22 23:29	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		11/28/22 12:28	12/28/22 23:29	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		11/28/22 12:28	12/28/22 23:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		11/28/22 12:28	12/28/22 23:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		11/28/22 12:28	12/28/22 23:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		11/28/22 12:28	12/28/22 23:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		11/28/22 12:28	12/28/22 23:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		11/28/22 12:28	12/28/22 23:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		11/28/22 12:28	12/28/22 23:29	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	97		50 - 150	11/28/22 12:28	12/28/22 23:29	1
13C4 PFHpA	94		50 - 150	11/28/22 12:28	12/28/22 23:29	1
13C4 PFOA	95		50 - 150	11/28/22 12:28	12/28/22 23:29	1
13C5 PFNA	97		50 - 150	11/28/22 12:28	12/28/22 23:29	1
13C2 PFDA	100		50 - 150	11/28/22 12:28	12/28/22 23:29	1
13C2 PFUnA	97		50 - 150	11/28/22 12:28	12/28/22 23:29	1
13C2 PFDoA	89		50 - 150	11/28/22 12:28	12/28/22 23:29	1
13C2 PFTeDA	94		50 - 150	11/28/22 12:28	12/28/22 23:29	1
13C3 PFBS	92		50 - 150	11/28/22 12:28	12/28/22 23:29	1
18O2 PFHxS	90		50 - 150	11/28/22 12:28	12/28/22 23:29	1
13C4 PFOS	89		50 - 150	11/28/22 12:28	12/28/22 23:29	1
d3-NMeFOSAA	108		50 - 150	11/28/22 12:28	12/28/22 23:29	1
d5-NEtFOSAA	108		50 - 150	11/28/22 12:28	12/28/22 23:29	1
13C3 HFPO-DA	92		50 - 150	11/28/22 12:28	12/28/22 23:29	1

**Lab Sample ID: LCS 320-635703/2-A**  
**Matrix: Water**  
**Analysis Batch: 643342**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 635703**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	43.6		ng/L		109	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	45.5		ng/L		114	71 - 133
Perfluorononanoic acid (PFNA)	40.0	43.2		ng/L		108	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-635703/2-A**  
**Matrix: Water**  
**Analysis Batch: 643342**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 635703**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	42.6		ng/L		106	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.7		ng/L		107	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	46.6		ng/L		117	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	47.5		ng/L		119	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.8		ng/L		100	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	38.0		ng/L		107	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.7		ng/L		101	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	39.9		ng/L		107	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.5		ng/L		109	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.2		ng/L		108	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	43.0		ng/L		115	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.5		ng/L		99	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	49.4		ng/L		131	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	47.1		ng/L		125	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	99		50 - 150
13C4 PFHpA	99		50 - 150
13C4 PFOA	98		50 - 150
13C5 PFNA	98		50 - 150
13C2 PFDA	102		50 - 150
13C2 PFUnA	103		50 - 150
13C2 PFDoA	95		50 - 150
13C2 PFTeDA	103		50 - 150
13C3 PFBS	95		50 - 150
18O2 PFHxS	94		50 - 150
13C4 PFOS	91		50 - 150
d3-NMeFOSAA	115		50 - 150
d5-NEtFOSAA	109		50 - 150
13C3 HFPO-DA	102		50 - 150

**Lab Sample ID: LCSD 320-635703/25-A**  
**Matrix: Water**  
**Analysis Batch: 643342**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 635703**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	41.1		ng/L		103	72 - 129	3 30
Perfluoroheptanoic acid (PFHpA)	40.0	43.7		ng/L		109	72 - 130	0 30
Perfluorooctanoic acid (PFOA)	40.0	45.1		ng/L		113	71 - 133	1 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-635703/25-A**  
**Matrix: Water**  
**Analysis Batch: 643342**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 635703**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	43.9		ng/L		110	69 - 130	2	30
Perfluorodecanoic acid (PFDA)	40.0	38.5		ng/L		96	71 - 129	10	30
Perfluoroundecanoic acid (PFUnA)	40.0	42.7		ng/L		107	69 - 133	0	30
Perfluorododecanoic acid (PFDoA)	40.0	46.3		ng/L		116	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	48.6		ng/L		121	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.8		ng/L		100	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.9		ng/L		110	72 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.2		ng/L		99	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	40.0		ng/L		108	65 - 140	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.1		ng/L		100	65 - 136	8	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.5		ng/L		111	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.7		ng/L		112	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.6		ng/L		104	72 - 132	5	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	46.5		ng/L		123	76 - 136	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.4		ng/L		118	81 - 141	6	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	97		50 - 150
13C4 PFHpA	95		50 - 150
13C4 PFOA	95		50 - 150
13C5 PFNA	96		50 - 150
13C2 PFDA	102		50 - 150
13C2 PFUnA	102		50 - 150
13C2 PFDoA	91		50 - 150
13C2 PFTeDA	97		50 - 150
13C3 PFBS	95		50 - 150
18O2 PFHxS	93		50 - 150
13C4 PFOS	91		50 - 150
d3-NMeFOSAA	111		50 - 150
d5-NEtFOSAA	104		50 - 150
13C3 HFPO-DA	94		50 - 150

**Lab Sample ID: 280-169191-A-3-D MS**  
**Matrix: Water**  
**Analysis Batch: 643342**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 635703**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	26		34.8	56.3		ng/L		87	72 - 129
Perfluoroheptanoic acid (PFHpA)	6.8	J	34.8	50.5		ng/L		125	72 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 280-169191-A-3-D MS**  
**Matrix: Water**  
**Analysis Batch: 643342**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 635703**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier	Added	Result	Qualifier				
Perfluorooctanoic acid (PFOA)	54	F1 F2	34.8	122	F1	ng/L		196	71 - 133
Perfluorononanoic acid (PFNA)	87	F1 F2	34.8	206	F1	ng/L		343	69 - 130
Perfluorodecanoic acid (PFDA)	5.3	J F1 F2	34.8	58.4	F1	ng/L		153	71 - 129
Perfluoroundecanoic acid (PFUnA)	ND		34.8	41.8		ng/L		120	69 - 133
Perfluorododecanoic acid (PFDoA)	ND		34.8	44.4		ng/L		128	72 - 134
Perfluorotridecanoic acid (PFTriA)	ND		34.8	43.1		ng/L		124	65 - 144
Perfluorotetradecanoic acid (PFTeA)	ND		34.8	36.4		ng/L		105	71 - 132
Perfluorobutanesulfonic acid (PFBS)	22		30.9	50.5		ng/L		91	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	220	F2	31.7	305	4	ng/L		257	68 - 131
Perfluorooctanesulfonic acid (PFOS)	1100	F2	32.3	2230	4	ng/L		3420	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		34.8	38.1	J	ng/L		110	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		34.8	44.1		ng/L		127	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		32.5	36.4		ng/L		112	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		34.8	39.1		ng/L		112	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		32.8	38.4		ng/L		117	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		32.8	38.0		ng/L		116	81 - 141

Isotope Dilution	MS	MS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	98		50 - 150
13C4 PFHpA	92		50 - 150
13C4 PFOA	96		50 - 150
13C5 PFNA	93		50 - 150
13C2 PFDA	101		50 - 150
13C2 PFUnA	105		50 - 150
13C2 PFDoA	92		50 - 150
13C2 PFTeDA	86		50 - 150
13C3 PFBS	98		50 - 150
18O2 PFHxS	85		50 - 150
13C4 PFOS	93		50 - 150
d3-NMeFOSAA	120		50 - 150
d5-NEtFOSAA	126		50 - 150
13C3 HFPO-DA	89		50 - 150

**Lab Sample ID: 280-169191-A-3-E MSD**  
**Matrix: Water**  
**Analysis Batch: 643342**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 635703**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec Limits	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier					Limit	
Perfluorohexanoic acid (PFHxA)	26		34.0	56.0		ng/L		88	72 - 129	1	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 280-169191-A-3-E MSD**

**Matrix: Water**

**Analysis Batch: 643342**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

**Prep Batch: 635703**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
Perfluoroheptanoic acid (PFHpA)	6.8	J	34.0	43.1		ng/L		107	72 - 130	16	30
Perfluorooctanoic acid (PFOA)	54	F1 F2	34.0	64.6	F1 F2	ng/L		32	71 - 133	61	30
Perfluorononanoic acid (PFNA)	87	F1 F2	34.0	78.0	F1 F2	ng/L		-26	69 - 130	90	30
Perfluorodecanoic acid (PFDA)	5.3	J F1 F2	34.0	38.0	F2	ng/L		96	71 - 129	42	30
Perfluoroundecanoic acid (PFUnA)	ND		34.0	37.1		ng/L		109	69 - 133	12	30
Perfluorododecanoic acid (PFDoA)	ND		34.0	41.5		ng/L		122	72 - 134	7	30
Perfluorotridecanoic acid (PFTriA)	ND		34.0	38.6		ng/L		113	65 - 144	11	30
Perfluorotetradecanoic acid (PFTeA)	ND		34.0	36.5		ng/L		107	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	22		30.2	52.5		ng/L		100	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	220	F2	31.0	157	4 F2	ng/L		-216	68 - 131	64	30
Perfluorooctanesulfonic acid (PFOS)	1100	F2	31.6	509	4 F2	ng/L		-1931	65 - 140	126	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		34.0	37.0	J	ng/L		109	65 - 136	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		34.0	39.6	J	ng/L		117	61 - 135	11	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		31.8	33.6		ng/L		106	77 - 137	8	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		34.0	30.5	J	ng/L		90	72 - 132	25	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		32.1	38.1		ng/L		118	76 - 136	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		32.1	37.0		ng/L		115	81 - 141	3	30

Isotope Dilution	MSD	MSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	99		50 - 150
13C4 PFHpA	98		50 - 150
13C4 PFOA	101		50 - 150
13C5 PFNA	100		50 - 150
13C2 PFDA	104		50 - 150
13C2 PFUnA	106		50 - 150
13C2 PFDoA	91		50 - 150
13C2 PFTeDA	86		50 - 150
13C3 PFBS	94		50 - 150
18O2 PFHxS	95		50 - 150
13C4 PFOS	96		50 - 150
d3-NMeFOSAA	118		50 - 150
d5-NEtFOSAA	112		50 - 150
13C3 HFPO-DA	103		50 - 150

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-644337/1-A**  
**Matrix: Water**  
**Analysis Batch: 644692**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 644337**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		01/04/23 05:16	01/05/23 01:45	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		01/04/23 05:16	01/05/23 01:45	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		01/04/23 05:16	01/05/23 01:45	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		01/04/23 05:16	01/05/23 01:45	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		01/04/23 05:16	01/05/23 01:45	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		01/04/23 05:16	01/05/23 01:45	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		01/04/23 05:16	01/05/23 01:45	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/04/23 05:16	01/05/23 01:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		01/04/23 05:16	01/05/23 01:45	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		01/04/23 05:16	01/05/23 01:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		01/04/23 05:16	01/05/23 01:45	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		01/04/23 05:16	01/05/23 01:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		01/04/23 05:16	01/05/23 01:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		01/04/23 05:16	01/05/23 01:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		01/04/23 05:16	01/05/23 01:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		01/04/23 05:16	01/05/23 01:45	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		01/04/23 05:16	01/05/23 01:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		01/04/23 05:16	01/05/23 01:45	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	97		50 - 150	01/04/23 05:16	01/05/23 01:45	1
13C4 PFHpA	97		50 - 150	01/04/23 05:16	01/05/23 01:45	1
13C4 PFOA	102		50 - 150	01/04/23 05:16	01/05/23 01:45	1
13C5 PFNA	105		50 - 150	01/04/23 05:16	01/05/23 01:45	1
13C2 PFDA	100		50 - 150	01/04/23 05:16	01/05/23 01:45	1
13C2 PFUnA	108		50 - 150	01/04/23 05:16	01/05/23 01:45	1
13C2 PFDoA	95		50 - 150	01/04/23 05:16	01/05/23 01:45	1
13C2 PFTeDA	100		50 - 150	01/04/23 05:16	01/05/23 01:45	1
13C3 PFBS	92		50 - 150	01/04/23 05:16	01/05/23 01:45	1
18O2 PFHxS	96		50 - 150	01/04/23 05:16	01/05/23 01:45	1
13C4 PFOS	95		50 - 150	01/04/23 05:16	01/05/23 01:45	1
d3-NMeFOSAA	94		50 - 150	01/04/23 05:16	01/05/23 01:45	1
d5-NEtFOSAA	93		50 - 150	01/04/23 05:16	01/05/23 01:45	1
13C3 HFPO-DA	100		50 - 150	01/04/23 05:16	01/05/23 01:45	1

**Lab Sample ID: LCS 320-644337/2-A**  
**Matrix: Water**  
**Analysis Batch: 644692**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 644337**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	41.8		ng/L		105	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	40.7		ng/L		102	71 - 133
Perfluorononanoic acid (PFNA)	40.0	39.0		ng/L		97	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-644337/2-A**  
**Matrix: Water**  
**Analysis Batch: 644692**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 644337**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	39.8		ng/L		100	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	38.5		ng/L		96	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	42.6		ng/L		107	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.4		ng/L		109	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.4		ng/L		101	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	34.3		ng/L		97	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.5		ng/L		94	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	38.9		ng/L		105	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.2		ng/L		98	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.5		ng/L		96	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.3		ng/L		111	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.4		ng/L		98	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	41.1		ng/L		109	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.3		ng/L		112	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	96		50 - 150
13C4 PFHpA	96		50 - 150
13C4 PFOA	100		50 - 150
13C5 PFNA	106		50 - 150
13C2 PFDA	99		50 - 150
13C2 PFUnA	106		50 - 150
13C2 PFDoA	96		50 - 150
13C2 PFTeDA	103		50 - 150
13C3 PFBS	94		50 - 150
18O2 PFHxS	96		50 - 150
13C4 PFOS	89		50 - 150
d3-NMeFOSAA	97		50 - 150
d5-NEtFOSAA	95		50 - 150
13C3 HFPO-DA	103		50 - 150

**Lab Sample ID: LCSD 320-644337/3-A**  
**Matrix: Water**  
**Analysis Batch: 644692**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 644337**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.0		ng/L		100	72 - 129	3 30
Perfluoroheptanoic acid (PFHpA)	40.0	41.6		ng/L		104	72 - 130	1 30
Perfluorooctanoic acid (PFOA)	40.0	40.2		ng/L		100	71 - 133	1 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-644337/3-A**  
**Matrix: Water**  
**Analysis Batch: 644692**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 644337**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	41.0		ng/L		102	69 - 130	5	30
Perfluorodecanoic acid (PFDA)	40.0	42.7		ng/L		107	71 - 129	7	30
Perfluoroundecanoic acid (PFUnA)	40.0	37.2		ng/L		93	69 - 133	4	30
Perfluorododecanoic acid (PFDoA)	40.0	45.0		ng/L		112	72 - 134	5	30
Perfluorotridecanoic acid (PFTriA)	40.0	44.6		ng/L		112	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	44.0		ng/L		110	71 - 132	9	30
Perfluorobutanesulfonic acid (PFBS)	35.5	34.7		ng/L		98	72 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.9		ng/L		98	68 - 131	4	30
Perfluorooctanesulfonic acid (PFOS)	37.2	38.6		ng/L		104	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.6		ng/L		104	65 - 136	6	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.1		ng/L		103	61 - 135	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.3		ng/L		105	77 - 137	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.8		ng/L		102	72 - 132	3	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	37.6		ng/L		100	76 - 136	9	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.6		ng/L		110	81 - 141	2	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	107		50 - 150
13C4 PFHpA	104		50 - 150
13C4 PFOA	107		50 - 150
13C5 PFNA	106		50 - 150
13C2 PFDA	103		50 - 150
13C2 PFUnA	115		50 - 150
13C2 PFDoA	99		50 - 150
13C2 PFTeDA	96		50 - 150
13C3 PFBS	94		50 - 150
18O2 PFHxS	98		50 - 150
13C4 PFOS	95		50 - 150
d3-NMeFOSAA	93		50 - 150
d5-NEtFOSAA	94		50 - 150
13C3 HFPO-DA	106		50 - 150

**Lab Sample ID: 320-95656-A-4-B MS**  
**Matrix: Water**  
**Analysis Batch: 644692**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 644337**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	10		36.9	45.2		ng/L		94	72 - 129
Perfluoroheptanoic acid (PFHpA)	2.3		36.9	42.0		ng/L		108	72 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-95656-A-4-B MS**  
**Matrix: Water**  
**Analysis Batch: 644692**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 644337**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorooctanoic acid (PFOA)	5.3		36.9	44.6		ng/L		106	71 - 133
Perfluorononanoic acid (PFNA)	1.1	J	36.9	39.6		ng/L		104	69 - 130
Perfluorodecanoic acid (PFDA)	0.92	J	36.9	44.1		ng/L		117	71 - 129
Perfluoroundecanoic acid (PFUnA)	ND		36.9	38.5		ng/L		104	69 - 133
Perfluorododecanoic acid (PFDoA)	ND		36.9	43.0		ng/L		117	72 - 134
Perfluorotridecanoic acid (PFTriA)	ND		36.9	35.2		ng/L		96	65 - 144
Perfluorotetradecanoic acid (PFTeA)	ND		36.9	38.6		ng/L		105	71 - 132
Perfluorobutanesulfonic acid (PFBS)	8.1	I	32.7	41.4		ng/L		102	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	4.5		33.6	38.3		ng/L		100	68 - 131
Perfluorooctanesulfonic acid (PFOS)	4.1		34.3	40.6		ng/L		107	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		36.9	40.5		ng/L		110	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		36.9	39.4		ng/L		107	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		34.4	37.1		ng/L		108	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		36.9	37.7		ng/L		102	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		34.8	26.8		ng/L		77	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		34.8	41.5		ng/L		119	81 - 141

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C2 PFHxA	96		50 - 150
13C4 PFHpA	99		50 - 150
13C4 PFOA	101		50 - 150
13C5 PFNA	99		50 - 150
13C2 PFDA	97		50 - 150
13C2 PFUnA	96		50 - 150
13C2 PFDoA	72		50 - 150
13C2 PFTeDA	54		50 - 150
13C3 PFBS	91		50 - 150
18O2 PFHxS	93		50 - 150
13C4 PFOS	89		50 - 150
d3-NMeFOSAA	84		50 - 150
d5-NEtFOSAA	88		50 - 150
13C3 HFPO-DA	101		50 - 150

**Lab Sample ID: 320-95656-A-4-C MSD**  
**Matrix: Water**  
**Analysis Batch: 644692**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 644337**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	10		37.2	46.7		ng/L		97	72 - 129	3	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-95656-A-4-C MSD**

**Matrix: Water**

**Analysis Batch: 644692**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

**Prep Batch: 644337**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
Perfluoroheptanoic acid (PFHpA)	2.3		37.2	42.9		ng/L		109	72 - 130	2	30
Perfluorooctanoic acid (PFOA)	5.3		37.2	42.0		ng/L		99	71 - 133	6	30
Perfluorononanoic acid (PFNA)	1.1	J	37.2	38.8		ng/L		101	69 - 130	2	30
Perfluorodecanoic acid (PFDA)	0.92	J	37.2	47.5		ng/L		125	71 - 129	7	30
Perfluoroundecanoic acid (PFUnA)	ND		37.2	39.0		ng/L		105	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)	ND		37.2	42.5		ng/L		114	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)	ND		37.2	34.6		ng/L		93	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)	ND		37.2	40.1		ng/L		108	71 - 132	4	30
Perfluorobutanesulfonic acid (PFBS)	8.1	I	33.0	43.0		ng/L		106	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	4.5		33.9	37.5		ng/L		97	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)	4.1		34.6	39.2		ng/L		102	65 - 140	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		37.2	38.4		ng/L		103	65 - 136	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		37.2	38.7		ng/L		104	61 - 135	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		34.7	37.1		ng/L		107	77 - 137	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		37.2	38.8		ng/L		104	72 - 132	3	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		35.1	32.1		ng/L		92	76 - 136	18	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		35.1	39.7		ng/L		113	81 - 141	5	30

Isotope Dilution	MSD	MSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	98		50 - 150
13C4 PFHpA	100		50 - 150
13C4 PFOA	105		50 - 150
13C5 PFNA	105		50 - 150
13C2 PFDA	99		50 - 150
13C2 PFUnA	103		50 - 150
13C2 PFDoA	84		50 - 150
13C2 PFTeDA	62		50 - 150
13C3 PFBS	87		50 - 150
18O2 PFHxS	93		50 - 150
13C4 PFOS	92		50 - 150
d3-NMeFOSAA	87		50 - 150
d5-NEtFOSAA	95		50 - 150
13C3 HFPO-DA	97		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## LCMS

### Prep Batch: 635703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94638-1	PW-203	Total/NA	Water	3535	
320-94638-2	PW-204	Total/NA	Water	3535	
320-94638-3	PW-5101	Total/NA	Water	3535	
320-94638-4	PW-062	Total/NA	Water	3535	
320-94638-6	PW-095	Total/NA	Water	3535	
320-94638-7	PW-140	Total/NA	Water	3535	
320-94638-8	PW-081	Total/NA	Water	3535	
320-94638-9	PW-005	Total/NA	Water	3535	
320-94638-10	PW-059	Total/NA	Water	3535	
320-94638-11	PW-139	Total/NA	Water	3535	
320-94638-12	PW-201	Total/NA	Water	3535	
320-94638-13	PW-200	Total/NA	Water	3535	
MB 320-635703/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-635703/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-635703/25-A	Lab Control Sample Dup	Total/NA	Water	3535	
280-169191-A-3-D MS	Matrix Spike	Total/NA	Water	3535	
280-169191-A-3-E MSD	Matrix Spike Duplicate	Total/NA	Water	3535	

### Analysis Batch: 641989

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94638-1	PW-203	Total/NA	Water	EPA 537(Mod)	635703
320-94638-2	PW-204	Total/NA	Water	EPA 537(Mod)	635703
320-94638-3	PW-5101	Total/NA	Water	EPA 537(Mod)	635703
320-94638-4	PW-062	Total/NA	Water	EPA 537(Mod)	635703
320-94638-6	PW-095	Total/NA	Water	EPA 537(Mod)	635703
320-94638-7	PW-140	Total/NA	Water	EPA 537(Mod)	635703
320-94638-8	PW-081	Total/NA	Water	EPA 537(Mod)	635703
320-94638-9	PW-005	Total/NA	Water	EPA 537(Mod)	635703
320-94638-10	PW-059	Total/NA	Water	EPA 537(Mod)	635703
320-94638-11	PW-139	Total/NA	Water	EPA 537(Mod)	635703
320-94638-12	PW-201	Total/NA	Water	EPA 537(Mod)	635703
320-94638-13	PW-200	Total/NA	Water	EPA 537(Mod)	635703

### Analysis Batch: 643342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-635703/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	635703
LCS 320-635703/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	635703
LCSD 320-635703/25-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	635703
280-169191-A-3-D MS	Matrix Spike	Total/NA	Water	EPA 537(Mod)	635703
280-169191-A-3-E MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	635703

### Prep Batch: 644337

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94638-5	PW-101	Total/NA	Water	3535	
MB 320-644337/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-644337/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-644337/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
320-95656-A-4-B MS	Matrix Spike	Total/NA	Water	3535	
320-95656-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Water	3535	

Eurofins Sacramento

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## LCMS

### Analysis Batch: 644692

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94638-5	PW-101	Total/NA	Water	EPA 537(Mod)	644337
MB 320-644337/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	644337
LCS 320-644337/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	644337
LCSD 320-644337/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	644337
320-95656-A-4-B MS	Matrix Spike	Total/NA	Water	EPA 537(Mod)	644337
320-95656-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	644337

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Client Sample ID: PW-203

Date Collected: 11/19/22 14:02

Date Received: 11/22/22 14:52

## Lab Sample ID: 320-94638-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			285.1 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 08:22	K1S	EET SAC

## Client Sample ID: PW-204

Date Collected: 11/19/22 16:58

Date Received: 11/22/22 14:52

## Lab Sample ID: 320-94638-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			292.6 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 08:32	K1S	EET SAC

## Client Sample ID: PW-5101

Date Collected: 11/21/22 09:50

Date Received: 11/22/22 14:52

## Lab Sample ID: 320-94638-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.9 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 08:42	K1S	EET SAC

## Client Sample ID: PW-062

Date Collected: 11/21/22 10:00

Date Received: 11/22/22 14:52

## Lab Sample ID: 320-94638-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			283.4 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 08:52	K1S	EET SAC

## Client Sample ID: PW-101

Date Collected: 11/21/22 09:20

Date Received: 11/22/22 14:52

## Lab Sample ID: 320-94638-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261.9 mL	10.0 mL	644337	01/04/23 05:16	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	644692	01/05/23 02:15	K1S	EET SAC

## Client Sample ID: PW-095

Date Collected: 11/19/22 16:08

Date Received: 11/22/22 14:52

## Lab Sample ID: 320-94638-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.6 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 09:12	K1S	EET SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-140**

**Lab Sample ID: 320-94638-7**

**Date Collected: 11/18/22 11:05**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			288.5 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 09:22	K1S	EET SAC

**Client Sample ID: PW-081**

**Lab Sample ID: 320-94638-8**

**Date Collected: 11/15/22 11:28**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			285.1 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 09:33	K1S	EET SAC

**Client Sample ID: PW-005**

**Lab Sample ID: 320-94638-9**

**Date Collected: 11/18/22 15:42**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.1 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 10:03	K1S	EET SAC

**Client Sample ID: PW-059**

**Lab Sample ID: 320-94638-10**

**Date Collected: 11/16/22 09:12**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.4 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 10:13	K1S	EET SAC

**Client Sample ID: PW-139**

**Lab Sample ID: 320-94638-11**

**Date Collected: 11/18/22 09:45**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.6 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 10:23	K1S	EET SAC

**Client Sample ID: PW-201**

**Lab Sample ID: 320-94638-12**

**Date Collected: 11/18/22 10:20**

**Matrix: Water**

**Date Received: 11/22/22 14:52**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.8 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 10:33	K1S	EET SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

**Client Sample ID: PW-200**  
**Date Collected: 11/18/22 09:13**  
**Date Received: 11/22/22 14:52**

**Lab Sample ID: 320-94638-13**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.8 mL	10.0 mL	635703	11/28/22 12:28	MRP	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	641989	12/22/22 10:43	K1S	EET SAC

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94638-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-94638-1	PW-203	Water	11/19/22 14:02	11/22/22 14:52
320-94638-2	PW-204	Water	11/19/22 16:58	11/22/22 14:52
320-94638-3	PW-5101	Water	11/21/22 09:50	11/22/22 14:52
320-94638-4	PW-062	Water	11/21/22 10:00	11/22/22 14:52
320-94638-5	PW-101	Water	11/21/22 09:20	11/22/22 14:52
320-94638-6	PW-095	Water	11/19/22 16:08	11/22/22 14:52
320-94638-7	PW-140	Water	11/18/22 11:05	11/22/22 14:52
320-94638-8	PW-081	Water	11/15/22 11:28	11/22/22 14:52
320-94638-9	PW-005	Water	11/18/22 15:42	11/22/22 14:52
320-94638-10	PW-059	Water	11/16/22 09:12	11/22/22 14:52
320-94638-11	PW-139	Water	11/18/22 09:45	11/22/22 14:52
320-94638-12	PW-201	Water	11/18/22 10:20	11/22/22 14:52
320-94638-13	PW-200	Water	11/18/22 09:13	11/22/22 14:52

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15





## Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-94638-1

**Login Number: 94638**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Pratali, Sandra A**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEAL
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Jessa Tibbetts	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-94638-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	1/9/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 0.6°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments:
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method EPA 537(Mod): The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 320-635703 and analytical batch 320-643342 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the

associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

- Method EPA 537(Mod): Results for samples (280-169191-A-3-A), (280-169191-A-3-D MS) and (280-169191-A-3-E MSD) 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
- Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: (320-95656-A-4-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.
- Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. (320-95656-A-4-A)
- Method 3535: The following samples in preparation batch 320-635703 were light yellow in color prior to extraction. PW-081 (320-94638-8) and PW-005 (320-94638-9)
- Method 3535: The following samples in preparation batch 320-635703 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-081 (320-94638-8) and PW-005 (320-94638-9)
- Method 3535: The following sample was re-prepared outside of preparation holding time due to re-prep needed for result confirmation PW-101 (320-94638-5). Preparation batch 320-644337

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

c. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

b. Are all applicable holding times met?

Yes  No  N/A

Comments: Sample *PW-101* was re-prepared outside of the preparation holding time due to re-prep needed for result confirmation.

- c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

Sample *PW-101* was re-prepared outside holding time; therefore, the non-detect (ND) results reported for each analyte are flagged "UN" as tentatively identified, and the result is considered an estimate. We note that duplicate sample *PW-5101* was prepared within holding and confirms the ND results for the "UN" flagged results.

## 6. QC Samples

- a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were reported for preparatory batches 635703 and 644337.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments: Method EPA 537(Mod): Several matrix spike/matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-635703 and analytical batch 320-643342 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample/laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments: Several matrix spike/matrix spike duplicate (MS/MSD) RPDs for preparation batch 320-635703 and analytical batch 320-643342 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample/laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: None; MS/MSD failures only apply to the sample that was spiked and the sample used by the laboratory does not belong to this project sample set. Results are not affected. LCS/LCSD information is referenced to assess the accuracy and precision.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: The LCS/LCSD for the project samples met acceptance criteria and do not require flagging.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-94638-1

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: The LCS/LCSD for the project samples met acceptance criteria and the results do not require flagging due to the MS/MSD accuracy and precision failures.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments: IDAs were reported for the PFAS project samples.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

Comments: The IDA recovery associated with MS/MSD Sample 320-95656-A-4-A is below the method recommended limit.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: No, IDA failures only affect to the associated sample and the MS/MSD samples were not from our project sample set. Results are not affected.

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: The data quality and usability were not affected, see above.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments: A trip blank is not required for PFAS analysis.

ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: A trip blank was not submitted with this work order.

iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. Field duplicate pair *PW-101* and *PW-5101* were submitted with this work order.

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: N/A. RPDs could not be calculated because PFAS were not detected in either sample for the duplicate pair.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-94638-1

iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

a. Are they defined and appropriate?

Yes  No  N/A

Comments: Other data flags and qualifiers were not required for the project samples.



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 12/13/2022 12:49:34 PM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-94743-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
12/13/2022 12:49:34 PM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	14
QC Sample Results . . . . .	15
QC Association Summary . . . . .	18
Lab Chronicle . . . . .	19
Certification Summary . . . . .	21
Method Summary . . . . .	22
Sample Summary . . . . .	23
Chain of Custody . . . . .	24
Receipt Checklists . . . . .	25

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

---

**Job ID: 320-94743-1**

---

**Laboratory: Eurofins Sacramento**

---

**Narrative**

---

**Job Narrative  
320-94743-1**

**Receipt**

The samples were received on 11/29/2022 2:46 PM. 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 2.4° C.

**LCMS**

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.  
PW-148 (320-94743-3)

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/sample duplicate (MS/MSD/DUP) associated with preparation batch 320-637222.

Method 3535: The following samples in preparation batch 320-637222 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-44 (320-94743-1), PW-148 (320-94743-3) and PW-110 (320-94743-4)

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



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

## Client Sample ID: PW-44

Lab Sample ID: 320-94743-1

No Detections.

## Client Sample ID: PW-155

Lab Sample ID: 320-94743-2

No Detections.

## Client Sample ID: PW-148

Lab Sample ID: 320-94743-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	17		1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.85	J I	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.1		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-110

Lab Sample ID: 320-94743-4

No Detections.

## Client Sample ID: PW-224

Lab Sample ID: 320-94743-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.22	J	1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-202

Lab Sample ID: 320-94743-6

No Detections.

## Client Sample ID: PW-114

Lab Sample ID: 320-94743-7

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

**Client Sample ID: PW-44**

**Lab Sample ID: 320-94743-1**

**Date Collected: 11/28/22 08:53**

**Matrix: Water**

**Date Received: 11/29/22 14:46**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		12/04/22 11:12	12/06/22 09:51	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		12/04/22 11:12	12/06/22 09:51	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		12/04/22 11:12	12/06/22 09:51	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		12/04/22 11:12	12/06/22 09:51	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		12/04/22 11:12	12/06/22 09:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		12/04/22 11:12	12/06/22 09:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		12/04/22 11:12	12/06/22 09:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/04/22 11:12	12/06/22 09:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		12/04/22 11:12	12/06/22 09:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/04/22 11:12	12/06/22 09:51	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		12/04/22 11:12	12/06/22 09:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		12/04/22 11:12	12/06/22 09:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		12/04/22 11:12	12/06/22 09:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		12/04/22 11:12	12/06/22 09:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		12/04/22 11:12	12/06/22 09:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		12/04/22 11:12	12/06/22 09:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		12/04/22 11:12	12/06/22 09:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		12/04/22 11:12	12/06/22 09:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	12/04/22 11:12	12/06/22 09:51	1
13C4 PFHpA	92		50 - 150	12/04/22 11:12	12/06/22 09:51	1
13C4 PFOA	93		50 - 150	12/04/22 11:12	12/06/22 09:51	1
13C5 PFNA	92		50 - 150	12/04/22 11:12	12/06/22 09:51	1
13C2 PFDA	97		50 - 150	12/04/22 11:12	12/06/22 09:51	1
13C2 PFUnA	95		50 - 150	12/04/22 11:12	12/06/22 09:51	1
13C2 PFDoA	85		50 - 150	12/04/22 11:12	12/06/22 09:51	1
13C2 PFTeDA	96		50 - 150	12/04/22 11:12	12/06/22 09:51	1
13C3 PFBS	93		50 - 150	12/04/22 11:12	12/06/22 09:51	1
18O2 PFHxS	100		50 - 150	12/04/22 11:12	12/06/22 09:51	1
13C4 PFOS	91		50 - 150	12/04/22 11:12	12/06/22 09:51	1
d3-NMeFOSAA	96		50 - 150	12/04/22 11:12	12/06/22 09:51	1
d5-NEtFOSAA	95		50 - 150	12/04/22 11:12	12/06/22 09:51	1
13C3 HFPODA	84		50 - 150	12/04/22 11:12	12/06/22 09:51	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

**Client Sample ID: PW-155**

**Lab Sample ID: 320-94743-2**

**Date Collected: 11/23/22 16:50**

**Matrix: Water**

**Date Received: 11/29/22 14:46**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		12/04/22 11:12	12/06/22 10:01	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		12/04/22 11:12	12/06/22 10:01	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		12/04/22 11:12	12/06/22 10:01	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		12/04/22 11:12	12/06/22 10:01	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		12/04/22 11:12	12/06/22 10:01	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		12/04/22 11:12	12/06/22 10:01	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		12/04/22 11:12	12/06/22 10:01	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		12/04/22 11:12	12/06/22 10:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		12/04/22 11:12	12/06/22 10:01	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/04/22 11:12	12/06/22 10:01	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		12/04/22 11:12	12/06/22 10:01	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		12/04/22 11:12	12/06/22 10:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		12/04/22 11:12	12/06/22 10:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		12/04/22 11:12	12/06/22 10:01	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		12/04/22 11:12	12/06/22 10:01	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		12/04/22 11:12	12/06/22 10:01	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		12/04/22 11:12	12/06/22 10:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		12/04/22 11:12	12/06/22 10:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		50 - 150	12/04/22 11:12	12/06/22 10:01	1
13C4 PFHpA	102		50 - 150	12/04/22 11:12	12/06/22 10:01	1
13C4 PFOA	98		50 - 150	12/04/22 11:12	12/06/22 10:01	1
13C5 PFNA	98		50 - 150	12/04/22 11:12	12/06/22 10:01	1
13C2 PFDA	105		50 - 150	12/04/22 11:12	12/06/22 10:01	1
13C2 PFUnA	100		50 - 150	12/04/22 11:12	12/06/22 10:01	1
13C2 PFDoA	89		50 - 150	12/04/22 11:12	12/06/22 10:01	1
13C2 PFTeDA	92		50 - 150	12/04/22 11:12	12/06/22 10:01	1
13C3 PFBS	94		50 - 150	12/04/22 11:12	12/06/22 10:01	1
18O2 PFHxS	99		50 - 150	12/04/22 11:12	12/06/22 10:01	1
13C4 PFOS	99		50 - 150	12/04/22 11:12	12/06/22 10:01	1
d3-NMeFOSAA	93		50 - 150	12/04/22 11:12	12/06/22 10:01	1
d5-NEtFOSAA	100		50 - 150	12/04/22 11:12	12/06/22 10:01	1
13C3 HFPODA	89		50 - 150	12/04/22 11:12	12/06/22 10:01	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

**Client Sample ID: PW-148**

**Lab Sample ID: 320-94743-3**

**Date Collected: 11/22/22 14:00**

**Matrix: Water**

**Date Received: 11/29/22 14:46**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	17		1.8	0.52	ng/L		12/04/22 11:12	12/06/22 10:12	1
Perfluoroheptanoic acid (PFHpA)	0.85	J I	1.8	0.23	ng/L		12/04/22 11:12	12/06/22 10:12	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		12/04/22 11:12	12/06/22 10:12	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		12/04/22 11:12	12/06/22 10:12	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		12/04/22 11:12	12/06/22 10:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		12/04/22 11:12	12/06/22 10:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		12/04/22 11:12	12/06/22 10:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/04/22 11:12	12/06/22 10:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		12/04/22 11:12	12/06/22 10:12	1
Perfluorobutanesulfonic acid (PFBS)	3.1		1.8	0.18	ng/L		12/04/22 11:12	12/06/22 10:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		12/04/22 11:12	12/06/22 10:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		12/04/22 11:12	12/06/22 10:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		12/04/22 11:12	12/06/22 10:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		12/04/22 11:12	12/06/22 10:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		12/04/22 11:12	12/06/22 10:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		12/04/22 11:12	12/06/22 10:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		12/04/22 11:12	12/06/22 10:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		12/04/22 11:12	12/06/22 10:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	12/04/22 11:12	12/06/22 10:12	1
13C4 PFHpA	90		50 - 150	12/04/22 11:12	12/06/22 10:12	1
13C4 PFOA	91		50 - 150	12/04/22 11:12	12/06/22 10:12	1
13C5 PFNA	92		50 - 150	12/04/22 11:12	12/06/22 10:12	1
13C2 PFDA	94		50 - 150	12/04/22 11:12	12/06/22 10:12	1
13C2 PFUnA	94		50 - 150	12/04/22 11:12	12/06/22 10:12	1
13C2 PFDoA	85		50 - 150	12/04/22 11:12	12/06/22 10:12	1
13C2 PFTeDA	91		50 - 150	12/04/22 11:12	12/06/22 10:12	1
13C3 PFBS	86		50 - 150	12/04/22 11:12	12/06/22 10:12	1
18O2 PFHxS	92		50 - 150	12/04/22 11:12	12/06/22 10:12	1
13C4 PFOS	94		50 - 150	12/04/22 11:12	12/06/22 10:12	1
d3-NMeFOSAA	80		50 - 150	12/04/22 11:12	12/06/22 10:12	1
d5-NEtFOSAA	89		50 - 150	12/04/22 11:12	12/06/22 10:12	1
13C3 HFPODA	87		50 - 150	12/04/22 11:12	12/06/22 10:12	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

**Client Sample ID: PW-110**

**Lab Sample ID: 320-94743-4**

**Date Collected: 11/22/22 12:15**

**Matrix: Water**

**Date Received: 11/29/22 14:46**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		12/04/22 11:12	12/06/22 10:22	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		12/04/22 11:12	12/06/22 10:22	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		12/04/22 11:12	12/06/22 10:22	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		12/04/22 11:12	12/06/22 10:22	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		12/04/22 11:12	12/06/22 10:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		12/04/22 11:12	12/06/22 10:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		12/04/22 11:12	12/06/22 10:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		12/04/22 11:12	12/06/22 10:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		12/04/22 11:12	12/06/22 10:22	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/04/22 11:12	12/06/22 10:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		12/04/22 11:12	12/06/22 10:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		12/04/22 11:12	12/06/22 10:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		12/04/22 11:12	12/06/22 10:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		12/04/22 11:12	12/06/22 10:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		12/04/22 11:12	12/06/22 10:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		12/04/22 11:12	12/06/22 10:22	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		12/04/22 11:12	12/06/22 10:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		12/04/22 11:12	12/06/22 10:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	12/04/22 11:12	12/06/22 10:22	1
13C4 PFHpA	94		50 - 150	12/04/22 11:12	12/06/22 10:22	1
13C4 PFOA	95		50 - 150	12/04/22 11:12	12/06/22 10:22	1
13C5 PFNA	97		50 - 150	12/04/22 11:12	12/06/22 10:22	1
13C2 PFDA	98		50 - 150	12/04/22 11:12	12/06/22 10:22	1
13C2 PFUnA	101		50 - 150	12/04/22 11:12	12/06/22 10:22	1
13C2 PFDoA	88		50 - 150	12/04/22 11:12	12/06/22 10:22	1
13C2 PFTeDA	94		50 - 150	12/04/22 11:12	12/06/22 10:22	1
13C3 PFBS	93		50 - 150	12/04/22 11:12	12/06/22 10:22	1
18O2 PFHxS	97		50 - 150	12/04/22 11:12	12/06/22 10:22	1
13C4 PFOS	92		50 - 150	12/04/22 11:12	12/06/22 10:22	1
d3-NMeFOSAA	89		50 - 150	12/04/22 11:12	12/06/22 10:22	1
d5-NEtFOSAA	95		50 - 150	12/04/22 11:12	12/06/22 10:22	1
13C3 HFPODA	85		50 - 150	12/04/22 11:12	12/06/22 10:22	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

**Client Sample ID: PW-224**

**Lab Sample ID: 320-94743-5**

**Date Collected: 11/22/22 12:41**

**Matrix: Water**

**Date Received: 11/29/22 14:46**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		12/04/22 11:12	12/06/22 10:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		12/04/22 11:12	12/06/22 10:32	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		12/04/22 11:12	12/06/22 10:32	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		12/04/22 11:12	12/06/22 10:32	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		12/04/22 11:12	12/06/22 10:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		12/04/22 11:12	12/06/22 10:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		12/04/22 11:12	12/06/22 10:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/04/22 11:12	12/06/22 10:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		12/04/22 11:12	12/06/22 10:32	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.22</b>	<b>J</b>	1.8	0.18	ng/L		12/04/22 11:12	12/06/22 10:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		12/04/22 11:12	12/06/22 10:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		12/04/22 11:12	12/06/22 10:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		12/04/22 11:12	12/06/22 10:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		12/04/22 11:12	12/06/22 10:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		12/04/22 11:12	12/06/22 10:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		12/04/22 11:12	12/06/22 10:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		12/04/22 11:12	12/06/22 10:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		12/04/22 11:12	12/06/22 10:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		50 - 150	12/04/22 11:12	12/06/22 10:32	1
13C4 PFHpA	91		50 - 150	12/04/22 11:12	12/06/22 10:32	1
13C4 PFOA	92		50 - 150	12/04/22 11:12	12/06/22 10:32	1
13C5 PFNA	93		50 - 150	12/04/22 11:12	12/06/22 10:32	1
13C2 PFDA	93		50 - 150	12/04/22 11:12	12/06/22 10:32	1
13C2 PFUnA	97		50 - 150	12/04/22 11:12	12/06/22 10:32	1
13C2 PFDoA	87		50 - 150	12/04/22 11:12	12/06/22 10:32	1
13C2 PFTeDA	94		50 - 150	12/04/22 11:12	12/06/22 10:32	1
13C3 PFBS	92		50 - 150	12/04/22 11:12	12/06/22 10:32	1
18O2 PFHxS	96		50 - 150	12/04/22 11:12	12/06/22 10:32	1
13C4 PFOS	93		50 - 150	12/04/22 11:12	12/06/22 10:32	1
d3-NMeFOSAA	91		50 - 150	12/04/22 11:12	12/06/22 10:32	1
d5-NEtFOSAA	95		50 - 150	12/04/22 11:12	12/06/22 10:32	1
13C3 HFPODA	88		50 - 150	12/04/22 11:12	12/06/22 10:32	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

**Client Sample ID: PW-202**

**Lab Sample ID: 320-94743-6**

**Date Collected: 11/23/22 09:23**

**Matrix: Water**

**Date Received: 11/29/22 14:46**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		12/04/22 11:12	12/06/22 10:42	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		12/04/22 11:12	12/06/22 10:42	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		12/04/22 11:12	12/06/22 10:42	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		12/04/22 11:12	12/06/22 10:42	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		12/04/22 11:12	12/06/22 10:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		12/04/22 11:12	12/06/22 10:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		12/04/22 11:12	12/06/22 10:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/04/22 11:12	12/06/22 10:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		12/04/22 11:12	12/06/22 10:42	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/04/22 11:12	12/06/22 10:42	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		12/04/22 11:12	12/06/22 10:42	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		12/04/22 11:12	12/06/22 10:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		12/04/22 11:12	12/06/22 10:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		12/04/22 11:12	12/06/22 10:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		12/04/22 11:12	12/06/22 10:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		12/04/22 11:12	12/06/22 10:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		12/04/22 11:12	12/06/22 10:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		12/04/22 11:12	12/06/22 10:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		50 - 150	12/04/22 11:12	12/06/22 10:42	1
13C4 PFHpA	93		50 - 150	12/04/22 11:12	12/06/22 10:42	1
13C4 PFOA	90		50 - 150	12/04/22 11:12	12/06/22 10:42	1
13C5 PFNA	93		50 - 150	12/04/22 11:12	12/06/22 10:42	1
13C2 PFDA	91		50 - 150	12/04/22 11:12	12/06/22 10:42	1
13C2 PFUnA	94		50 - 150	12/04/22 11:12	12/06/22 10:42	1
13C2 PFDoA	82		50 - 150	12/04/22 11:12	12/06/22 10:42	1
13C2 PFTeDA	91		50 - 150	12/04/22 11:12	12/06/22 10:42	1
13C3 PFBS	94		50 - 150	12/04/22 11:12	12/06/22 10:42	1
18O2 PFHxS	93		50 - 150	12/04/22 11:12	12/06/22 10:42	1
13C4 PFOS	85		50 - 150	12/04/22 11:12	12/06/22 10:42	1
d3-NMeFOSAA	89		50 - 150	12/04/22 11:12	12/06/22 10:42	1
d5-NEtFOSAA	97		50 - 150	12/04/22 11:12	12/06/22 10:42	1
13C3 HFPODA	81		50 - 150	12/04/22 11:12	12/06/22 10:42	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

**Client Sample ID: PW-114**

**Lab Sample ID: 320-94743-7**

**Date Collected: 11/28/22 10:50**

**Matrix: Water**

**Date Received: 11/29/22 14:46**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		12/04/22 11:12	12/06/22 10:52	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		12/04/22 11:12	12/06/22 10:52	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		12/04/22 11:12	12/06/22 10:52	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		12/04/22 11:12	12/06/22 10:52	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		12/04/22 11:12	12/06/22 10:52	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		12/04/22 11:12	12/06/22 10:52	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		12/04/22 11:12	12/06/22 10:52	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/04/22 11:12	12/06/22 10:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		12/04/22 11:12	12/06/22 10:52	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		12/04/22 11:12	12/06/22 10:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		12/04/22 11:12	12/06/22 10:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		12/04/22 11:12	12/06/22 10:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		12/04/22 11:12	12/06/22 10:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		12/04/22 11:12	12/06/22 10:52	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		12/04/22 11:12	12/06/22 10:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		12/04/22 11:12	12/06/22 10:52	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		12/04/22 11:12	12/06/22 10:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		12/04/22 11:12	12/06/22 10:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		50 - 150	12/04/22 11:12	12/06/22 10:52	1
13C4 PFHpA	95		50 - 150	12/04/22 11:12	12/06/22 10:52	1
13C4 PFOA	92		50 - 150	12/04/22 11:12	12/06/22 10:52	1
13C5 PFNA	90		50 - 150	12/04/22 11:12	12/06/22 10:52	1
13C2 PFDA	94		50 - 150	12/04/22 11:12	12/06/22 10:52	1
13C2 PFUnA	100		50 - 150	12/04/22 11:12	12/06/22 10:52	1
13C2 PFDoA	87		50 - 150	12/04/22 11:12	12/06/22 10:52	1
13C2 PFTeDA	93		50 - 150	12/04/22 11:12	12/06/22 10:52	1
13C3 PFBS	95		50 - 150	12/04/22 11:12	12/06/22 10:52	1
18O2 PFHxS	96		50 - 150	12/04/22 11:12	12/06/22 10:52	1
13C4 PFOS	91		50 - 150	12/04/22 11:12	12/06/22 10:52	1
d3-NMeFOSAA	90		50 - 150	12/04/22 11:12	12/06/22 10:52	1
d5-NEtFOSAA	88		50 - 150	12/04/22 11:12	12/06/22 10:52	1
13C3 HFPODA	92		50 - 150	12/04/22 11:12	12/06/22 10:52	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-94743-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
LCS 320-637222/2-A	Lab Control Sample	91	93	93	96	95	97	92	93
LCSD 320-637222/3-A	Lab Control Sample Dup	91	96	95	97	95	94	87	95
MB 320-637222/1-A	Method Blank	87	94	91	92	90	91	90	95

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOs (50-150)	d5NEFOs (50-150)	HFPODA (50-150)
LCS 320-637222/2-A	Lab Control Sample	90	93	90	77	83	96
LCSD 320-637222/3-A	Lab Control Sample Dup	89	94	90	76	81	95
MB 320-637222/1-A	Method Blank	88	90	90	72	76	91

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOs = d3-NMeFOSAA
- d5NEFOs = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-637222/1-A**  
**Matrix: Water**  
**Analysis Batch: 638855**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 637222**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		12/04/22 11:12	12/09/22 13:17	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		12/04/22 11:12	12/09/22 13:17	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		12/04/22 11:12	12/09/22 13:17	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		12/04/22 11:12	12/09/22 13:17	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		12/04/22 11:12	12/09/22 13:17	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		12/04/22 11:12	12/09/22 13:17	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		12/04/22 11:12	12/09/22 13:17	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		12/04/22 11:12	12/09/22 13:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		12/04/22 11:12	12/09/22 13:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		12/04/22 11:12	12/09/22 13:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		12/04/22 11:12	12/09/22 13:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		12/04/22 11:12	12/09/22 13:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		12/04/22 11:12	12/09/22 13:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		12/04/22 11:12	12/09/22 13:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		12/04/22 11:12	12/09/22 13:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		12/04/22 11:12	12/09/22 13:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		12/04/22 11:12	12/09/22 13:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		12/04/22 11:12	12/09/22 13:17	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	87		50 - 150	12/04/22 11:12	12/09/22 13:17	1
13C4 PFHpA	94		50 - 150	12/04/22 11:12	12/09/22 13:17	
13C4 PFOA	91		50 - 150	12/04/22 11:12	12/09/22 13:17	
13C5 PFNA	92		50 - 150	12/04/22 11:12	12/09/22 13:17	
13C2 PFDA	90		50 - 150	12/04/22 11:12	12/09/22 13:17	
13C2 PFUnA	91		50 - 150	12/04/22 11:12	12/09/22 13:17	
13C2 PFDoA	90		50 - 150	12/04/22 11:12	12/09/22 13:17	
13C2 PFTeDA	95		50 - 150	12/04/22 11:12	12/09/22 13:17	
13C3 PFBS	88		50 - 150	12/04/22 11:12	12/09/22 13:17	
18O2 PFHxS	90		50 - 150	12/04/22 11:12	12/09/22 13:17	
13C4 PFOS	90		50 - 150	12/04/22 11:12	12/09/22 13:17	
d3-NMeFOSAA	72		50 - 150	12/04/22 11:12	12/09/22 13:17	
d5-NEtFOSAA	76		50 - 150	12/04/22 11:12	12/09/22 13:17	
13C3 HFPO-DA	91		50 - 150	12/04/22 11:12	12/09/22 13:17	

**Lab Sample ID: LCS 320-637222/2-A**  
**Matrix: Water**  
**Analysis Batch: 638855**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 637222**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	42.6		ng/L		106	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	41.8		ng/L		105	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.0		ng/L		105	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-637222/2-A**  
**Matrix: Water**  
**Analysis Batch: 638855**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 637222**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	41.0		ng/L		103	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.6		ng/L		107	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.7		ng/L		114	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	45.4		ng/L		113	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	41.8		ng/L		105	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	39.3		ng/L		111	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.7		ng/L		101	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	37.3		ng/L		100	65 - 140
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	40.0	42.6		ng/L		107	65 - 136
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	40.0	41.8		ng/L		105	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.6		ng/L		111	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.4		ng/L		98	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	40.6		ng/L		108	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.7		ng/L		113	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	91		50 - 150
13C4 PFHpA	93		50 - 150
13C4 PFOA	93		50 - 150
13C5 PFNA	96		50 - 150
13C2 PFDA	95		50 - 150
13C2 PFUnA	97		50 - 150
13C2 PFDoA	92		50 - 150
13C2 PFTeDA	93		50 - 150
13C3 PFBS	90		50 - 150
18O2 PFHxS	93		50 - 150
13C4 PFOS	90		50 - 150
d3-NMeFOSAA	77		50 - 150
d5-NEtFOSAA	83		50 - 150
13C3 HFPO-DA	96		50 - 150

**Lab Sample ID: LCSD 320-637222/3-A**  
**Matrix: Water**  
**Analysis Batch: 638855**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 637222**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	42.8		ng/L		107	72 - 129	3 30
Perfluoroheptanoic acid (PFHpA)	40.0	39.3		ng/L		98	72 - 130	8 30
Perfluorooctanoic acid (PFOA)	40.0	43.1		ng/L		108	71 - 133	3 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-637222/3-A**  
**Matrix: Water**  
**Analysis Batch: 638855**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 637222**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	42.8		ng/L		107	69 - 130	2	30
Perfluorodecanoic acid (PFDA)	40.0	39.9		ng/L		100	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	44.7		ng/L		112	69 - 133	5	30
Perfluorododecanoic acid (PFDoA)	40.0	47.8		ng/L		119	72 - 134	5	30
Perfluorotridecanoic acid (PFTriA)	40.0	48.5		ng/L		121	65 - 144	7	30
Perfluorotetradecanoic acid (PFTeA)	40.0	46.4		ng/L		116	71 - 132	10	30
Perfluorobutanesulfonic acid (PFBS)	35.5	39.2		ng/L		110	72 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.4		ng/L		94	68 - 131	7	30
Perfluorooctanesulfonic acid (PFOS)	37.2	37.0		ng/L		100	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.0		ng/L		105	65 - 136	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.8		ng/L		102	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	40.7		ng/L		109	77 - 137	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.7		ng/L		104	72 - 132	6	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	41.2		ng/L		109	76 - 136	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.0		ng/L		117	81 - 141	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	91		50 - 150
13C4 PFHpA	96		50 - 150
13C4 PFOA	95		50 - 150
13C5 PFNA	97		50 - 150
13C2 PFDA	95		50 - 150
13C2 PFUnA	94		50 - 150
13C2 PFDoA	87		50 - 150
13C2 PFTeDA	95		50 - 150
13C3 PFBS	89		50 - 150
18O2 PFHxS	94		50 - 150
13C4 PFOS	90		50 - 150
d3-NMeFOSAA	76		50 - 150
d5-NEtFOSAA	81		50 - 150
13C3 HFPO-DA	95		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

## LCMS

### Prep Batch: 637222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94743-1	PW-44	Total/NA	Water	3535	
320-94743-2	PW-155	Total/NA	Water	3535	
320-94743-3	PW-148	Total/NA	Water	3535	
320-94743-4	PW-110	Total/NA	Water	3535	
320-94743-5	PW-224	Total/NA	Water	3535	
320-94743-6	PW-202	Total/NA	Water	3535	
320-94743-7	PW-114	Total/NA	Water	3535	
MB 320-637222/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-637222/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-637222/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 637614

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94743-1	PW-44	Total/NA	Water	EPA 537(Mod)	637222
320-94743-2	PW-155	Total/NA	Water	EPA 537(Mod)	637222
320-94743-3	PW-148	Total/NA	Water	EPA 537(Mod)	637222
320-94743-4	PW-110	Total/NA	Water	EPA 537(Mod)	637222
320-94743-5	PW-224	Total/NA	Water	EPA 537(Mod)	637222
320-94743-6	PW-202	Total/NA	Water	EPA 537(Mod)	637222
320-94743-7	PW-114	Total/NA	Water	EPA 537(Mod)	637222

### Analysis Batch: 638855

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-637222/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	637222
LCS 320-637222/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	637222
LCSD 320-637222/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	637222

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

**Client Sample ID: PW-44**

**Date Collected: 11/28/22 08:53**

**Date Received: 11/29/22 14:46**

**Lab Sample ID: 320-94743-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.2 mL	10.0 mL	637222	12/04/22 11:12	MEK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	637614	12/06/22 09:51	S1M	EET SAC

**Client Sample ID: PW-155**

**Date Collected: 11/23/22 16:50**

**Date Received: 11/29/22 14:46**

**Lab Sample ID: 320-94743-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			284.4 mL	10.0 mL	637222	12/04/22 11:12	MEK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	637614	12/06/22 10:01	S1M	EET SAC

**Client Sample ID: PW-148**

**Date Collected: 11/22/22 14:00**

**Date Received: 11/29/22 14:46**

**Lab Sample ID: 320-94743-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			277.4 mL	10.0 mL	637222	12/04/22 11:12	MEK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	637614	12/06/22 10:12	S1M	EET SAC

**Client Sample ID: PW-110**

**Date Collected: 11/22/22 12:15**

**Date Received: 11/29/22 14:46**

**Lab Sample ID: 320-94743-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			284.1 mL	10.0 mL	637222	12/04/22 11:12	MEK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	637614	12/06/22 10:22	S1M	EET SAC

**Client Sample ID: PW-224**

**Date Collected: 11/22/22 12:41**

**Date Received: 11/29/22 14:46**

**Lab Sample ID: 320-94743-5**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.2 mL	10.0 mL	637222	12/04/22 11:12	MEK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	637614	12/06/22 10:32	S1M	EET SAC

**Client Sample ID: PW-202**

**Date Collected: 11/23/22 09:23**

**Date Received: 11/29/22 14:46**

**Lab Sample ID: 320-94743-6**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.1 mL	10.0 mL	637222	12/04/22 11:12	MEK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	637614	12/06/22 10:42	S1M	EET SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

**Client Sample ID: PW-114**  
**Date Collected: 11/28/22 10:50**  
**Date Received: 11/29/22 14:46**

**Lab Sample ID: 320-94743-7**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.1 mL	10.0 mL	637222	12/04/22 11:12	MEK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	637614	12/06/22 10:52	S1M	EET SAC

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

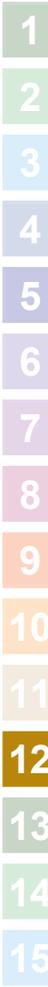
**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94743-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-94743-1	PW-44	Water	11/28/22 08:53	11/29/22 14:46
320-94743-2	PW-155	Water	11/23/22 16:50	11/29/22 14:46
320-94743-3	PW-148	Water	11/22/22 14:00	11/29/22 14:46
320-94743-4	PW-110	Water	11/22/22 12:15	11/29/22 14:46
320-94743-5	PW-224	Water	11/22/22 12:41	11/29/22 14:46
320-94743-6	PW-202	Water	11/23/22 09:23	11/29/22 14:46
320-94743-7	PW-114	Water	11/28/22 10:50	11/29/22 14:46

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-94743-1

**Login Number: 94743**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Pratali, Sandra A**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1845980, 1845981
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?	False	Not requested on COC.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Jessa Tibbetts	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-94743-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	12/13/2022

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 2.4°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: The laboratory noted the samplers name was not present on the COC; however, our sampler's signature was present, and we do not consider the custody to be breached.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty,

and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. PW-148 (320-94743-3)

- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 320-637222.
- Method 3535: The following samples in preparation batch 320-637222 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-44 (320-94743-1), PW-148 (320-94743-3) and PW-110 (320-94743-4)

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

- c. What is the effect on data quality/usability according to the case narrative?  
Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

- b. Are all applicable holding times met?

Yes  No  N/A

Comments:

- c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

### a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

### b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-94743-1

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were not reported due to sample volume.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: N/A; see above.
- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments: N/A; see above.
- vii. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability are not affected; see above.
- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only
- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?  
Yes  No  N/A   
Comments: IDAs were reported for the PFAS project samples.
- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)  
Yes  No  N/A   
Comments:
- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments:
- iv. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The data quality and usability were not affected.
- e. Trip Blanks
- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A   
Comments: A trip blank is not required for PFAS analysis.
- ii. Are all results less than LoQ or RL?  
Yes  No  N/A   
Comments: A trip blank was not submitted with this work order.

iii. If above LoQ or RL, what samples are affected?  
Comments: N/A; a trip blank was not submitted with this work order.

iv. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?  
Yes  No  N/A   
Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. A field duplicate was not collected with the samples in this work order.

ii. Was the duplicate submitted blind to lab?  
Yes  No  N/A   
Comments:

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

iv. Is the data quality or usability affected? (Explain)  
Yes  No  N/A   
Comments: N/A; see above

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?  
Yes  No  N/A   
Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

ii. Are all results less than LoQ or RL?  
Yes  No  N/A   
Comments: An equipment blank was not submitted with this work order.

iii. If above LoQ or RL, specify what samples are affected.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-94743-1

Comments: N/A; an equipment blank was not submitted with this work order.

iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

a. Are they defined and appropriate?

Yes  No  N/A

Comments: Other data flags and qualifiers were not required.

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

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 1/16/2023 8:30:46 AM

**JOB DESCRIPTION**

AIA PFAS

**JOB NUMBER**

320-94980-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
1/16/2023 8:30:46 AM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	8
Isotope Dilution Summary . . . . .	30
QC Sample Results . . . . .	32
QC Association Summary . . . . .	40
Lab Chronicle . . . . .	42
Certification Summary . . . . .	46
Method Summary . . . . .	47
Sample Summary . . . . .	48
Chain of Custody . . . . .	49
Receipt Checklists . . . . .	51

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

---

## Job ID: 320-94980-1

---

### Laboratory: Eurofins Sacramento

#### Narrative

---

#### Job Narrative 320-94980-1

#### Receipt

The samples were received on 12/6/2022 1:35 PM. 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 5.9° C.

#### LCMS

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit: (320-94883-K-1-A) and (320-94883-A-1-A MS). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. (320-94883-K-1-A)

Method EPA 537(Mod): Results for samples (320-94883-K-1-A), (320-94883-A-1-A MS) and (320-94883-A-1-B MSD) 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.

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 320-638285, 320-638285 and 320-638285.

Method 3535: The following samples in preparation batch 320-638285 and 320-638285 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-079 (320-94980-14), PW-223 (320-94980-16), PW-226 (320-94980-17) and PW-070 (320-94980-22)

Method 3535: During the solid phase extraction process, the following sample contained sediment which clogged the solid phase extraction column: PW-079 (320-94980-14).  
preparation batch 320-638285

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

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-090**

**Lab Sample ID: 320-94980-1**

No Detections.

**Client Sample ID: PW-138**

**Lab Sample ID: 320-94980-2**

No Detections.

**Client Sample ID: PW-096**

**Lab Sample ID: 320-94980-3**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	1.2	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.66	J	1.9	0.52	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.5		1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.0		1.9	0.53	ng/L	1		EPA 537(Mod)	Total/NA

**Client Sample ID: PW-088**

**Lab Sample ID: 320-94980-4**

No Detections.

**Client Sample ID: PW-134**

**Lab Sample ID: 320-94980-5**

No Detections.

**Client Sample ID: PW-5134**

**Lab Sample ID: 320-94980-6**

No Detections.

**Client Sample ID: PW-067**

**Lab Sample ID: 320-94980-7**

No Detections.

**Client Sample ID: PW-038**

**Lab Sample ID: 320-94980-8**

No Detections.

**Client Sample ID: PW-214**

**Lab Sample ID: 320-94980-9**

No Detections.

**Client Sample ID: PW-150**

**Lab Sample ID: 320-94980-10**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.64	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.31	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.98	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA

**Client Sample ID: PW-220**

**Lab Sample ID: 320-94980-11**

No Detections.

**Client Sample ID: PW-5220**

**Lab Sample ID: 320-94980-12**

No Detections.

**Client Sample ID: PW-052**

**Lab Sample ID: 320-94980-13**

No Detections.

**Client Sample ID: PW-079**

**Lab Sample ID: 320-94980-14**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.79	J	1.8	0.52	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Client Sample ID: PW-079 (Continued)

Lab Sample ID: 320-94980-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	0.34	J	1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid	0.31	J	1.8	0.29	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-068

Lab Sample ID: 320-94980-15

No Detections.

## Client Sample ID: PW-223

Lab Sample ID: 320-94980-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.61	J	1.9	0.55	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-226

Lab Sample ID: 320-94980-17

No Detections.

## Client Sample ID: PW-132

Lab Sample ID: 320-94980-18

No Detections.

## Client Sample ID: PW-037

Lab Sample ID: 320-94980-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	6.1		1.8	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.39	J	1.8	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.1		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	1.8	0.53	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-055

Lab Sample ID: 320-94980-20

No Detections.

## Client Sample ID: PW-156

Lab Sample ID: 320-94980-21

No Detections.

## Client Sample ID: PW-070

Lab Sample ID: 320-94980-22

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.4	J	1.8	0.77	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.54	J	1.8	0.49	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-090**

**Lab Sample ID: 320-94980-1**

**Date Collected: 12/02/22 09:20**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		12/08/22 05:39	12/09/22 19:00	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		12/08/22 05:39	12/09/22 19:00	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		12/08/22 05:39	12/09/22 19:00	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		12/08/22 05:39	12/09/22 19:00	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		12/08/22 05:39	12/09/22 19:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		12/08/22 05:39	12/09/22 19:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		12/08/22 05:39	12/09/22 19:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/08/22 05:39	12/09/22 19:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		12/08/22 05:39	12/09/22 19:00	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		12/08/22 05:39	12/09/22 19:00	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		12/08/22 05:39	12/09/22 19:00	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		12/08/22 05:39	12/09/22 19:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		12/08/22 05:39	12/09/22 19:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		12/08/22 05:39	12/09/22 19:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		12/08/22 05:39	12/09/22 19:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		12/08/22 05:39	12/09/22 19:00	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		12/08/22 05:39	12/09/22 19:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		12/08/22 05:39	12/09/22 19:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		50 - 150	12/08/22 05:39	12/09/22 19:00	1
13C4 PFHpA	94		50 - 150	12/08/22 05:39	12/09/22 19:00	1
13C4 PFOA	94		50 - 150	12/08/22 05:39	12/09/22 19:00	1
13C5 PFNA	104		50 - 150	12/08/22 05:39	12/09/22 19:00	1
13C2 PFDA	96		50 - 150	12/08/22 05:39	12/09/22 19:00	1
13C2 PFUnA	92		50 - 150	12/08/22 05:39	12/09/22 19:00	1
13C2 PFDoA	89		50 - 150	12/08/22 05:39	12/09/22 19:00	1
13C2 PFTeDA	92		50 - 150	12/08/22 05:39	12/09/22 19:00	1
13C3 PFBS	88		50 - 150	12/08/22 05:39	12/09/22 19:00	1
18O2 PFHxS	94		50 - 150	12/08/22 05:39	12/09/22 19:00	1
13C4 PFOS	94		50 - 150	12/08/22 05:39	12/09/22 19:00	1
d3-NMeFOSAA	77		50 - 150	12/08/22 05:39	12/09/22 19:00	1
d5-NEtFOSAA	80		50 - 150	12/08/22 05:39	12/09/22 19:00	1
13C3 HFPODA	96		50 - 150	12/08/22 05:39	12/09/22 19:00	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-138**

**Lab Sample ID: 320-94980-2**

**Date Collected: 12/01/22 11:00**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.57	ng/L		12/08/22 05:39	12/09/22 19:10	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		12/08/22 05:39	12/09/22 19:10	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.83	ng/L		12/08/22 05:39	12/09/22 19:10	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		12/08/22 05:39	12/09/22 19:10	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		12/08/22 05:39	12/09/22 19:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		12/08/22 05:39	12/09/22 19:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		12/08/22 05:39	12/09/22 19:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.3	ng/L		12/08/22 05:39	12/09/22 19:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.71	ng/L		12/08/22 05:39	12/09/22 19:10	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		12/08/22 05:39	12/09/22 19:10	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.56	ng/L		12/08/22 05:39	12/09/22 19:10	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.53	ng/L		12/08/22 05:39	12/09/22 19:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		12/08/22 05:39	12/09/22 19:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		12/08/22 05:39	12/09/22 19:10	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		12/08/22 05:39	12/09/22 19:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		12/08/22 05:39	12/09/22 19:10	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		12/08/22 05:39	12/09/22 19:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.39	ng/L		12/08/22 05:39	12/09/22 19:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	12/08/22 05:39	12/09/22 19:10	1
13C4 PFHpA	95		50 - 150	12/08/22 05:39	12/09/22 19:10	1
13C4 PFOA	93		50 - 150	12/08/22 05:39	12/09/22 19:10	1
13C5 PFNA	104		50 - 150	12/08/22 05:39	12/09/22 19:10	1
13C2 PFDA	93		50 - 150	12/08/22 05:39	12/09/22 19:10	1
13C2 PFUnA	94		50 - 150	12/08/22 05:39	12/09/22 19:10	1
13C2 PFDoA	88		50 - 150	12/08/22 05:39	12/09/22 19:10	1
13C2 PFTeDA	95		50 - 150	12/08/22 05:39	12/09/22 19:10	1
13C3 PFBS	92		50 - 150	12/08/22 05:39	12/09/22 19:10	1
18O2 PFHxS	95		50 - 150	12/08/22 05:39	12/09/22 19:10	1
13C4 PFOS	96		50 - 150	12/08/22 05:39	12/09/22 19:10	1
d3-NMeFOSAA	75		50 - 150	12/08/22 05:39	12/09/22 19:10	1
d5-NEtFOSAA	80		50 - 150	12/08/22 05:39	12/09/22 19:10	1
13C3 HFPODA	94		50 - 150	12/08/22 05:39	12/09/22 19:10	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-096**

**Lab Sample ID: 320-94980-3**

Date Collected: 12/01/22 11:20

Matrix: Water

Date Received: 12/06/22 13:35

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>1.2</b>	<b>J</b>	1.9	0.54	ng/L		12/08/22 05:47	01/01/23 23:04	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		12/08/22 05:47	01/01/23 23:04	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		12/08/22 05:47	01/01/23 23:04	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		12/08/22 05:47	01/01/23 23:04	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		12/08/22 05:47	01/01/23 23:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		12/08/22 05:47	01/01/23 23:04	1
<b>Perfluorododecanoic acid (PFDoA)</b>	<b>0.66</b>	<b>J</b>	1.9	0.52	ng/L		12/08/22 05:47	01/01/23 23:04	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/08/22 05:47	01/01/23 23:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		12/08/22 05:47	01/01/23 23:04	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>2.5</b>		1.9	0.19	ng/L		12/08/22 05:47	01/01/23 23:04	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>5.0</b>		1.9	0.53	ng/L		12/08/22 05:47	01/01/23 23:04	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		12/08/22 05:47	01/01/23 23:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		12/08/22 05:47	01/01/23 23:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		12/08/22 05:47	01/01/23 23:04	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		12/08/22 05:47	01/01/23 23:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		12/08/22 05:47	01/01/23 23:04	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		12/08/22 05:47	01/01/23 23:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		12/08/22 05:47	01/01/23 23:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		50 - 150	12/08/22 05:47	01/01/23 23:04	1
13C4 PFHpA	92		50 - 150	12/08/22 05:47	01/01/23 23:04	1
13C4 PFOA	92		50 - 150	12/08/22 05:47	01/01/23 23:04	1
13C5 PFNA	99		50 - 150	12/08/22 05:47	01/01/23 23:04	1
13C2 PFDA	88		50 - 150	12/08/22 05:47	01/01/23 23:04	1
13C2 PFUnA	86		50 - 150	12/08/22 05:47	01/01/23 23:04	1
13C2 PFDoA	78		50 - 150	12/08/22 05:47	01/01/23 23:04	1
13C2 PFTeDA	72		50 - 150	12/08/22 05:47	01/01/23 23:04	1
13C3 PFBS	83		50 - 150	12/08/22 05:47	01/01/23 23:04	1
18O2 PFHxS	85		50 - 150	12/08/22 05:47	01/01/23 23:04	1
13C4 PFOS	82		50 - 150	12/08/22 05:47	01/01/23 23:04	1
d3-NMeFOSAA	91		50 - 150	12/08/22 05:47	01/01/23 23:04	1
d5-NEtFOSAA	108		50 - 150	12/08/22 05:47	01/01/23 23:04	1
13C3 HFPODA	90		50 - 150	12/08/22 05:47	01/01/23 23:04	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-088**

**Lab Sample ID: 320-94980-4**

**Date Collected: 12/01/22 10:29**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		12/08/22 05:47	01/01/23 23:14	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		12/08/22 05:47	01/01/23 23:14	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		12/08/22 05:47	01/01/23 23:14	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		12/08/22 05:47	01/01/23 23:14	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		12/08/22 05:47	01/01/23 23:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		12/08/22 05:47	01/01/23 23:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		12/08/22 05:47	01/01/23 23:14	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/08/22 05:47	01/01/23 23:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		12/08/22 05:47	01/01/23 23:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		12/08/22 05:47	01/01/23 23:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		12/08/22 05:47	01/01/23 23:14	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		12/08/22 05:47	01/01/23 23:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		12/08/22 05:47	01/01/23 23:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		12/08/22 05:47	01/01/23 23:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		12/08/22 05:47	01/01/23 23:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		12/08/22 05:47	01/01/23 23:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		12/08/22 05:47	01/01/23 23:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		12/08/22 05:47	01/01/23 23:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	12/08/22 05:47	01/01/23 23:14	1
13C4 PFHpA	95		50 - 150	12/08/22 05:47	01/01/23 23:14	1
13C4 PFOA	93		50 - 150	12/08/22 05:47	01/01/23 23:14	1
13C5 PFNA	105		50 - 150	12/08/22 05:47	01/01/23 23:14	1
13C2 PFDA	97		50 - 150	12/08/22 05:47	01/01/23 23:14	1
13C2 PFUnA	100		50 - 150	12/08/22 05:47	01/01/23 23:14	1
13C2 PFDoA	93		50 - 150	12/08/22 05:47	01/01/23 23:14	1
13C2 PFTeDA	91		50 - 150	12/08/22 05:47	01/01/23 23:14	1
13C3 PFBS	84		50 - 150	12/08/22 05:47	01/01/23 23:14	1
18O2 PFHxS	86		50 - 150	12/08/22 05:47	01/01/23 23:14	1
13C4 PFOS	84		50 - 150	12/08/22 05:47	01/01/23 23:14	1
d3-NMeFOSAA	117		50 - 150	12/08/22 05:47	01/01/23 23:14	1
d5-NEtFOSAA	130		50 - 150	12/08/22 05:47	01/01/23 23:14	1
13C3 HFPODA	87		50 - 150	12/08/22 05:47	01/01/23 23:14	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-134**

**Lab Sample ID: 320-94980-5**

**Date Collected: 11/30/22 11:10**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		12/08/22 05:47	01/01/23 23:24	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		12/08/22 05:47	01/01/23 23:24	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		12/08/22 05:47	01/01/23 23:24	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		12/08/22 05:47	01/01/23 23:24	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		12/08/22 05:47	01/01/23 23:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		12/08/22 05:47	01/01/23 23:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		12/08/22 05:47	01/01/23 23:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/08/22 05:47	01/01/23 23:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		12/08/22 05:47	01/01/23 23:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		12/08/22 05:47	01/01/23 23:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		12/08/22 05:47	01/01/23 23:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		12/08/22 05:47	01/01/23 23:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		12/08/22 05:47	01/01/23 23:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		12/08/22 05:47	01/01/23 23:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		12/08/22 05:47	01/01/23 23:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		12/08/22 05:47	01/01/23 23:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		12/08/22 05:47	01/01/23 23:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		12/08/22 05:47	01/01/23 23:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	12/08/22 05:47	01/01/23 23:24	1
13C4 PFHpA	94		50 - 150	12/08/22 05:47	01/01/23 23:24	1
13C4 PFOA	92		50 - 150	12/08/22 05:47	01/01/23 23:24	1
13C5 PFNA	105		50 - 150	12/08/22 05:47	01/01/23 23:24	1
13C2 PFDA	95		50 - 150	12/08/22 05:47	01/01/23 23:24	1
13C2 PFUnA	97		50 - 150	12/08/22 05:47	01/01/23 23:24	1
13C2 PFDoA	94		50 - 150	12/08/22 05:47	01/01/23 23:24	1
13C2 PFTeDA	91		50 - 150	12/08/22 05:47	01/01/23 23:24	1
13C3 PFBS	85		50 - 150	12/08/22 05:47	01/01/23 23:24	1
18O2 PFHxS	88		50 - 150	12/08/22 05:47	01/01/23 23:24	1
13C4 PFOS	79		50 - 150	12/08/22 05:47	01/01/23 23:24	1
d3-NMeFOSAA	109		50 - 150	12/08/22 05:47	01/01/23 23:24	1
d5-NEtFOSAA	118		50 - 150	12/08/22 05:47	01/01/23 23:24	1
13C3 HFPODA	93		50 - 150	12/08/22 05:47	01/01/23 23:24	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-5134**

**Lab Sample ID: 320-94980-6**

**Date Collected: 11/30/22 11:40**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		12/08/22 05:47	01/01/23 23:34	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		12/08/22 05:47	01/01/23 23:34	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.84	ng/L		12/08/22 05:47	01/01/23 23:34	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		12/08/22 05:47	01/01/23 23:34	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		12/08/22 05:47	01/01/23 23:34	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		12/08/22 05:47	01/01/23 23:34	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		12/08/22 05:47	01/01/23 23:34	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		12/08/22 05:47	01/01/23 23:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		12/08/22 05:47	01/01/23 23:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		12/08/22 05:47	01/01/23 23:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		12/08/22 05:47	01/01/23 23:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		12/08/22 05:47	01/01/23 23:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		12/08/22 05:47	01/01/23 23:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		12/08/22 05:47	01/01/23 23:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		12/08/22 05:47	01/01/23 23:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		12/08/22 05:47	01/01/23 23:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		12/08/22 05:47	01/01/23 23:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		12/08/22 05:47	01/01/23 23:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	12/08/22 05:47	01/01/23 23:34	1
13C4 PFHpA	95		50 - 150	12/08/22 05:47	01/01/23 23:34	1
13C4 PFOA	96		50 - 150	12/08/22 05:47	01/01/23 23:34	1
13C5 PFNA	107		50 - 150	12/08/22 05:47	01/01/23 23:34	1
13C2 PFDA	100		50 - 150	12/08/22 05:47	01/01/23 23:34	1
13C2 PFUnA	107		50 - 150	12/08/22 05:47	01/01/23 23:34	1
13C2 PFDoA	96		50 - 150	12/08/22 05:47	01/01/23 23:34	1
13C2 PFTeDA	93		50 - 150	12/08/22 05:47	01/01/23 23:34	1
13C3 PFBS	89		50 - 150	12/08/22 05:47	01/01/23 23:34	1
18O2 PFHxS	90		50 - 150	12/08/22 05:47	01/01/23 23:34	1
13C4 PFOS	87		50 - 150	12/08/22 05:47	01/01/23 23:34	1
d3-NMeFOSAA	121		50 - 150	12/08/22 05:47	01/01/23 23:34	1
d5-NEtFOSAA	135		50 - 150	12/08/22 05:47	01/01/23 23:34	1
13C3 HFPODA	94		50 - 150	12/08/22 05:47	01/01/23 23:34	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-067**

**Lab Sample ID: 320-94980-7**

**Date Collected: 11/30/22 09:25**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.54	ng/L		12/08/22 05:47	01/01/23 23:44	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		12/08/22 05:47	01/01/23 23:44	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.79	ng/L		12/08/22 05:47	01/01/23 23:44	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		12/08/22 05:47	01/01/23 23:44	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		12/08/22 05:47	01/01/23 23:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		12/08/22 05:47	01/01/23 23:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		12/08/22 05:47	01/01/23 23:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/08/22 05:47	01/01/23 23:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		12/08/22 05:47	01/01/23 23:44	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/08/22 05:47	01/01/23 23:44	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		12/08/22 05:47	01/01/23 23:44	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		12/08/22 05:47	01/01/23 23:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		12/08/22 05:47	01/01/23 23:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		12/08/22 05:47	01/01/23 23:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		12/08/22 05:47	01/01/23 23:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		12/08/22 05:47	01/01/23 23:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		12/08/22 05:47	01/01/23 23:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		12/08/22 05:47	01/01/23 23:44	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	12/08/22 05:47	01/01/23 23:44	1
13C4 PFHpA	91		50 - 150	12/08/22 05:47	01/01/23 23:44	1
13C4 PFOA	93		50 - 150	12/08/22 05:47	01/01/23 23:44	1
13C5 PFNA	100		50 - 150	12/08/22 05:47	01/01/23 23:44	1
13C2 PFDA	91		50 - 150	12/08/22 05:47	01/01/23 23:44	1
13C2 PFUnA	91		50 - 150	12/08/22 05:47	01/01/23 23:44	1
13C2 PFDoA	78		50 - 150	12/08/22 05:47	01/01/23 23:44	1
13C2 PFTeDA	71		50 - 150	12/08/22 05:47	01/01/23 23:44	1
13C3 PFBS	84		50 - 150	12/08/22 05:47	01/01/23 23:44	1
18O2 PFHxS	88		50 - 150	12/08/22 05:47	01/01/23 23:44	1
13C4 PFOS	87		50 - 150	12/08/22 05:47	01/01/23 23:44	1
d3-NMeFOSAA	106		50 - 150	12/08/22 05:47	01/01/23 23:44	1
d5-NEtFOSAA	107		50 - 150	12/08/22 05:47	01/01/23 23:44	1
13C3 HFPODA	89		50 - 150	12/08/22 05:47	01/01/23 23:44	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-038**

**Lab Sample ID: 320-94980-8**

**Date Collected: 11/30/22 11:50**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		12/08/22 05:47	01/01/23 23:54	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		12/08/22 05:47	01/01/23 23:54	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		12/08/22 05:47	01/01/23 23:54	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		12/08/22 05:47	01/01/23 23:54	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		12/08/22 05:47	01/01/23 23:54	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		12/08/22 05:47	01/01/23 23:54	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		12/08/22 05:47	01/01/23 23:54	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/08/22 05:47	01/01/23 23:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		12/08/22 05:47	01/01/23 23:54	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		12/08/22 05:47	01/01/23 23:54	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		12/08/22 05:47	01/01/23 23:54	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		12/08/22 05:47	01/01/23 23:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		12/08/22 05:47	01/01/23 23:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		12/08/22 05:47	01/01/23 23:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		12/08/22 05:47	01/01/23 23:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		12/08/22 05:47	01/01/23 23:54	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		12/08/22 05:47	01/01/23 23:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		12/08/22 05:47	01/01/23 23:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		50 - 150	12/08/22 05:47	01/01/23 23:54	1
13C4 PFHpA	88		50 - 150	12/08/22 05:47	01/01/23 23:54	1
13C4 PFOA	92		50 - 150	12/08/22 05:47	01/01/23 23:54	1
13C5 PFNA	102		50 - 150	12/08/22 05:47	01/01/23 23:54	1
13C2 PFDA	98		50 - 150	12/08/22 05:47	01/01/23 23:54	1
13C2 PFUnA	100		50 - 150	12/08/22 05:47	01/01/23 23:54	1
13C2 PFDoA	98		50 - 150	12/08/22 05:47	01/01/23 23:54	1
13C2 PFTeDA	94		50 - 150	12/08/22 05:47	01/01/23 23:54	1
13C3 PFBS	83		50 - 150	12/08/22 05:47	01/01/23 23:54	1
18O2 PFHxS	91		50 - 150	12/08/22 05:47	01/01/23 23:54	1
13C4 PFOS	85		50 - 150	12/08/22 05:47	01/01/23 23:54	1
d3-NMeFOSAA	120		50 - 150	12/08/22 05:47	01/01/23 23:54	1
d5-NEtFOSAA	125		50 - 150	12/08/22 05:47	01/01/23 23:54	1
13C3 HFPODA	86		50 - 150	12/08/22 05:47	01/01/23 23:54	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-214**

**Lab Sample ID: 320-94980-9**

**Date Collected: 11/30/22 10:20**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		12/08/22 05:47	01/02/23 00:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		12/08/22 05:47	01/02/23 00:05	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		12/08/22 05:47	01/02/23 00:05	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		12/08/22 05:47	01/02/23 00:05	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		12/08/22 05:47	01/02/23 00:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		12/08/22 05:47	01/02/23 00:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		12/08/22 05:47	01/02/23 00:05	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/08/22 05:47	01/02/23 00:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		12/08/22 05:47	01/02/23 00:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		12/08/22 05:47	01/02/23 00:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		12/08/22 05:47	01/02/23 00:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		12/08/22 05:47	01/02/23 00:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		12/08/22 05:47	01/02/23 00:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		12/08/22 05:47	01/02/23 00:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		12/08/22 05:47	01/02/23 00:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		12/08/22 05:47	01/02/23 00:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		12/08/22 05:47	01/02/23 00:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		12/08/22 05:47	01/02/23 00:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	12/08/22 05:47	01/02/23 00:05	1
13C4 PFHpA	96		50 - 150	12/08/22 05:47	01/02/23 00:05	1
13C4 PFOA	90		50 - 150	12/08/22 05:47	01/02/23 00:05	1
13C5 PFNA	105		50 - 150	12/08/22 05:47	01/02/23 00:05	1
13C2 PFDA	96		50 - 150	12/08/22 05:47	01/02/23 00:05	1
13C2 PFUnA	98		50 - 150	12/08/22 05:47	01/02/23 00:05	1
13C2 PFDoA	90		50 - 150	12/08/22 05:47	01/02/23 00:05	1
13C2 PFTeDA	88		50 - 150	12/08/22 05:47	01/02/23 00:05	1
13C3 PFBS	85		50 - 150	12/08/22 05:47	01/02/23 00:05	1
18O2 PFHxS	92		50 - 150	12/08/22 05:47	01/02/23 00:05	1
13C4 PFOS	86		50 - 150	12/08/22 05:47	01/02/23 00:05	1
d3-NMeFOSAA	114		50 - 150	12/08/22 05:47	01/02/23 00:05	1
d5-NEtFOSAA	122		50 - 150	12/08/22 05:47	01/02/23 00:05	1
13C3 HFPODA	88		50 - 150	12/08/22 05:47	01/02/23 00:05	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-150**

**Lab Sample ID: 320-94980-10**

**Date Collected: 11/30/22 12:50**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.64</b>	<b>J</b>	1.9	0.55	ng/L		12/08/22 05:47	01/02/23 00:35	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		12/08/22 05:47	01/02/23 00:35	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.81	ng/L		12/08/22 05:47	01/02/23 00:35	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		12/08/22 05:47	01/02/23 00:35	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		12/08/22 05:47	01/02/23 00:35	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		12/08/22 05:47	01/02/23 00:35	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		12/08/22 05:47	01/02/23 00:35	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/08/22 05:47	01/02/23 00:35	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		12/08/22 05:47	01/02/23 00:35	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.31</b>	<b>J</b>	1.9	0.19	ng/L		12/08/22 05:47	01/02/23 00:35	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>0.98</b>	<b>J</b>	1.9	0.54	ng/L		12/08/22 05:47	01/02/23 00:35	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		12/08/22 05:47	01/02/23 00:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.1	ng/L		12/08/22 05:47	01/02/23 00:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		12/08/22 05:47	01/02/23 00:35	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		12/08/22 05:47	01/02/23 00:35	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		12/08/22 05:47	01/02/23 00:35	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		12/08/22 05:47	01/02/23 00:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		12/08/22 05:47	01/02/23 00:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		50 - 150	12/08/22 05:47	01/02/23 00:35	1
13C4 PFHpA	88		50 - 150	12/08/22 05:47	01/02/23 00:35	1
13C4 PFOA	92		50 - 150	12/08/22 05:47	01/02/23 00:35	1
13C5 PFNA	101		50 - 150	12/08/22 05:47	01/02/23 00:35	1
13C2 PFDA	92		50 - 150	12/08/22 05:47	01/02/23 00:35	1
13C2 PFUnA	97		50 - 150	12/08/22 05:47	01/02/23 00:35	1
13C2 PFDoA	91		50 - 150	12/08/22 05:47	01/02/23 00:35	1
13C2 PFTeDA	86		50 - 150	12/08/22 05:47	01/02/23 00:35	1
13C3 PFBS	81		50 - 150	12/08/22 05:47	01/02/23 00:35	1
18O2 PFHxS	82		50 - 150	12/08/22 05:47	01/02/23 00:35	1
13C4 PFOS	85		50 - 150	12/08/22 05:47	01/02/23 00:35	1
d3-NMeFOSAA	115		50 - 150	12/08/22 05:47	01/02/23 00:35	1
d5-NEtFOSAA	122		50 - 150	12/08/22 05:47	01/02/23 00:35	1
13C3 HFPODA	88		50 - 150	12/08/22 05:47	01/02/23 00:35	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-220**

**Lab Sample ID: 320-94980-11**

**Date Collected: 11/29/22 09:18**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		12/08/22 05:47	01/02/23 00:45	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		12/08/22 05:47	01/02/23 00:45	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		12/08/22 05:47	01/02/23 00:45	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		12/08/22 05:47	01/02/23 00:45	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		12/08/22 05:47	01/02/23 00:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		12/08/22 05:47	01/02/23 00:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		12/08/22 05:47	01/02/23 00:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/08/22 05:47	01/02/23 00:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		12/08/22 05:47	01/02/23 00:45	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/08/22 05:47	01/02/23 00:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		12/08/22 05:47	01/02/23 00:45	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		12/08/22 05:47	01/02/23 00:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		12/08/22 05:47	01/02/23 00:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		12/08/22 05:47	01/02/23 00:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		12/08/22 05:47	01/02/23 00:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		12/08/22 05:47	01/02/23 00:45	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		12/08/22 05:47	01/02/23 00:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		12/08/22 05:47	01/02/23 00:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		50 - 150	12/08/22 05:47	01/02/23 00:45	1
13C4 PFHpA	95		50 - 150	12/08/22 05:47	01/02/23 00:45	1
13C4 PFOA	92		50 - 150	12/08/22 05:47	01/02/23 00:45	1
13C5 PFNA	102		50 - 150	12/08/22 05:47	01/02/23 00:45	1
13C2 PFDA	92		50 - 150	12/08/22 05:47	01/02/23 00:45	1
13C2 PFUnA	98		50 - 150	12/08/22 05:47	01/02/23 00:45	1
13C2 PFDoA	87		50 - 150	12/08/22 05:47	01/02/23 00:45	1
13C2 PFTeDA	84		50 - 150	12/08/22 05:47	01/02/23 00:45	1
13C3 PFBS	82		50 - 150	12/08/22 05:47	01/02/23 00:45	1
18O2 PFHxS	90		50 - 150	12/08/22 05:47	01/02/23 00:45	1
13C4 PFOS	88		50 - 150	12/08/22 05:47	01/02/23 00:45	1
d3-NMeFOSAA	114		50 - 150	12/08/22 05:47	01/02/23 00:45	1
d5-NEtFOSAA	114		50 - 150	12/08/22 05:47	01/02/23 00:45	1
13C3 HFPODA	87		50 - 150	12/08/22 05:47	01/02/23 00:45	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-5220**

**Lab Sample ID: 320-94980-12**

**Date Collected: 11/29/22 09:48**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.57	ng/L		12/08/22 05:47	01/02/23 00:55	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		12/08/22 05:47	01/02/23 00:55	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		12/08/22 05:47	01/02/23 00:55	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		12/08/22 05:47	01/02/23 00:55	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		12/08/22 05:47	01/02/23 00:55	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		12/08/22 05:47	01/02/23 00:55	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		12/08/22 05:47	01/02/23 00:55	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		12/08/22 05:47	01/02/23 00:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.72	ng/L		12/08/22 05:47	01/02/23 00:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		12/08/22 05:47	01/02/23 00:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		12/08/22 05:47	01/02/23 00:55	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		12/08/22 05:47	01/02/23 00:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		12/08/22 05:47	01/02/23 00:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		12/08/22 05:47	01/02/23 00:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		12/08/22 05:47	01/02/23 00:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		12/08/22 05:47	01/02/23 00:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		12/08/22 05:47	01/02/23 00:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		12/08/22 05:47	01/02/23 00:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	12/08/22 05:47	01/02/23 00:55	1
13C4 PFHpA	88		50 - 150	12/08/22 05:47	01/02/23 00:55	1
13C4 PFOA	91		50 - 150	12/08/22 05:47	01/02/23 00:55	1
13C5 PFNA	100		50 - 150	12/08/22 05:47	01/02/23 00:55	1
13C2 PFDA	93		50 - 150	12/08/22 05:47	01/02/23 00:55	1
13C2 PFUnA	100		50 - 150	12/08/22 05:47	01/02/23 00:55	1
13C2 PFDoA	96		50 - 150	12/08/22 05:47	01/02/23 00:55	1
13C2 PFTeDA	91		50 - 150	12/08/22 05:47	01/02/23 00:55	1
13C3 PFBS	84		50 - 150	12/08/22 05:47	01/02/23 00:55	1
18O2 PFHxS	85		50 - 150	12/08/22 05:47	01/02/23 00:55	1
13C4 PFOS	82		50 - 150	12/08/22 05:47	01/02/23 00:55	1
d3-NMeFOSAA	117		50 - 150	12/08/22 05:47	01/02/23 00:55	1
d5-NEtFOSAA	128		50 - 150	12/08/22 05:47	01/02/23 00:55	1
13C3 HFPODA	88		50 - 150	12/08/22 05:47	01/02/23 00:55	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-052**

**Lab Sample ID: 320-94980-13**

**Date Collected: 11/29/22 09:53**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56	ng/L		12/08/22 05:47	01/02/23 01:06	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		12/08/22 05:47	01/02/23 01:06	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.82	ng/L		12/08/22 05:47	01/02/23 01:06	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		12/08/22 05:47	01/02/23 01:06	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.30	ng/L		12/08/22 05:47	01/02/23 01:06	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1	ng/L		12/08/22 05:47	01/02/23 01:06	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53	ng/L		12/08/22 05:47	01/02/23 01:06	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/08/22 05:47	01/02/23 01:06	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.70	ng/L		12/08/22 05:47	01/02/23 01:06	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		12/08/22 05:47	01/02/23 01:06	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.55	ng/L		12/08/22 05:47	01/02/23 01:06	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52	ng/L		12/08/22 05:47	01/02/23 01:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.8	1.2	ng/L		12/08/22 05:47	01/02/23 01:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.8	1.2	ng/L		12/08/22 05:47	01/02/23 01:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		12/08/22 05:47	01/02/23 01:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		12/08/22 05:47	01/02/23 01:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.31	ng/L		12/08/22 05:47	01/02/23 01:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		12/08/22 05:47	01/02/23 01:06	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		50 - 150	12/08/22 05:47	01/02/23 01:06	1
13C4 PFHpA	90		50 - 150	12/08/22 05:47	01/02/23 01:06	1
13C4 PFOA	87		50 - 150	12/08/22 05:47	01/02/23 01:06	1
13C5 PFNA	95		50 - 150	12/08/22 05:47	01/02/23 01:06	1
13C2 PFDA	87		50 - 150	12/08/22 05:47	01/02/23 01:06	1
13C2 PFUnA	88		50 - 150	12/08/22 05:47	01/02/23 01:06	1
13C2 PFDoA	79		50 - 150	12/08/22 05:47	01/02/23 01:06	1
13C2 PFTeDA	72		50 - 150	12/08/22 05:47	01/02/23 01:06	1
13C3 PFBS	74		50 - 150	12/08/22 05:47	01/02/23 01:06	1
18O2 PFHxS	86		50 - 150	12/08/22 05:47	01/02/23 01:06	1
13C4 PFOS	76		50 - 150	12/08/22 05:47	01/02/23 01:06	1
d3-NMeFOSAA	101		50 - 150	12/08/22 05:47	01/02/23 01:06	1
d5-NEtFOSAA	107		50 - 150	12/08/22 05:47	01/02/23 01:06	1
13C3 HFPODA	87		50 - 150	12/08/22 05:47	01/02/23 01:06	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-079**

**Lab Sample ID: 320-94980-14**

**Date Collected: 11/29/22 12:17**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.79</b>	<b>J</b>	1.8	0.52	ng/L		12/08/22 05:47	01/02/23 01:16	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		12/08/22 05:47	01/02/23 01:16	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		12/08/22 05:47	01/02/23 01:16	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		12/08/22 05:47	01/02/23 01:16	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		12/08/22 05:47	01/02/23 01:16	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		12/08/22 05:47	01/02/23 01:16	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		12/08/22 05:47	01/02/23 01:16	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/08/22 05:47	01/02/23 01:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		12/08/22 05:47	01/02/23 01:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/08/22 05:47	01/02/23 01:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		12/08/22 05:47	01/02/23 01:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		12/08/22 05:47	01/02/23 01:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		12/08/22 05:47	01/02/23 01:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		12/08/22 05:47	01/02/23 01:16	1
<b>9-Chlorohexadecafluoro-3-oxonane-1-sulfonic acid</b>	<b>0.34</b>	<b>J</b>	1.8	0.22	ng/L		12/08/22 05:47	01/02/23 01:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		12/08/22 05:47	01/02/23 01:16	1
<b>11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid</b>	<b>0.31</b>	<b>J</b>	1.8	0.29	ng/L		12/08/22 05:47	01/02/23 01:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		12/08/22 05:47	01/02/23 01:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	75		50 - 150	12/08/22 05:47	01/02/23 01:16	1
13C4 PFHpA	82		50 - 150	12/08/22 05:47	01/02/23 01:16	1
13C4 PFOA	81		50 - 150	12/08/22 05:47	01/02/23 01:16	1
13C5 PFNA	92		50 - 150	12/08/22 05:47	01/02/23 01:16	1
13C2 PFDA	83		50 - 150	12/08/22 05:47	01/02/23 01:16	1
13C2 PFUnA	83		50 - 150	12/08/22 05:47	01/02/23 01:16	1
13C2 PFDoA	77		50 - 150	12/08/22 05:47	01/02/23 01:16	1
13C2 PFTeDA	79		50 - 150	12/08/22 05:47	01/02/23 01:16	1
13C3 PFBS	70		50 - 150	12/08/22 05:47	01/02/23 01:16	1
18O2 PFHxS	75		50 - 150	12/08/22 05:47	01/02/23 01:16	1
13C4 PFOS	71		50 - 150	12/08/22 05:47	01/02/23 01:16	1
d3-NMeFOSAA	92		50 - 150	12/08/22 05:47	01/02/23 01:16	1
d5-NEtFOSAA	102		50 - 150	12/08/22 05:47	01/02/23 01:16	1
13C3 HFPODA	77		50 - 150	12/08/22 05:47	01/02/23 01:16	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-068**

**Lab Sample ID: 320-94980-15**

**Date Collected: 11/29/22 13:20**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		12/08/22 05:47	01/02/23 01:26	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		12/08/22 05:47	01/02/23 01:26	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		12/08/22 05:47	01/02/23 01:26	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		12/08/22 05:47	01/02/23 01:26	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		12/08/22 05:47	01/02/23 01:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		12/08/22 05:47	01/02/23 01:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		12/08/22 05:47	01/02/23 01:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/08/22 05:47	01/02/23 01:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		12/08/22 05:47	01/02/23 01:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		12/08/22 05:47	01/02/23 01:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		12/08/22 05:47	01/02/23 01:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		12/08/22 05:47	01/02/23 01:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		12/08/22 05:47	01/02/23 01:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		12/08/22 05:47	01/02/23 01:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		12/08/22 05:47	01/02/23 01:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		12/08/22 05:47	01/02/23 01:26	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		12/08/22 05:47	01/02/23 01:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		12/08/22 05:47	01/02/23 01:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		50 - 150	12/08/22 05:47	01/02/23 01:26	1
13C4 PFHpA	87		50 - 150	12/08/22 05:47	01/02/23 01:26	1
13C4 PFOA	89		50 - 150	12/08/22 05:47	01/02/23 01:26	1
13C5 PFNA	103		50 - 150	12/08/22 05:47	01/02/23 01:26	1
13C2 PFDA	96		50 - 150	12/08/22 05:47	01/02/23 01:26	1
13C2 PFUnA	94		50 - 150	12/08/22 05:47	01/02/23 01:26	1
13C2 PFDoA	90		50 - 150	12/08/22 05:47	01/02/23 01:26	1
13C2 PFTeDA	85		50 - 150	12/08/22 05:47	01/02/23 01:26	1
13C3 PFBS	80		50 - 150	12/08/22 05:47	01/02/23 01:26	1
18O2 PFHxS	83		50 - 150	12/08/22 05:47	01/02/23 01:26	1
13C4 PFOS	81		50 - 150	12/08/22 05:47	01/02/23 01:26	1
d3-NMeFOSAA	110		50 - 150	12/08/22 05:47	01/02/23 01:26	1
d5-NEtFOSAA	118		50 - 150	12/08/22 05:47	01/02/23 01:26	1
13C3 HFPODA	90		50 - 150	12/08/22 05:47	01/02/23 01:26	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-223**

**Lab Sample ID: 320-94980-16**

**Date Collected: 12/01/22 09:50**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.61</b>	<b>J</b>	1.9	0.55	ng/L		12/08/22 05:47	01/02/23 01:36	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		12/08/22 05:47	01/02/23 01:36	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		12/08/22 05:47	01/02/23 01:36	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.26	ng/L		12/08/22 05:47	01/02/23 01:36	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		12/08/22 05:47	01/02/23 01:36	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		12/08/22 05:47	01/02/23 01:36	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		12/08/22 05:47	01/02/23 01:36	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/08/22 05:47	01/02/23 01:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		12/08/22 05:47	01/02/23 01:36	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		12/08/22 05:47	01/02/23 01:36	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		12/08/22 05:47	01/02/23 01:36	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		12/08/22 05:47	01/02/23 01:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		12/08/22 05:47	01/02/23 01:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		12/08/22 05:47	01/02/23 01:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		12/08/22 05:47	01/02/23 01:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		12/08/22 05:47	01/02/23 01:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		12/08/22 05:47	01/02/23 01:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		12/08/22 05:47	01/02/23 01:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		50 - 150	12/08/22 05:47	01/02/23 01:36	1
13C4 PFHpA	95		50 - 150	12/08/22 05:47	01/02/23 01:36	1
13C4 PFOA	95		50 - 150	12/08/22 05:47	01/02/23 01:36	1
13C5 PFNA	107		50 - 150	12/08/22 05:47	01/02/23 01:36	1
13C2 PFDA	101		50 - 150	12/08/22 05:47	01/02/23 01:36	1
13C2 PFUnA	108		50 - 150	12/08/22 05:47	01/02/23 01:36	1
13C2 PFDoA	98		50 - 150	12/08/22 05:47	01/02/23 01:36	1
13C2 PFTeDA	106		50 - 150	12/08/22 05:47	01/02/23 01:36	1
13C3 PFBS	88		50 - 150	12/08/22 05:47	01/02/23 01:36	1
18O2 PFHxS	88		50 - 150	12/08/22 05:47	01/02/23 01:36	1
13C4 PFOS	85		50 - 150	12/08/22 05:47	01/02/23 01:36	1
d3-NMeFOSAA	128		50 - 150	12/08/22 05:47	01/02/23 01:36	1
d5-NEtFOSAA	141		50 - 150	12/08/22 05:47	01/02/23 01:36	1
13C3 HFPODA	88		50 - 150	12/08/22 05:47	01/02/23 01:36	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-226**

**Lab Sample ID: 320-94980-17**

**Date Collected: 12/01/22 11:45**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		12/08/22 05:47	01/02/23 01:46	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		12/08/22 05:47	01/02/23 01:46	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		12/08/22 05:47	01/02/23 01:46	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		12/08/22 05:47	01/02/23 01:46	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		12/08/22 05:47	01/02/23 01:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		12/08/22 05:47	01/02/23 01:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		12/08/22 05:47	01/02/23 01:46	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/08/22 05:47	01/02/23 01:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		12/08/22 05:47	01/02/23 01:46	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/08/22 05:47	01/02/23 01:46	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		12/08/22 05:47	01/02/23 01:46	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		12/08/22 05:47	01/02/23 01:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		12/08/22 05:47	01/02/23 01:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		12/08/22 05:47	01/02/23 01:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		12/08/22 05:47	01/02/23 01:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		12/08/22 05:47	01/02/23 01:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		12/08/22 05:47	01/02/23 01:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		12/08/22 05:47	01/02/23 01:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		50 - 150	12/08/22 05:47	01/02/23 01:46	1
13C4 PFHpA	89		50 - 150	12/08/22 05:47	01/02/23 01:46	1
13C4 PFOA	92		50 - 150	12/08/22 05:47	01/02/23 01:46	1
13C5 PFNA	100		50 - 150	12/08/22 05:47	01/02/23 01:46	1
13C2 PFDA	90		50 - 150	12/08/22 05:47	01/02/23 01:46	1
13C2 PFUnA	96		50 - 150	12/08/22 05:47	01/02/23 01:46	1
13C2 PFDoA	91		50 - 150	12/08/22 05:47	01/02/23 01:46	1
13C2 PFTeDA	96		50 - 150	12/08/22 05:47	01/02/23 01:46	1
13C3 PFBS	81		50 - 150	12/08/22 05:47	01/02/23 01:46	1
18O2 PFHxS	84		50 - 150	12/08/22 05:47	01/02/23 01:46	1
13C4 PFOS	84		50 - 150	12/08/22 05:47	01/02/23 01:46	1
d3-NMeFOSAA	115		50 - 150	12/08/22 05:47	01/02/23 01:46	1
d5-NEtFOSAA	121		50 - 150	12/08/22 05:47	01/02/23 01:46	1
13C3 HFPODA	84		50 - 150	12/08/22 05:47	01/02/23 01:46	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-132**

**Lab Sample ID: 320-94980-18**

**Date Collected: 12/02/22 10:25**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		12/08/22 05:47	01/02/23 01:56	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		12/08/22 05:47	01/02/23 01:56	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		12/08/22 05:47	01/02/23 01:56	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		12/08/22 05:47	01/02/23 01:56	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		12/08/22 05:47	01/02/23 01:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		12/08/22 05:47	01/02/23 01:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		12/08/22 05:47	01/02/23 01:56	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/08/22 05:47	01/02/23 01:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		12/08/22 05:47	01/02/23 01:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/08/22 05:47	01/02/23 01:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		12/08/22 05:47	01/02/23 01:56	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		12/08/22 05:47	01/02/23 01:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		12/08/22 05:47	01/02/23 01:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		12/08/22 05:47	01/02/23 01:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		12/08/22 05:47	01/02/23 01:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		12/08/22 05:47	01/02/23 01:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		12/08/22 05:47	01/02/23 01:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		12/08/22 05:47	01/02/23 01:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	12/08/22 05:47	01/02/23 01:56	1
13C4 PFHpA	94		50 - 150	12/08/22 05:47	01/02/23 01:56	1
13C4 PFOA	93		50 - 150	12/08/22 05:47	01/02/23 01:56	1
13C5 PFNA	102		50 - 150	12/08/22 05:47	01/02/23 01:56	1
13C2 PFDA	98		50 - 150	12/08/22 05:47	01/02/23 01:56	1
13C2 PFUnA	97		50 - 150	12/08/22 05:47	01/02/23 01:56	1
13C2 PFDoA	83		50 - 150	12/08/22 05:47	01/02/23 01:56	1
13C2 PFTeDA	88		50 - 150	12/08/22 05:47	01/02/23 01:56	1
13C3 PFBS	87		50 - 150	12/08/22 05:47	01/02/23 01:56	1
18O2 PFHxS	92		50 - 150	12/08/22 05:47	01/02/23 01:56	1
13C4 PFOS	80		50 - 150	12/08/22 05:47	01/02/23 01:56	1
d3-NMeFOSAA	108		50 - 150	12/08/22 05:47	01/02/23 01:56	1
d5-NEtFOSAA	116		50 - 150	12/08/22 05:47	01/02/23 01:56	1
13C3 HFPODA	90		50 - 150	12/08/22 05:47	01/02/23 01:56	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-037**

**Lab Sample ID: 320-94980-19**

Date Collected: 12/02/22 11:20

Matrix: Water

Date Received: 12/06/22 13:35

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	6.1		1.8	0.54	ng/L		12/08/22 05:47	01/02/23 02:06	1
Perfluoroheptanoic acid (PFHpA)	0.39	J	1.8	0.23	ng/L		12/08/22 05:47	01/02/23 02:06	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		12/08/22 05:47	01/02/23 02:06	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		12/08/22 05:47	01/02/23 02:06	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		12/08/22 05:47	01/02/23 02:06	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		12/08/22 05:47	01/02/23 02:06	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		12/08/22 05:47	01/02/23 02:06	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/08/22 05:47	01/02/23 02:06	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		12/08/22 05:47	01/02/23 02:06	1
Perfluorobutanesulfonic acid (PFBS)	2.1		1.8	0.18	ng/L		12/08/22 05:47	01/02/23 02:06	1
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	1.8	0.53	ng/L		12/08/22 05:47	01/02/23 02:06	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		12/08/22 05:47	01/02/23 02:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		12/08/22 05:47	01/02/23 02:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		12/08/22 05:47	01/02/23 02:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		12/08/22 05:47	01/02/23 02:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		12/08/22 05:47	01/02/23 02:06	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.30	ng/L		12/08/22 05:47	01/02/23 02:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		12/08/22 05:47	01/02/23 02:06	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	12/08/22 05:47	01/02/23 02:06	1
13C4 PFHpA	95		50 - 150	12/08/22 05:47	01/02/23 02:06	1
13C4 PFOA	100		50 - 150	12/08/22 05:47	01/02/23 02:06	1
13C5 PFNA	108		50 - 150	12/08/22 05:47	01/02/23 02:06	1
13C2 PFDA	100		50 - 150	12/08/22 05:47	01/02/23 02:06	1
13C2 PFUnA	105		50 - 150	12/08/22 05:47	01/02/23 02:06	1
13C2 PFDoA	99		50 - 150	12/08/22 05:47	01/02/23 02:06	1
13C2 PFTeDA	103		50 - 150	12/08/22 05:47	01/02/23 02:06	1
13C3 PFBS	90		50 - 150	12/08/22 05:47	01/02/23 02:06	1
18O2 PFHxS	92		50 - 150	12/08/22 05:47	01/02/23 02:06	1
13C4 PFOS	88		50 - 150	12/08/22 05:47	01/02/23 02:06	1
d3-NMeFOSAA	119		50 - 150	12/08/22 05:47	01/02/23 02:06	1
d5-NEt FOSAA	143		50 - 150	12/08/22 05:47	01/02/23 02:06	1
13C3 HFPODA	97		50 - 150	12/08/22 05:47	01/02/23 02:06	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-055**

**Lab Sample ID: 320-94980-20**

**Date Collected: 12/02/22 12:17**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		12/08/22 05:48	01/02/23 02:37	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		12/08/22 05:48	01/02/23 02:37	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		12/08/22 05:48	01/02/23 02:37	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		12/08/22 05:48	01/02/23 02:37	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		12/08/22 05:48	01/02/23 02:37	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		12/08/22 05:48	01/02/23 02:37	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		12/08/22 05:48	01/02/23 02:37	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		12/08/22 05:48	01/02/23 02:37	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		12/08/22 05:48	01/02/23 02:37	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		12/08/22 05:48	01/02/23 02:37	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		12/08/22 05:48	01/02/23 02:37	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		12/08/22 05:48	01/02/23 02:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		12/08/22 05:48	01/02/23 02:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		12/08/22 05:48	01/02/23 02:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		12/08/22 05:48	01/02/23 02:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		12/08/22 05:48	01/02/23 02:37	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		12/08/22 05:48	01/02/23 02:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		12/08/22 05:48	01/02/23 02:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	12/08/22 05:48	01/02/23 02:37	1
13C4 PFHpA	97		50 - 150	12/08/22 05:48	01/02/23 02:37	1
13C4 PFOA	95		50 - 150	12/08/22 05:48	01/02/23 02:37	1
13C5 PFNA	104		50 - 150	12/08/22 05:48	01/02/23 02:37	1
13C2 PFDA	97		50 - 150	12/08/22 05:48	01/02/23 02:37	1
13C2 PFUnA	98		50 - 150	12/08/22 05:48	01/02/23 02:37	1
13C2 PFDoA	86		50 - 150	12/08/22 05:48	01/02/23 02:37	1
13C2 PFTeDA	85		50 - 150	12/08/22 05:48	01/02/23 02:37	1
13C3 PFBS	83		50 - 150	12/08/22 05:48	01/02/23 02:37	1
18O2 PFHxS	86		50 - 150	12/08/22 05:48	01/02/23 02:37	1
13C4 PFOS	83		50 - 150	12/08/22 05:48	01/02/23 02:37	1
d3-NMeFOSAA	115		50 - 150	12/08/22 05:48	01/02/23 02:37	1
d5-NEtFOSAA	114		50 - 150	12/08/22 05:48	01/02/23 02:37	1
13C3 HFPODA	97		50 - 150	12/08/22 05:48	01/02/23 02:37	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-156**

**Lab Sample ID: 320-94980-21**

**Date Collected: 12/02/22 16:18**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		12/08/22 05:48	01/02/23 02:47	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		12/08/22 05:48	01/02/23 02:47	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		12/08/22 05:48	01/02/23 02:47	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		12/08/22 05:48	01/02/23 02:47	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.29	ng/L		12/08/22 05:48	01/02/23 02:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		12/08/22 05:48	01/02/23 02:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		12/08/22 05:48	01/02/23 02:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/08/22 05:48	01/02/23 02:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		12/08/22 05:48	01/02/23 02:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/08/22 05:48	01/02/23 02:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.53	ng/L		12/08/22 05:48	01/02/23 02:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.50	ng/L		12/08/22 05:48	01/02/23 02:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		12/08/22 05:48	01/02/23 02:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		12/08/22 05:48	01/02/23 02:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		12/08/22 05:48	01/02/23 02:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		12/08/22 05:48	01/02/23 02:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		12/08/22 05:48	01/02/23 02:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		12/08/22 05:48	01/02/23 02:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		50 - 150	12/08/22 05:48	01/02/23 02:47	1
13C4 PFHpA	94		50 - 150	12/08/22 05:48	01/02/23 02:47	1
13C4 PFOA	94		50 - 150	12/08/22 05:48	01/02/23 02:47	1
13C5 PFNA	109		50 - 150	12/08/22 05:48	01/02/23 02:47	1
13C2 PFDA	96		50 - 150	12/08/22 05:48	01/02/23 02:47	1
13C2 PFUnA	104		50 - 150	12/08/22 05:48	01/02/23 02:47	1
13C2 PFDoA	100		50 - 150	12/08/22 05:48	01/02/23 02:47	1
13C2 PFTeDA	98		50 - 150	12/08/22 05:48	01/02/23 02:47	1
13C3 PFBS	88		50 - 150	12/08/22 05:48	01/02/23 02:47	1
18O2 PFHxS	91		50 - 150	12/08/22 05:48	01/02/23 02:47	1
13C4 PFOS	87		50 - 150	12/08/22 05:48	01/02/23 02:47	1
d3-NMeFOSAA	121		50 - 150	12/08/22 05:48	01/02/23 02:47	1
d5-NEtFOSAA	129		50 - 150	12/08/22 05:48	01/02/23 02:47	1
13C3 HFPODA	92		50 - 150	12/08/22 05:48	01/02/23 02:47	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-070**

**Lab Sample ID: 320-94980-22**

Date Collected: 12/03/22 12:20

Matrix: Water

Date Received: 12/06/22 13:35

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		12/08/22 05:48	01/02/23 02:57	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		12/08/22 05:48	01/02/23 02:57	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>1.4</b>	<b>J</b>	1.8	0.77	ng/L		12/08/22 05:48	01/02/23 02:57	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		12/08/22 05:48	01/02/23 02:57	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		12/08/22 05:48	01/02/23 02:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		12/08/22 05:48	01/02/23 02:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		12/08/22 05:48	01/02/23 02:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/08/22 05:48	01/02/23 02:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		12/08/22 05:48	01/02/23 02:57	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/08/22 05:48	01/02/23 02:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		12/08/22 05:48	01/02/23 02:57	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.54</b>	<b>J</b>	1.8	0.49	ng/L		12/08/22 05:48	01/02/23 02:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		12/08/22 05:48	01/02/23 02:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		12/08/22 05:48	01/02/23 02:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		12/08/22 05:48	01/02/23 02:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		12/08/22 05:48	01/02/23 02:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		12/08/22 05:48	01/02/23 02:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		12/08/22 05:48	01/02/23 02:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	12/08/22 05:48	01/02/23 02:57	1
13C4 PFHpA	90		50 - 150	12/08/22 05:48	01/02/23 02:57	1
13C4 PFOA	94		50 - 150	12/08/22 05:48	01/02/23 02:57	1
13C5 PFNA	100		50 - 150	12/08/22 05:48	01/02/23 02:57	1
13C2 PFDA	97		50 - 150	12/08/22 05:48	01/02/23 02:57	1
13C2 PFUnA	97		50 - 150	12/08/22 05:48	01/02/23 02:57	1
13C2 PFDoA	93		50 - 150	12/08/22 05:48	01/02/23 02:57	1
13C2 PFTeDA	83		50 - 150	12/08/22 05:48	01/02/23 02:57	1
13C3 PFBS	87		50 - 150	12/08/22 05:48	01/02/23 02:57	1
18O2 PFHxS	89		50 - 150	12/08/22 05:48	01/02/23 02:57	1
13C4 PFOS	81		50 - 150	12/08/22 05:48	01/02/23 02:57	1
d3-NMeFOSAA	116		50 - 150	12/08/22 05:48	01/02/23 02:57	1
d5-NEtFOSAA	113		50 - 150	12/08/22 05:48	01/02/23 02:57	1
13C3 HFPODA	89		50 - 150	12/08/22 05:48	01/02/23 02:57	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

**Matrix: Water**

**Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-94883-A-1-A MS	Matrix Spike	89	95	91	98	83	80	75	80
320-94883-A-1-B MSD	Matrix Spike Duplicate	90	94	91	101	85	85	75	84
320-94980-1	PW-090	92	94	94	104	96	92	89	92
320-94980-2	PW-138	97	95	93	104	93	94	88	95
320-94980-3	PW-096	90	92	92	99	88	86	78	72
320-94980-4	PW-088	88	95	93	105	97	100	93	91
320-94980-5	PW-134	89	94	92	105	95	97	94	91
320-94980-6	PW-5134	95	95	96	107	100	107	96	93
320-94980-7	PW-067	88	91	93	100	91	91	78	71
320-94980-8	PW-038	90	88	92	102	98	100	98	94
320-94980-9	PW-214	89	96	90	105	96	98	90	88
320-94980-10	PW-150	87	88	92	101	92	97	91	86
320-94980-11	PW-220	87	95	92	102	92	98	87	84
320-94980-12	PW-5220	88	88	91	100	93	100	96	91
320-94980-13	PW-052	87	90	87	95	87	88	79	72
320-94980-14	PW-079	75	82	81	92	83	83	77	79
320-94980-15	PW-068	87	87	89	103	96	94	90	85
320-94980-16	PW-223	91	95	95	107	101	108	98	106
320-94980-17	PW-226	85	89	92	100	90	96	91	96
320-94980-18	PW-132	95	94	93	102	98	97	83	88
320-94980-19	PW-037	89	95	100	108	100	105	99	103
320-94980-20	PW-055	93	97	95	104	97	98	86	85
320-94980-21	PW-156	92	94	94	109	96	104	100	98
320-94980-22	PW-070	89	90	94	100	97	97	93	83
LCS 320-638283/2-A	Lab Control Sample	93	96	91	102	95	104	92	90
LCS 320-638285/2-A	Lab Control Sample	96	96	94	104	98	100	98	98
LCSD 320-638283/3-A	Lab Control Sample Dup	93	94	93	102	95	96	89	92
LCSD 320-638285/3-A	Lab Control Sample Dup	95	96	95	109	103	101	96	95
MB 320-638283/1-A	Method Blank	86	93	88	96	89	92	89	88
MB 320-638285/1-A	Method Blank	93	92	98	108	103	109	101	95

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-94883-A-1-A MS	Matrix Spike	80	85	83	62	67	91
320-94883-A-1-B MSD	Matrix Spike Duplicate	80	91	88	63	72	94
320-94980-1	PW-090	88	94	94	77	80	96
320-94980-2	PW-138	92	95	96	75	80	94
320-94980-3	PW-096	83	85	82	91	108	90
320-94980-4	PW-088	84	86	84	117	130	87
320-94980-5	PW-134	85	88	79	109	118	93
320-94980-6	PW-5134	89	90	87	121	135	94
320-94980-7	PW-067	84	88	87	106	107	89
320-94980-8	PW-038	83	91	85	120	125	86
320-94980-9	PW-214	85	92	86	114	122	88
320-94980-10	PW-150	81	82	85	115	122	88
320-94980-11	PW-220	82	90	88	114	114	87
320-94980-12	PW-5220	84	85	82	117	128	88
320-94980-13	PW-052	74	86	76	101	107	87
320-94980-14	PW-079	70	75	71	92	102	77

Eurofins Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-94980-1

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)**

**Matrix: Water**

**Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-94980-15	PW-068	80	83	81	110	118	90
320-94980-16	PW-223	88	88	85	128	141	88
320-94980-17	PW-226	81	84	84	115	121	84
320-94980-18	PW-132	87	92	80	108	116	90
320-94980-19	PW-037	90	92	88	119	143	97
320-94980-20	PW-055	83	86	83	115	114	97
320-94980-21	PW-156	88	91	87	121	129	92
320-94980-22	PW-070	87	89	81	116	113	89
LCS 320-638283/2-A	Lab Control Sample	90	91	90	76	83	93
LCS 320-638285/2-A	Lab Control Sample	86	90	85	123	127	95
LCSD 320-638283/3-A	Lab Control Sample Dup	90	90	92	77	85	92
LCSD 320-638285/3-A	Lab Control Sample Dup	93	92	88	120	127	98
MB 320-638283/1-A	Method Blank	87	88	91	79	78	91
MB 320-638285/1-A	Method Blank	92	88	89	129	133	97

**Surrogate Legend**

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFH<sub>p</sub>A
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFD<sub>o</sub>A = 13C2 PFD<sub>o</sub>A
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-638283/1-A**  
**Matrix: Water**  
**Analysis Batch: 638868**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 638283**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		12/08/22 05:39	12/09/22 16:59	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		12/08/22 05:39	12/09/22 16:59	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		12/08/22 05:39	12/09/22 16:59	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		12/08/22 05:39	12/09/22 16:59	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		12/08/22 05:39	12/09/22 16:59	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		12/08/22 05:39	12/09/22 16:59	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		12/08/22 05:39	12/09/22 16:59	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		12/08/22 05:39	12/09/22 16:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		12/08/22 05:39	12/09/22 16:59	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		12/08/22 05:39	12/09/22 16:59	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		12/08/22 05:39	12/09/22 16:59	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		12/08/22 05:39	12/09/22 16:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		12/08/22 05:39	12/09/22 16:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		12/08/22 05:39	12/09/22 16:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		12/08/22 05:39	12/09/22 16:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		12/08/22 05:39	12/09/22 16:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		12/08/22 05:39	12/09/22 16:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		12/08/22 05:39	12/09/22 16:59	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	86		50 - 150	12/08/22 05:39	12/09/22 16:59	1
13C4 PFHpA	93		50 - 150	12/08/22 05:39	12/09/22 16:59	:
13C4 PFOA	88		50 - 150	12/08/22 05:39	12/09/22 16:59	:
13C5 PFNA	96		50 - 150	12/08/22 05:39	12/09/22 16:59	:
13C2 PFDA	89		50 - 150	12/08/22 05:39	12/09/22 16:59	:
13C2 PFUnA	92		50 - 150	12/08/22 05:39	12/09/22 16:59	:
13C2 PFDoA	89		50 - 150	12/08/22 05:39	12/09/22 16:59	:
13C2 PFTeDA	88		50 - 150	12/08/22 05:39	12/09/22 16:59	:
13C3 PFBS	87		50 - 150	12/08/22 05:39	12/09/22 16:59	:
18O2 PFHxS	88		50 - 150	12/08/22 05:39	12/09/22 16:59	:
13C4 PFOS	91		50 - 150	12/08/22 05:39	12/09/22 16:59	:
d3-NMeFOSAA	79		50 - 150	12/08/22 05:39	12/09/22 16:59	:
d5-NEtFOSAA	78		50 - 150	12/08/22 05:39	12/09/22 16:59	:
13C3 HFPO-DA	91		50 - 150	12/08/22 05:39	12/09/22 16:59	:

**Lab Sample ID: LCS 320-638283/2-A**  
**Matrix: Water**  
**Analysis Batch: 638868**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 638283**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	41.4		ng/L		104	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	44.6		ng/L		112	71 - 133
Perfluorononanoic acid (PFNA)	40.0	41.5		ng/L		104	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-638283/2-A**  
**Matrix: Water**  
**Analysis Batch: 638868**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 638283**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	40.1		ng/L		100	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.4		ng/L		103	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.5		ng/L		114	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	48.1		ng/L		120	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	42.3		ng/L		106	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	38.3		ng/L		108	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.6		ng/L		100	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	39.5		ng/L		106	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.3		ng/L		103	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.4		ng/L		106	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	42.0		ng/L		112	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.7		ng/L		104	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	44.8		ng/L		119	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.2		ng/L		120	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	93		50 - 150
13C4 PFHpA	96		50 - 150
13C4 PFOA	91		50 - 150
13C5 PFNA	102		50 - 150
13C2 PFDA	95		50 - 150
13C2 PFUnA	104		50 - 150
13C2 PFDoA	92		50 - 150
13C2 PFTeDA	90		50 - 150
13C3 PFBS	90		50 - 150
18O2 PFHxS	91		50 - 150
13C4 PFOS	90		50 - 150
d3-NMeFOSAA	76		50 - 150
d5-NEtFOSAA	83		50 - 150
13C3 HFPO-DA	93		50 - 150

**Lab Sample ID: LCSD 320-638283/3-A**  
**Matrix: Water**  
**Analysis Batch: 638868**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 638283**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	41.7		ng/L		104	72 - 129	1 30
Perfluoroheptanoic acid (PFHpA)	40.0	41.8		ng/L		105	72 - 130	1 30
Perfluorooctanoic acid (PFOA)	40.0	43.6		ng/L		109	71 - 133	2 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-638283/3-A**  
**Matrix: Water**  
**Analysis Batch: 638868**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 638283**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	41.3		ng/L		103	69 - 130	1	30
Perfluorodecanoic acid (PFDA)	40.0	38.2		ng/L		96	71 - 129	5	30
Perfluoroundecanoic acid (PFUnA)	40.0	43.5		ng/L		109	69 - 133	5	30
Perfluorododecanoic acid (PFDoA)	40.0	48.6		ng/L		121	72 - 134	7	30
Perfluorotridecanoic acid (PFTriA)	40.0	48.3		ng/L		121	65 - 144	0	30
Perfluorotetradecanoic acid (PFTeA)	40.0	42.9		ng/L		107	71 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)	35.5	37.9		ng/L		107	72 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.3		ng/L		102	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)	37.2	39.6		ng/L		107	65 - 140	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.1		ng/L		108	65 - 136	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.2		ng/L		108	61 - 135	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.0		ng/L		110	77 - 137	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.2		ng/L		105	72 - 132	1	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	42.1		ng/L		112	76 - 136	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.2		ng/L		114	81 - 141	4	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	93		50 - 150
13C4 PFHpA	94		50 - 150
13C4 PFOA	93		50 - 150
13C5 PFNA	102		50 - 150
13C2 PFDA	95		50 - 150
13C2 PFUnA	96		50 - 150
13C2 PFDoA	89		50 - 150
13C2 PFTeDA	92		50 - 150
13C3 PFBS	90		50 - 150
18O2 PFHxS	90		50 - 150
13C4 PFOS	92		50 - 150
d3-NMeFOSAA	77		50 - 150
d5-NEtFOSAA	85		50 - 150
13C3 HFPO-DA	92		50 - 150

**Lab Sample ID: 320-94883-A-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 638868**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 638283**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanoic acid (PFHpA)	2.1		36.7	40.2		ng/L		104	72 - 130
Perfluorooctanoic acid (PFOA)	ND		36.7	38.6		ng/L		105	71 - 133

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-94883-A-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 638868**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 638283**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorononanoic acid (PFNA)	ND		36.7	38.2		ng/L		104	69 - 130
Perfluorodecanoic acid (PFDA)	ND		36.7	38.1		ng/L		104	71 - 129
Perfluoroundecanoic acid (PFUnA)	ND		36.7	40.7		ng/L		111	69 - 133
Perfluorododecanoic acid (PFDoA)	ND		36.7	40.0		ng/L		109	72 - 134
Perfluorotridecanoic acid (PFTriA)	ND		36.7	37.8		ng/L		103	65 - 144
Perfluorotetradecanoic acid (PFTeA)	ND		36.7	38.8		ng/L		106	71 - 132
Perfluorobutanesulfonic acid (PFBS)	ND		32.6	40.0		ng/L		123	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	ND		33.5	36.3		ng/L		109	68 - 131
Perfluorooctanesulfonic acid (PFOS)	ND		34.1	36.9		ng/L		108	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		36.7	40.2		ng/L		110	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		36.7	38.8		ng/L		106	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		34.3	37.4		ng/L		109	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		36.7	38.4		ng/L		105	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		34.6	31.5		ng/L		91	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		34.6	41.9		ng/L		121	81 - 141

Isotope Dilution	%Recovery	MS Qualifier	MS Limits
13C2 PFHxA	89		50 - 150
13C4 PFHpA	95		50 - 150
13C4 PFOA	91		50 - 150
13C5 PFNA	98		50 - 150
13C2 PFDA	83		50 - 150
13C2 PFUnA	80		50 - 150
13C2 PFDoA	75		50 - 150
13C2 PFTeDA	80		50 - 150
13C3 PFBS	80		50 - 150
18O2 PFHxS	85		50 - 150
13C4 PFOS	83		50 - 150
d3-NMeFOSAA	62		50 - 150
d5-NEtFOSAA	67		50 - 150
13C3 HFPO-DA	91		50 - 150

**Lab Sample ID: 320-94883-A-1-B MSD**  
**Matrix: Water**  
**Analysis Batch: 638868**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 638283**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	2.1		38.8	43.5		ng/L		107	72 - 130	8	30
Perfluorooctanoic acid (PFOA)	ND		38.8	41.3		ng/L		106	71 - 133	7	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: 320-94883-A-1-B MSD**

**Matrix: Water**

**Analysis Batch: 638868**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

**Prep Batch: 638283**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD Limit
				Result	Qualifier				Limits		
Perfluorononanoic acid (PFNA)	ND		38.8	39.6		ng/L		102	69 - 130	4	30
Perfluorodecanoic acid (PFDA)	ND		38.8	41.0		ng/L		106	71 - 129	7	30
Perfluoroundecanoic acid (PFUnA)	ND		38.8	42.9		ng/L		111	69 - 133	5	30
Perfluorododecanoic acid (PFDoA)	ND		38.8	43.8		ng/L		113	72 - 134	9	30
Perfluorotridecanoic acid (PFTriA)	ND		38.8	43.8		ng/L		113	65 - 144	15	30
Perfluorotetradecanoic acid (PFTeA)	ND		38.8	42.5		ng/L		109	71 - 132	9	30
Perfluorobutanesulfonic acid (PFBS)	ND		34.4	38.7		ng/L		112	72 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	ND		35.4	35.8		ng/L		101	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	ND		36.1	36.5		ng/L		101	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		38.8	41.4		ng/L		107	65 - 136	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		38.8	42.4		ng/L		109	61 - 135	9	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		36.2	36.7		ng/L		101	77 - 137	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		38.8	40.4		ng/L		104	72 - 132	5	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		36.6	33.2		ng/L		91	76 - 136	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		36.6	44.2		ng/L		121	81 - 141	5	30

Isotope Dilution	MSD	MSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	90		50 - 150
13C4 PFHpA	94		50 - 150
13C4 PFOA	91		50 - 150
13C5 PFNA	101		50 - 150
13C2 PFDA	85		50 - 150
13C2 PFUnA	85		50 - 150
13C2 PFDoA	75		50 - 150
13C2 PFTeDA	84		50 - 150
13C3 PFBS	80		50 - 150
18O2 PFHxS	91		50 - 150
13C4 PFOS	88		50 - 150
d3-NMeFOSAA	63		50 - 150
d5-NEtFOSAA	72		50 - 150
13C3 HFPO-DA	94		50 - 150

**Lab Sample ID: MB 320-638285/1-A**

**Matrix: Water**

**Analysis Batch: 643834**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 638285**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		12/08/22 05:47	01/01/23 22:33	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		12/08/22 05:47	01/01/23 22:33	1

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-638285/1-A**  
**Matrix: Water**  
**Analysis Batch: 643834**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 638285**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		12/08/22 05:47	01/01/23 22:33	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		12/08/22 05:47	01/01/23 22:33	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		12/08/22 05:47	01/01/23 22:33	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		12/08/22 05:47	01/01/23 22:33	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		12/08/22 05:47	01/01/23 22:33	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		12/08/22 05:47	01/01/23 22:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		12/08/22 05:47	01/01/23 22:33	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		12/08/22 05:47	01/01/23 22:33	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		12/08/22 05:47	01/01/23 22:33	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		12/08/22 05:47	01/01/23 22:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		12/08/22 05:47	01/01/23 22:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		12/08/22 05:47	01/01/23 22:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		12/08/22 05:47	01/01/23 22:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		12/08/22 05:47	01/01/23 22:33	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		12/08/22 05:47	01/01/23 22:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		12/08/22 05:47	01/01/23 22:33	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	12/08/22 05:47	01/01/23 22:33	1
13C4 PFHpA	92		50 - 150	12/08/22 05:47	01/01/23 22:33	:
13C4 PFOA	98		50 - 150	12/08/22 05:47	01/01/23 22:33	:
13C5 PFNA	108		50 - 150	12/08/22 05:47	01/01/23 22:33	:
13C2 PFDA	103		50 - 150	12/08/22 05:47	01/01/23 22:33	:
13C2 PFUnA	109		50 - 150	12/08/22 05:47	01/01/23 22:33	:
13C2 PFDoA	101		50 - 150	12/08/22 05:47	01/01/23 22:33	:
13C2 PFTeDA	95		50 - 150	12/08/22 05:47	01/01/23 22:33	:
13C3 PFBS	92		50 - 150	12/08/22 05:47	01/01/23 22:33	:
18O2 PFHxS	88		50 - 150	12/08/22 05:47	01/01/23 22:33	:
13C4 PFOS	89		50 - 150	12/08/22 05:47	01/01/23 22:33	:
d3-NMeFOSAA	129		50 - 150	12/08/22 05:47	01/01/23 22:33	:
d5-NEtFOSAA	133		50 - 150	12/08/22 05:47	01/01/23 22:33	:
13C3 HFPO-DA	97		50 - 150	12/08/22 05:47	01/01/23 22:33	:

**Lab Sample ID: LCS 320-638285/2-A**  
**Matrix: Water**  
**Analysis Batch: 643834**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 638285**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.5		ng/L		104	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	43.6		ng/L		109	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.0		ng/L		105	71 - 133
Perfluorononanoic acid (PFNA)	40.0	39.7		ng/L		99	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	43.4		ng/L		108	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.1		ng/L		105	69 - 133

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-638285/2-A**  
**Matrix: Water**  
**Analysis Batch: 643834**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 638285**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	40.0	44.8		ng/L		112	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	41.5		ng/L		104	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.8		ng/L		102	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	37.2		ng/L		105	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.9		ng/L		96	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	40.0		ng/L		108	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.1		ng/L		105	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.4		ng/L		99	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.4		ng/L		105	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.3		ng/L		111	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	41.6		ng/L		110	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.2		ng/L		120	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	96		50 - 150
13C4 PFHpA	96		50 - 150
13C4 PFOA	94		50 - 150
13C5 PFNA	104		50 - 150
13C2 PFDA	98		50 - 150
13C2 PFUnA	100		50 - 150
13C2 PFDoA	98		50 - 150
13C2 PFTeDA	98		50 - 150
13C3 PFBS	86		50 - 150
18O2 PFHxS	90		50 - 150
13C4 PFOS	85		50 - 150
d3-NMeFOSAA	123		50 - 150
d5-NEtFOSAA	127		50 - 150
13C3 HFPO-DA	95		50 - 150

**Lab Sample ID: LCSD 320-638285/3-A**  
**Matrix: Water**  
**Analysis Batch: 643834**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 638285**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.1		ng/L		100	72 - 129	3 30
Perfluoroheptanoic acid (PFHpA)	40.0	42.6		ng/L		106	72 - 130	2 30
Perfluorooctanoic acid (PFOA)	40.0	41.9		ng/L		105	71 - 133	0 30
Perfluorononanoic acid (PFNA)	40.0	39.8		ng/L		100	69 - 130	0 30
Perfluorodecanoic acid (PFDA)	40.0	42.1		ng/L		105	71 - 129	3 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-638285/3-A**  
**Matrix: Water**  
**Analysis Batch: 643834**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 638285**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	44.4		ng/L		111	69 - 133	5	30
Perfluorododecanoic acid (PFDoA)	40.0	48.3		ng/L		121	72 - 134	8	30
Perfluorotridecanoic acid (PFTriA)	40.0	44.7		ng/L		112	65 - 144	7	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.0		ng/L		103	71 - 132	0	30
Perfluorobutanesulfonic acid (PFBS)	35.5	34.4		ng/L		97	72 - 130	8	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.7		ng/L		95	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	39.7		ng/L		107	65 - 140	1	30
N-methylperfluorooctanesulfonamide	40.0	43.7		ng/L		109	65 - 136	4	30
N-ethylperfluorooctanesulfonamide	40.0	40.1		ng/L		100	61 - 135	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.3		ng/L		111	77 - 137	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.8		ng/L		107	72 - 132	4	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	39.1		ng/L		104	76 - 136	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.9		ng/L		116	81 - 141	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	95		50 - 150
13C4 PFHpA	96		50 - 150
13C4 PFOA	95		50 - 150
13C5 PFNA	109		50 - 150
13C2 PFDA	103		50 - 150
13C2 PFUnA	101		50 - 150
13C2 PFDoA	96		50 - 150
13C2 PFTeDA	95		50 - 150
13C3 PFBS	93		50 - 150
18O2 PFHxS	92		50 - 150
13C4 PFOS	88		50 - 150
d3-NMeFOSAA	120		50 - 150
d5-NEt FOSAA	127		50 - 150
13C3 HFPO-DA	98		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## LCMS

### Prep Batch: 638283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94980-1	PW-090	Total/NA	Water	3535	
320-94980-2	PW-138	Total/NA	Water	3535	
MB 320-638283/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-638283/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-638283/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
320-94883-A-1-A MS	Matrix Spike	Total/NA	Water	3535	
320-94883-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	3535	

### Prep Batch: 638285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94980-3	PW-096	Total/NA	Water	3535	
320-94980-4	PW-088	Total/NA	Water	3535	
320-94980-5	PW-134	Total/NA	Water	3535	
320-94980-6	PW-5134	Total/NA	Water	3535	
320-94980-7	PW-067	Total/NA	Water	3535	
320-94980-8	PW-038	Total/NA	Water	3535	
320-94980-9	PW-214	Total/NA	Water	3535	
320-94980-10	PW-150	Total/NA	Water	3535	
320-94980-11	PW-220	Total/NA	Water	3535	
320-94980-12	PW-5220	Total/NA	Water	3535	
320-94980-13	PW-052	Total/NA	Water	3535	
320-94980-14	PW-079	Total/NA	Water	3535	
320-94980-15	PW-068	Total/NA	Water	3535	
320-94980-16	PW-223	Total/NA	Water	3535	
320-94980-17	PW-226	Total/NA	Water	3535	
320-94980-18	PW-132	Total/NA	Water	3535	
320-94980-19	PW-037	Total/NA	Water	3535	
320-94980-20	PW-055	Total/NA	Water	3535	
320-94980-21	PW-156	Total/NA	Water	3535	
320-94980-22	PW-070	Total/NA	Water	3535	
MB 320-638285/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-638285/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-638285/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 638868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94980-1	PW-090	Total/NA	Water	EPA 537(Mod)	638283
320-94980-2	PW-138	Total/NA	Water	EPA 537(Mod)	638283
MB 320-638283/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	638283
LCS 320-638283/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	638283
LCSD 320-638283/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	638283
320-94883-A-1-A MS	Matrix Spike	Total/NA	Water	EPA 537(Mod)	638283
320-94883-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	EPA 537(Mod)	638283

### Analysis Batch: 643834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94980-3	PW-096	Total/NA	Water	EPA 537(Mod)	638285
320-94980-4	PW-088	Total/NA	Water	EPA 537(Mod)	638285
320-94980-5	PW-134	Total/NA	Water	EPA 537(Mod)	638285
320-94980-6	PW-5134	Total/NA	Water	EPA 537(Mod)	638285
320-94980-7	PW-067	Total/NA	Water	EPA 537(Mod)	638285

Eurofins Sacramento

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## LCMS (Continued)

### Analysis Batch: 643834 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-94980-8	PW-038	Total/NA	Water	EPA 537(Mod)	638285
320-94980-9	PW-214	Total/NA	Water	EPA 537(Mod)	638285
320-94980-10	PW-150	Total/NA	Water	EPA 537(Mod)	638285
320-94980-11	PW-220	Total/NA	Water	EPA 537(Mod)	638285
320-94980-12	PW-5220	Total/NA	Water	EPA 537(Mod)	638285
320-94980-13	PW-052	Total/NA	Water	EPA 537(Mod)	638285
320-94980-14	PW-079	Total/NA	Water	EPA 537(Mod)	638285
320-94980-15	PW-068	Total/NA	Water	EPA 537(Mod)	638285
320-94980-16	PW-223	Total/NA	Water	EPA 537(Mod)	638285
320-94980-17	PW-226	Total/NA	Water	EPA 537(Mod)	638285
320-94980-18	PW-132	Total/NA	Water	EPA 537(Mod)	638285
320-94980-19	PW-037	Total/NA	Water	EPA 537(Mod)	638285
320-94980-20	PW-055	Total/NA	Water	EPA 537(Mod)	638285
320-94980-21	PW-156	Total/NA	Water	EPA 537(Mod)	638285
320-94980-22	PW-070	Total/NA	Water	EPA 537(Mod)	638285
MB 320-638285/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	638285
LCS 320-638285/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	638285
LCSD 320-638285/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	638285

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-090**

**Date Collected: 12/02/22 09:20**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.6 mL	10.0 mL	638283	12/08/22 05:39	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	638868	12/09/22 19:00	RS1	EET SAC

**Client Sample ID: PW-138**

**Date Collected: 12/01/22 11:00**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.6 mL	10.0 mL	638283	12/08/22 05:39	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	638868	12/09/22 19:10	RS1	EET SAC

**Client Sample ID: PW-096**

**Date Collected: 12/01/22 11:20**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266.6 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/01/23 23:04	D1R	EET SAC

**Client Sample ID: PW-088**

**Date Collected: 12/01/22 10:29**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.3 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/01/23 23:14	D1R	EET SAC

**Client Sample ID: PW-134**

**Date Collected: 11/30/22 11:10**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-5**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266.5 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/01/23 23:24	D1R	EET SAC

**Client Sample ID: PW-5134**

**Date Collected: 11/30/22 11:40**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-6**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			253.2 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/01/23 23:34	D1R	EET SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-067**

**Date Collected: 11/30/22 09:25**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-7**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.7 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/01/23 23:44	D1R	EET SAC

**Client Sample ID: PW-038**

**Date Collected: 11/30/22 11:50**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-8**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.7 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/01/23 23:54	D1R	EET SAC

**Client Sample ID: PW-214**

**Date Collected: 11/30/22 10:20**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-9**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.2 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 00:05	D1R	EET SAC

**Client Sample ID: PW-150**

**Date Collected: 11/30/22 12:50**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-10**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.1 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 00:35	D1R	EET SAC

**Client Sample ID: PW-220**

**Date Collected: 11/29/22 09:18**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-11**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			272.2 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 00:45	D1R	EET SAC

**Client Sample ID: PW-5220**

**Date Collected: 11/29/22 09:48**

**Date Received: 12/06/22 13:35**

**Lab Sample ID: 320-94980-12**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			255 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 00:55	D1R	EET SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Client Sample ID: PW-052

Lab Sample ID: 320-94980-13

Date Collected: 11/29/22 09:53

Matrix: Water

Date Received: 12/06/22 13:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.4 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 01:06	D1R	EET SAC

## Client Sample ID: PW-079

Lab Sample ID: 320-94980-14

Date Collected: 11/29/22 12:17

Matrix: Water

Date Received: 12/06/22 13:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.4 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 01:16	D1R	EET SAC

## Client Sample ID: PW-068

Lab Sample ID: 320-94980-15

Date Collected: 11/29/22 13:20

Matrix: Water

Date Received: 12/06/22 13:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.1 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 01:26	D1R	EET SAC

## Client Sample ID: PW-223

Lab Sample ID: 320-94980-16

Date Collected: 12/01/22 09:50

Matrix: Water

Date Received: 12/06/22 13:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 01:36	D1R	EET SAC

## Client Sample ID: PW-226

Lab Sample ID: 320-94980-17

Date Collected: 12/01/22 11:45

Matrix: Water

Date Received: 12/06/22 13:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.2 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 01:46	D1R	EET SAC

## Client Sample ID: PW-132

Lab Sample ID: 320-94980-18

Date Collected: 12/02/22 10:25

Matrix: Water

Date Received: 12/06/22 13:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.6 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 01:56	D1R	EET SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

**Client Sample ID: PW-037**

**Lab Sample ID: 320-94980-19**

**Date Collected: 12/02/22 11:20**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.9 mL	10.0 mL	638285	12/08/22 05:47	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 02:06	D1R	EET SAC

**Client Sample ID: PW-055**

**Lab Sample ID: 320-94980-20**

**Date Collected: 12/02/22 12:17**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.6 mL	10.0 mL	638285	12/08/22 05:48	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 02:37	D1R	EET SAC

**Client Sample ID: PW-156**

**Lab Sample ID: 320-94980-21**

**Date Collected: 12/02/22 16:18**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.2 mL	10.0 mL	638285	12/08/22 05:48	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 02:47	D1R	EET SAC

**Client Sample ID: PW-070**

**Lab Sample ID: 320-94980-22**

**Date Collected: 12/03/22 12:20**

**Matrix: Water**

**Date Received: 12/06/22 13:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.8 mL	10.0 mL	638285	12/08/22 05:48	EFG	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	643834	01/02/23 02:57	D1R	EET SAC

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-94980-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-94980-1	PW-090	Water	12/02/22 09:20	12/06/22 13:35
320-94980-2	PW-138	Water	12/01/22 11:00	12/06/22 13:35
320-94980-3	PW-096	Water	12/01/22 11:20	12/06/22 13:35
320-94980-4	PW-088	Water	12/01/22 10:29	12/06/22 13:35
320-94980-5	PW-134	Water	11/30/22 11:10	12/06/22 13:35
320-94980-6	PW-5134	Water	11/30/22 11:40	12/06/22 13:35
320-94980-7	PW-067	Water	11/30/22 09:25	12/06/22 13:35
320-94980-8	PW-038	Water	11/30/22 11:50	12/06/22 13:35
320-94980-9	PW-214	Water	11/30/22 10:20	12/06/22 13:35
320-94980-10	PW-150	Water	11/30/22 12:50	12/06/22 13:35
320-94980-11	PW-220	Water	11/29/22 09:18	12/06/22 13:35
320-94980-12	PW-5220	Water	11/29/22 09:48	12/06/22 13:35
320-94980-13	PW-052	Water	11/29/22 09:53	12/06/22 13:35
320-94980-14	PW-079	Water	11/29/22 12:17	12/06/22 13:35
320-94980-15	PW-068	Water	11/29/22 13:20	12/06/22 13:35
320-94980-16	PW-223	Water	12/01/22 09:50	12/06/22 13:35
320-94980-17	PW-226	Water	12/01/22 11:45	12/06/22 13:35
320-94980-18	PW-132	Water	12/02/22 10:25	12/06/22 13:35
320-94980-19	PW-037	Water	12/02/22 11:20	12/06/22 13:35
320-94980-20	PW-055	Water	12/02/22 12:17	12/06/22 13:35
320-94980-21	PW-156	Water	12/02/22 16:18	12/06/22 13:35
320-94980-22	PW-070	Water	12/03/22 12:20	12/06/22 13:35



Chain of Custody Record



Client Contact	Report To: <b>Jessie Tibbets</b>	Site Contact:	Date:	Carrier: <b>Goldstrack</b>	Job No.:	320-94980 Chain of Custody
Your Company Name here	<b>Shannon + Wilson Inc</b>	Lab Contact: <b>David Alticker</b>			106189-003	Sample Specific Notes:
Address	<b>5430 Fairbanks Street, Suite 3</b>	Tel/Fax: <b>907-433-3251</b>				
City/State/Zip	<b>Anchorage, AK 99578</b>	Analysis Turnaround Time				
Phone:	<b>907-561-2120</b>	Calendar (C) or Work Days (W)				
FAX:		TAT if different from Below				
Project Name:	<b>AIA PPMs</b>	<input type="checkbox"/> 1 day				
Site:		<input type="checkbox"/> 2 days				
P O #	<b>106189-003</b>	<input type="checkbox"/> 1 week				
		<input checked="" type="checkbox"/> 2 weeks				

Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Sample Identification
12/12/22	9:20	G		2	PPMs - 45M 5.3 Tab B-15	PM-090
12/11/22	11:00					PM-138
12/11/22	11:20					PM-096
12/1/22	10:29					PM-088
11/30/22	11:10					PM-134
11/30/22	11:40					PM-5134
11/30/22	9:25					PM-067
11/30/22	11:50					PM-038
11/30/22	10:20					PM-214
11/30/22	12:50					PM-150
11/29/22	9:18					PM-220
11/29/22	9:48					PM-5220

Preservation Used: (1=Ice) 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other	<input type="checkbox"/> Non-Hazardous <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input checked="" type="checkbox"/> Unknown	<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For _____ Months	Special Instructions/QC Requirements & Comments:
Relinquished by: <b>SW</b>	Received by: <b>SW</b>	Company: <b>SW</b>	Date/Time: <b>12/13/22</b>
Relinquished by: <b>SW</b>	Received by: <b>SW</b>	Company: <b>SW</b>	Date/Time: <b>12/13/22</b>
Relinquished by: <b>SW</b>	Received by: <b>SW</b>	Company: <b>SW</b>	Date/Time: <b>12/13/22</b>
Relinquished by: <b>SW</b>	Received by: <b>SW</b>	Company: <b>SW</b>	Date/Time: <b>12/13/22</b>

5.90c

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

### Chain of Custody Record



Client Contact		Report To: <u>Jessa Tibbetts</u>	Site Contact:	Date:	COC No:
Your Company Name here <u>Shannon and Wilson, Inc</u>		Tel/Fax: <u>907-433-3251</u>	Lab Contact: <u>Dan Althacher</u>	Carrier: <u>Goldstruck</u>	of COCs
Address <u>5430 Fairbanks Street Suite 3</u>		Analysis Turnaround Time Calendar (C) or Work Days (W) TAT if different from Below <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day			Job No <u>106189-003</u>
City/State/Zip <u>Anchorage Alaska 99578</u>					
Phone: <u>907-561-2120</u>		Filtered Sample <u>PPMS - Qcm 5.3 Tab. B-15</u>			SDG No.
FAX:					
Project Name: <u>AIA PFA5</u>					
P O # <u>106189-003</u>					
Site:		Sample Identification			Sample Specific Notes:
Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	
<u>PW-052</u>	<u>11/24/22 9:53</u>	<u>G</u>	<u>W</u>	<u>2</u>	
<u>PW-079</u>	<u>11/29/22 12:17</u>				
<u>PW-068</u>	<u>11/29/22 13:20</u>				
<u>PW-223</u>	<u>12/1/22 9:50</u>				
<u>PW-226</u>	<u>12/1/22 11:45</u>				
<u>PW-132</u>	<u>12/2/22 10:25</u>				
<u>PW-037</u>	<u>12/2/22 11:20</u>				
<u>PW-055</u>	<u>12/2/22 12:17</u>				
<u>PW-156</u>	<u>12/2/22 16:18</u>				
<u>PW-070</u>	<u>12/3/22 12:20</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	
Preservation Used: <input checked="" type="checkbox"/> Ice; 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other		Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)			
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/>		<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Special Instructions/QC Requirements & Comments:					
Relinquished by: <u>[Signature]</u>	Company: <u>SW</u>	Date/Time: <u>12/19/22 9:10</u>	Received by: <u>[Signature]</u>	Company: <u>BETSAC</u>	Date/Time: <u>12/6/22 13:35</u>
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Page 50 of 51

1/16/2023

5.9°C



## Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-94980-1

**Login Number: 94980**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Cahill, Nicholas P**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	1838046
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	

# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Jessa Tibbetts	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-94980-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	1/16/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 5.9°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments:
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit: (320-94883-K-1-A) and (320-94883-A-1-A MS). Generally, data quality is not considered affected if the IDA signal-to-

noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

- Method EPA 537(Mod): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. (320-94883-K-1-A)
- Method EPA 537(Mod): Results for samples (320-94883-K-1-A), (320-94883-A-1-A MS) and (320-94883-A-1-B MSD) 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.
- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-638285, 320-638285 and 320-638285.
- Method 3535: The following samples in preparation batch 320-638285 and 320-638285 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-079 (320-94980-14), PW-223 (320-94980-16), PW-226 (320-94980-17) and PW-070 (320-94980-22)
- Method 3535: During the solid phase extraction process, the following sample contained sediment which clogged the solid phase extraction column: PW-079 (320-94980-14). preparation batch 320-638285

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

- c. What is the effect on data quality/usability according to the case narrative?  
Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

- b. Are all applicable holding times met?

Yes  No  N/A

Comments:

- c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

- a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A.

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

- b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. **Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?**  
Yes  No  N/A   
Comments: Metals were not reported for this work order.
  - iii. **Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)**  
Yes  No  N/A   
Comments:
  - iv. **Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)**  
Yes  No  N/A   
Comments:
  - v. **If %R or RPD is outside of acceptable limits, what samples are affected?**  
Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.
  - vi. **Do the affected sample(s) have data flags? If so, are the data flags clearly defined?**  
Yes  No  N/A   
Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.
  - vii. **Is the data quality or usability affected?**  
Yes  No  N/A   
Comments: Data quality and usability were not affected; see above.
- c. **Matrix Spike/Matrix Spike Duplicate (MS/MSD)**
- i. **Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?**  
Yes  No  N/A   
Comments: MS/MSD samples were reported for Prep Batch 638283. MS/MSD samples were not reported for Prep Batch 638285 due to insufficient sample volume.
  - ii. **Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?**  
Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: NA.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments: IDAs were reported for the PFAS project samples.

- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

Comments: The IDA recovery associated with Samples 320-94883-K-1-A and 320-94883-A-1-A MS are below the method recommended limit, however, these samples are not our project samples and do not affect the data.

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS  
**Lab Report No.:** 320-94980-1

Yes  No  N/A

Comments: See above.

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: The data quality and usability were not affected.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments: A trip blank is not required for PFAS analysis.

ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: A trip blank was not submitted with this work order.

iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

i. Is one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. Field duplicate pairs *PW-134* and *PW-5134* and *PW-220* and *PW-5220* were submitted with this work order.

ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: N/A. RPDs could not be calculated because PFAS were not detected in either sample for both duplicate pairs.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

- iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

- a. Are they defined and appropriate?

Yes  No  N/A

Comments: We note the "I flag" defined in the case narrative is associated with a sample from a different work order. The samples are unaffected.



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 1/18/2023 1:52:24 PM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-95405-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
1/18/2023 1:52:24 PM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	16
QC Sample Results . . . . .	17
QC Association Summary . . . . .	20
Lab Chronicle . . . . .	21
Certification Summary . . . . .	23
Method Summary . . . . .	24
Sample Summary . . . . .	25
Chain of Custody . . . . .	26
Receipt Checklists . . . . .	27

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

---

**Job ID: 320-95405-1**

---

**Laboratory: Eurofins Sacramento**

---

**Narrative**

**Job Narrative  
320-95405-1**

**Receipt**

The samples were received on 12/17/2022 10:35 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 1.5° C.

**LCMS**

Method EPA 537(Mod): Results for samples PW-222 (320-95405-6) were reported from the analysis of a diluted extract due to matrix interferences impacting Isotope Dilution Analyte recoveries 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.

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 320-641478.

Method 3535: The following samples in preparation batch 320-641478 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-222 (320-95405-6) and PW-137 (320-95405-7)

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



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

## Client Sample ID: PW-063

Lab Sample ID: 320-95405-1

No Detections.

## Client Sample ID: PW-228

Lab Sample ID: 320-95405-2

No Detections.

## Client Sample ID: PW-5228

Lab Sample ID: 320-95405-3

No Detections.

## Client Sample ID: PW-033

Lab Sample ID: 320-95405-4

No Detections.

## Client Sample ID: PW-5033

Lab Sample ID: 320-95405-5

No Detections.

## Client Sample ID: PW-222

Lab Sample ID: 320-95405-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	18		16	4.8	ng/L	10		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.4	J	16	1.6	ng/L	10		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-137

Lab Sample ID: 320-95405-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.2		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.0	J	1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	5.6		1.7	0.72	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	0.79	J	1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	2.5		1.7	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.75	J	1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.30	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.2	J	1.7	0.46	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-002

Lab Sample ID: 320-95405-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	6.2		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-061

Lab Sample ID: 320-95405-9

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

**Client Sample ID: PW-063**

**Lab Sample ID: 320-95405-1**

**Date Collected: 12/09/22 16:34**

**Matrix: Water**

**Date Received: 12/17/22 10:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		12/19/22 18:03	12/27/22 01:13	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		12/19/22 18:03	12/27/22 01:13	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		12/19/22 18:03	12/27/22 01:13	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		12/19/22 18:03	12/27/22 01:13	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		12/19/22 18:03	12/27/22 01:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		12/19/22 18:03	12/27/22 01:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		12/19/22 18:03	12/27/22 01:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		12/19/22 18:03	12/27/22 01:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		12/19/22 18:03	12/27/22 01:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/19/22 18:03	12/27/22 01:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		12/19/22 18:03	12/27/22 01:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		12/19/22 18:03	12/27/22 01:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		12/19/22 18:03	12/27/22 01:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		12/19/22 18:03	12/27/22 01:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		12/19/22 18:03	12/27/22 01:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		12/19/22 18:03	12/27/22 01:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		12/19/22 18:03	12/27/22 01:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		12/19/22 18:03	12/27/22 01:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
13C4 PFHpA	101		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
13C4 PFOA	104		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
13C5 PFNA	116		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
13C2 PFDA	101		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
13C2 PFUnA	100		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
13C2 PFDoA	96		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
13C2 PFTeDA	96		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
13C3 PFBS	93		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
18O2 PFHxS	99		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
13C4 PFOS	94		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
d3-NMeFOSAA	94		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
d5-NEt FOSAA	93		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	
13C3 HFPO-DA	110		50 - 150	12/19/22 18 03	12/ 27/22 01: 13	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

**Client Sample ID: PW-228**

**Lab Sample ID: 320-95405-2**

**Date Collected: 12/09/22 10:30**

**Matrix: Water**

**Date Received: 12/17/22 10:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.48	ng/L		12/19/22 18:03	12/27/22 01:24	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		12/19/22 18:03	12/27/22 01:24	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.71	ng/L		12/19/22 18:03	12/27/22 01:24	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.22	ng/L		12/19/22 18:03	12/27/22 01:24	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		12/19/22 18:03	12/27/22 01:24	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.91	ng/L		12/19/22 18:03	12/27/22 01:24	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		12/19/22 18:03	12/27/22 01:24	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		12/19/22 18:03	12/27/22 01:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.61	ng/L		12/19/22 18:03	12/27/22 01:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		12/19/22 18:03	12/27/22 01:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.47	ng/L		12/19/22 18:03	12/27/22 01:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.45	ng/L		12/19/22 18:03	12/27/22 01:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		12/19/22 18:03	12/27/22 01:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		12/19/22 18:03	12/27/22 01:24	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		12/19/22 18:03	12/27/22 01:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.3	1.2	ng/L		12/19/22 18:03	12/27/22 01:24	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		12/19/22 18:03	12/27/22 01:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.33	ng/L		12/19/22 18:03	12/27/22 01:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
13C4 PFHpA	107		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
13C4 PFOA	105		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
13C5 PFNA	113		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
13C2 PFDA	100		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
13C2 PFUnA	101		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
13C2 PFDoA	95		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
13C2 PFTeDA	100		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
13C3 PFBS	100		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
18O2 PFHxS	98		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
13C4 PFOS	95		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
d3-NMeFOSAA	86		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
d5-NEt FOSAA	93		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	
13C3 HFPO-DA	102		50 - 150	12/19/22 18 03	12/ 27/22 01: 24	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

**Client Sample ID: PW-5228**

**Lab Sample ID: 320-95405-3**

**Date Collected: 12/09/22 11:00**

**Matrix: Water**

**Date Received: 12/17/22 10:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49	ng/L		12/19/22 18:03	12/27/22 01:34	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		12/19/22 18:03	12/27/22 01:34	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		12/19/22 18:03	12/27/22 01:34	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		12/19/22 18:03	12/27/22 01:34	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		12/19/22 18:03	12/27/22 01:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		12/19/22 18:03	12/27/22 01:34	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		12/19/22 18:03	12/27/22 01:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		12/19/22 18:03	12/27/22 01:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		12/19/22 18:03	12/27/22 01:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		12/19/22 18:03	12/27/22 01:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.48	ng/L		12/19/22 18:03	12/27/22 01:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		12/19/22 18:03	12/27/22 01:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		12/19/22 18:03	12/27/22 01:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		12/19/22 18:03	12/27/22 01:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		12/19/22 18:03	12/27/22 01:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		12/19/22 18:03	12/27/22 01:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		12/19/22 18:03	12/27/22 01:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		12/19/22 18:03	12/27/22 01:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	105		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
13C4 PFHpA	105		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
13C4 PFOA	107		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
13C5 PFNA	113		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
13C2 PFDA	108		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
13C2 PFUnA	111		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
13C2 PFDoA	104		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
13C2 PFTeDA	102		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
13C3 PFBS	98		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
18O2 PFHxS	105		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
13C4 PFOS	96		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
d3-NMeFOSAA	101		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
d5-NEt FOSAA	108		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	
13C3 HFPO-DA	108		50 - 150	12/19/22 18 03	12/ 27/22 01: 34	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

**Client Sample ID: PW-033**

**Lab Sample ID: 320-95405-4**

**Date Collected: 12/09/22 15:40**

**Matrix: Water**

**Date Received: 12/17/22 10:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.48	ng/L		12/19/22 18:03	12/27/22 01:44	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		12/19/22 18:03	12/27/22 01:44	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.70	ng/L		12/19/22 18:03	12/27/22 01:44	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.22	ng/L		12/19/22 18:03	12/27/22 01:44	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		12/19/22 18:03	12/27/22 01:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.91	ng/L		12/19/22 18:03	12/27/22 01:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.45	ng/L		12/19/22 18:03	12/27/22 01:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		12/19/22 18:03	12/27/22 01:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.60	ng/L		12/19/22 18:03	12/27/22 01:44	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		12/19/22 18:03	12/27/22 01:44	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.47	ng/L		12/19/22 18:03	12/27/22 01:44	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.45	ng/L		12/19/22 18:03	12/27/22 01:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.1	0.99	ng/L		12/19/22 18:03	12/27/22 01:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.1	1.1	ng/L		12/19/22 18:03	12/27/22 01:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		12/19/22 18:03	12/27/22 01:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.3	1.2	ng/L		12/19/22 18:03	12/27/22 01:44	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.26	ng/L		12/19/22 18:03	12/27/22 01:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.33	ng/L		12/19/22 18:03	12/27/22 01:44	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
13C4 PFHpA	105		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
13C4 PFOA	104		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
13C5 PFNA	113		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
13C2 PFDA	96		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
13C2 PFUnA	98		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
13C2 PFDoA	87		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
13C2 PFTeDA	93		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
13C3 PFBS	93		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
18O2 PFHxS	95		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
13C4 PFOS	92		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
d3-NMeFOSAA	82		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
d5-NEt FOSAA	81		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	
13C3 HFPO-DA	106		50 - 150	12/19/22 18 03	12/ 27/22 01: 44	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

**Client Sample ID: PW-5033**

**Lab Sample ID: 320-95405-5**

**Date Collected: 12/09/22 16:10**

**Matrix: Water**

**Date Received: 12/17/22 10:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		12/19/22 18:03	12/27/22 01:54	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		12/19/22 18:03	12/27/22 01:54	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		12/19/22 18:03	12/27/22 01:54	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		12/19/22 18:03	12/27/22 01:54	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		12/19/22 18:03	12/27/22 01:54	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		12/19/22 18:03	12/27/22 01:54	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		12/19/22 18:03	12/27/22 01:54	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		12/19/22 18:03	12/27/22 01:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		12/19/22 18:03	12/27/22 01:54	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/19/22 18:03	12/27/22 01:54	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		12/19/22 18:03	12/27/22 01:54	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		12/19/22 18:03	12/27/22 01:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		12/19/22 18:03	12/27/22 01:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		12/19/22 18:03	12/27/22 01:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		12/19/22 18:03	12/27/22 01:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		12/19/22 18:03	12/27/22 01:54	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		12/19/22 18:03	12/27/22 01:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		12/19/22 18:03	12/27/22 01:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
13C4 PFHpA	95		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
13C4 PFOA	97		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
13C5 PFNA	100		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
13C2 PFDA	91		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
13C2 PFUnA	87		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
13C2 PFDoA	79		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
13C2 PFTeDA	77		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
13C3 PFBS	Ø		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
18O2 PFHxS	Ø		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
13C4 PFOS	79		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
d3-NMeFOSAA	75		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
d5-NEt FOSAA	78		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	
13C3 HFPO-DA	96		50 - 150	12/19/22 18 03	12/ 27/22 01: 54	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

**Client Sample ID: PW-222**  
**Date Collected: 12/15/22 10:02**  
**Date Received: 12/17/22 10:35**

**Lab Sample ID: 320-95405-6**  
**Matrix: Water**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>18</b>		16	4.8	ng/L		12/19/22 18:03	01/12/23 13:05	10
Perfluoroheptanoic acid (PFHpA)	ND		16	2.1	ng/L		12/19/22 18:03	01/12/23 13:05	10
Perfluorooctanoic acid (PFOA)	ND		16	7.0	ng/L		12/19/22 18:03	01/12/23 13:05	10
Perfluorononanoic acid (PFNA)	ND		16	2.2	ng/L		12/19/22 18:03	01/12/23 13:05	10
Perfluorodecanoic acid (PFDA)	ND		16	2.6	ng/L		12/19/22 18:03	01/12/23 13:05	10
Perfluoroundecanoic acid (PFUnA)	ND		16	9.1	ng/L		12/19/22 18:03	01/12/23 13:05	10
Perfluorododecanoic acid (PFDoA)	ND		16	4.5	ng/L		12/19/22 18:03	01/12/23 13:05	10
Perfluorotridecanoic acid (PFTriA)	ND		16	11	ng/L		12/19/22 18:03	01/12/23 13:05	10
Perfluorotetradecanoic acid (PFTeA)	ND		16	6.0	ng/L		12/19/22 18:03	01/12/23 13:05	10
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>3.4 J</b>		16	1.6	ng/L		12/19/22 18:03	01/12/23 13:05	10
Perfluorohexanesulfonic acid (PFHxS)	ND		16	4.7	ng/L		12/19/22 18:03	01/12/23 13:05	10
Perfluorooctanesulfonic acid (PFOS)	ND		16	4.4	ng/L		12/19/22 18:03	01/12/23 13:05	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		41	9.9	ng/L		12/19/22 18:03	01/12/23 13:05	10
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		41	11	ng/L		12/19/22 18:03	01/12/23 13:05	10
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		16	2.0	ng/L		12/19/22 18:03	01/12/23 13:05	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		33	12	ng/L		12/19/22 18:03	01/12/23 13:05	10
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		16	2.6	ng/L		12/19/22 18:03	01/12/23 13:05	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		16	3.3	ng/L		12/19/22 18:03	01/12/23 13:05	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	105		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
13C4 PFHpA	103		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
13C4 PFOA	105		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
13C5 PFNA	107		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
13C2 PFDA	95		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
13C2 PFUnA	97		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
13C2 PFDoA	92		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
13C2 PFTeDA	88		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
13C3 PFBS	96		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
18O2 PFHxS	110		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
13C4 PFOS	100		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
d3-NMeFOSAA	94		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
d5-NEt FOSAA	102		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10
13C3 HFPO-DA	77		50 - 150	12/19/22 18 03	01/ 12/23 13: 05	10

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

**Client Sample ID: PW-137**

**Lab Sample ID: 320-95405-7**

Date Collected: 12/14/22 12:32

Matrix: Water

Date Received: 12/17/22 10:35

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.2		1.7	0.49	ng/L		12/19/22 18:03	12/27/22 02:34	1
Perfluoroheptanoic acid (PFHpA)	1.0	J	1.7	0.21	ng/L		12/19/22 18:03	12/27/22 02:34	1
Perfluorooctanoic acid (PFOA)	5.6		1.7	0.72	ng/L		12/19/22 18:03	12/27/22 02:34	1
Perfluorononanoic acid (PFNA)	0.79	J	1.7	0.23	ng/L		12/19/22 18:03	12/27/22 02:34	1
Perfluorodecanoic acid (PFDA)	2.5		1.7	0.26	ng/L		12/19/22 18:03	12/27/22 02:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		12/19/22 18:03	12/27/22 02:34	1
Perfluorododecanoic acid (PFDoA)	0.75	J	1.7	0.47	ng/L		12/19/22 18:03	12/27/22 02:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		12/19/22 18:03	12/27/22 02:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		12/19/22 18:03	12/27/22 02:34	1
Perfluorobutanesulfonic acid (PFBS)	0.30	J	1.7	0.17	ng/L		12/19/22 18:03	12/27/22 02:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.48	ng/L		12/19/22 18:03	12/27/22 02:34	1
Perfluorooctanesulfonic acid (PFOS)	1.2	J	1.7	0.46	ng/L		12/19/22 18:03	12/27/22 02:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		12/19/22 18:03	12/27/22 02:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		12/19/22 18:03	12/27/22 02:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		12/19/22 18:03	12/27/22 02:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		12/19/22 18:03	12/27/22 02:34	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		12/19/22 18:03	12/27/22 02:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		12/19/22 18:03	12/27/22 02:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
13C4 PFHpA	96		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
13C4 PFOA	92		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
13C5 PFNA	101		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
13C2 PFDA	91		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
13C2 PFUnA	91		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
13C2 PFDoA	86		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
13C2 PFTeDA	94		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
13C3 PFBS	89		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
18O2 PFHxS	88		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
13C4 PFOS	81		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
d3-NMeFOSAA	77		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
d5-NEt FOSAA	84		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	
13C3 HFPO-DA	100		50 - 150	12/19/22 18 03	12/ 27/22 02: 34	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

**Client Sample ID: PW-002**

**Lab Sample ID: 320-95405-8**

**Date Collected: 12/13/22 13:18**

**Matrix: Water**

**Date Received: 12/17/22 10:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>6.2</b>		1.7	0.49	ng/L		12/19/22 18:03	12/27/22 02:45	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		12/19/22 18:03	12/27/22 02:45	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.71	ng/L		12/19/22 18:03	12/27/22 02:45	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		12/19/22 18:03	12/27/22 02:45	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		12/19/22 18:03	12/27/22 02:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.92	ng/L		12/19/22 18:03	12/27/22 02:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		12/19/22 18:03	12/27/22 02:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		12/19/22 18:03	12/27/22 02:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.61	ng/L		12/19/22 18:03	12/27/22 02:45	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>1.1 J</b>		1.7	0.17	ng/L		12/19/22 18:03	12/27/22 02:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.48	ng/L		12/19/22 18:03	12/27/22 02:45	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.45	ng/L		12/19/22 18:03	12/27/22 02:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		12/19/22 18:03	12/27/22 02:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		12/19/22 18:03	12/27/22 02:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		12/19/22 18:03	12/27/22 02:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		12/19/22 18:03	12/27/22 02:45	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		12/19/22 18:03	12/27/22 02:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		12/19/22 18:03	12/27/22 02:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
13C4 PFHpA	96		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
13C4 PFOA	97		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
13C5 PFNA	105		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
13C2 PFDA	99		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
13C2 PFUnA	95		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
13C2 PFDoA	91		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
13C2 PFTeDA	97		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
13C3 PFBS	91		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
18O2 PFHxS	89		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
13C4 PFOS	87		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
d3-NMeFOSAA	93		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
d5-NEt FOSAA	95		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	
13C3 HFPO-DA	99		50 - 150	12/19/22 18 03	12/ 27/22 02: 45	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

**Client Sample ID: PW-061**

**Lab Sample ID: 320-95405-9**

**Date Collected: 12/16/22 12:17**

**Matrix: Water**

**Date Received: 12/17/22 10:35**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		12/19/22 18:03	12/27/22 02:55	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		12/19/22 18:03	12/27/22 02:55	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		12/19/22 18:03	12/27/22 02:55	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		12/19/22 18:03	12/27/22 02:55	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		12/19/22 18:03	12/27/22 02:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		12/19/22 18:03	12/27/22 02:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		12/19/22 18:03	12/27/22 02:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		12/19/22 18:03	12/27/22 02:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		12/19/22 18:03	12/27/22 02:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		12/19/22 18:03	12/27/22 02:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		12/19/22 18:03	12/27/22 02:55	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		12/19/22 18:03	12/27/22 02:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		12/19/22 18:03	12/27/22 02:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		12/19/22 18:03	12/27/22 02:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		12/19/22 18:03	12/27/22 02:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		12/19/22 18:03	12/27/22 02:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		12/19/22 18:03	12/27/22 02:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		12/19/22 18:03	12/27/22 02:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	105		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
13C4 PFHpA	104		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
13C4 PFOA	104		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
13C5 PFNA	118		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
13C2 PFDA	102		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
13C2 PFUnA	106		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
13C2 PFDoA	97		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
13C2 PFTeDA	100		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
13C3 PFBS	98		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
18O2 PFHxS	104		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
13C4 PFOS	98		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
d3-NMeFOSAA	98		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
d5-NEt FOSAA	100		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	
13C3 HFPO-DA	109		50 - 150	12/19/22 18 03	12/ 27/22 02: 55	

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-95405-1	PW-063	97	101	104	116	101	100	96	96
320-95405-2	PW-228	99	107	105	113	100	101	95	100
320-95405-3	PW-5228	105	105	107	113	108	111	104	102
320-95405-4	PW-033	102	105	104	113	96	98	87	93
320-95405-5	PW-5033	92	95	97	100	91	87	79	77
320-95405-6	PW-222	105	103	105	107	95	97	92	88
320-95405-7	PW-137	89	96	92	101	91	91	86	94
320-95405-8	PW-002	96	96	97	105	99	95	91	97
320-95405-9	PW-061	105	104	104	118	102	106	97	100
LCS 320-641478/2-A	Lab Control Sample	101	109	104	121	110	105	101	105
LCSD 320-641478/3-A	Lab Control Sample Dup	108	108	104	117	105	112	104	111
MB 320-641478/1-A	Method Blank	99	101	106	115	103	105	99	101

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-95405-1	PW-063	93	99	94	94	93	110
320-95405-2	PW-228	100	98	95	86	93	102
320-95405-3	PW-5228	98	105	96	101	108	108
320-95405-4	PW-033	93	95	92	82	81	106
320-95405-5	PW-5033	89	89	79	75	78	96
320-95405-6	PW-222	96	110	100	94	102	77
320-95405-7	PW-137	89	88	81	77	84	100
320-95405-8	PW-002	91	89	87	93	95	99
320-95405-9	PW-061	98	104	98	98	100	109
LCS 320-641478/2-A	Lab Control Sample	98	100	99	96	89	107
LCSD 320-641478/3-A	Lab Control Sample Dup	100	103	98	96	100	114
MB 320-641478/1-A	Method Blank	98	97	98	99	97	106

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-641478/1-A**  
**Matrix: Water**  
**Analysis Batch: 642543**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 641478**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		12/19/22 18:03	12/26/22 22:31	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		12/19/22 18:03	12/26/22 22:31	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		12/19/22 18:03	12/26/22 22:31	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		12/19/22 18:03	12/26/22 22:31	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		12/19/22 18:03	12/26/22 22:31	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		12/19/22 18:03	12/26/22 22:31	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		12/19/22 18:03	12/26/22 22:31	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		12/19/22 18:03	12/26/22 22:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		12/19/22 18:03	12/26/22 22:31	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		12/19/22 18:03	12/26/22 22:31	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		12/19/22 18:03	12/26/22 22:31	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		12/19/22 18:03	12/26/22 22:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		12/19/22 18:03	12/26/22 22:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		12/19/22 18:03	12/26/22 22:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		12/19/22 18:03	12/26/22 22:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		12/19/22 18:03	12/26/22 22:31	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		12/19/22 18:03	12/26/22 22:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		12/19/22 18:03	12/26/22 22:31	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	99		50 - 150	12/19/22 18:03	12/26/22 22:31	1
13C4 PFHpA	101		50 - 150	12/19/22 18:03	12/26/22 22:31	1
13C4 PFOA	106		50 - 150	12/19/22 18:03	12/26/22 22:31	1
13C5 PFNA	115		50 - 150	12/19/22 18:03	12/26/22 22:31	1
13C2 PFDA	103		50 - 150	12/19/22 18:03	12/26/22 22:31	1
13C2 PFUnA	105		50 - 150	12/19/22 18:03	12/26/22 22:31	1
13C2 PFDoA	99		50 - 150	12/19/22 18:03	12/26/22 22:31	1
13C2 PFTeDA	101		50 - 150	12/19/22 18:03	12/26/22 22:31	1
13C3 PFBS	98		50 - 150	12/19/22 18:03	12/26/22 22:31	1
18O2 PFHxS	97		50 - 150	12/19/22 18:03	12/26/22 22:31	1
13C4 PFOS	98		50 - 150	12/19/22 18:03	12/26/22 22:31	1
d3-NMeFOSAA	99		50 - 150	12/19/22 18:03	12/26/22 22:31	1
d5-NEtFOSAA	97		50 - 150	12/19/22 18:03	12/26/22 22:31	1
13C3 HFPO-DA	106		50 - 150	12/19/22 18:03	12/26/22 22:31	1

**Lab Sample ID: LCS 320-641478/2-A**  
**Matrix: Water**  
**Analysis Batch: 642543**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 641478**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	38.5		ng/L		96	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	43.9		ng/L		110	71 - 133
Perfluorononanoic acid (PFNA)	40.0	36.9		ng/L		92	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-641478/2-A**  
**Matrix: Water**  
**Analysis Batch: 642543**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 641478**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	39.6		ng/L		99	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.1		ng/L		105	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	44.7		ng/L		112	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.0		ng/L		108	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	38.1		ng/L		95	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	37.8		ng/L		106	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.6		ng/L		98	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	38.1		ng/L		103	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.3		ng/L		101	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.1		ng/L		105	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	37.3		ng/L		100	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.2		ng/L		103	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	36.9		ng/L		98	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.0		ng/L		119	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	101		50 - 150
13C4 PFHpA	109		50 - 150
13C4 PFOA	104		50 - 150
13C5 PFNA	121		50 - 150
13C2 PFDA	110		50 - 150
13C2 PFUnA	105		50 - 150
13C2 PFDoA	101		50 - 150
13C2 PFTeDA	105		50 - 150
13C3 PFBS	98		50 - 150
18O2 PFHxS	100		50 - 150
13C4 PFOS	99		50 - 150
d3-NMeFOSAA	96		50 - 150
d5-NEtFOSAA	89		50 - 150
13C3 HFPO-DA	107		50 - 150

**Lab Sample ID: LCSD 320-641478/3-A**  
**Matrix: Water**  
**Analysis Batch: 642543**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 641478**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD
							Limits	RPD	
Perfluorohexanoic acid (PFHxA)	40.0	38.4		ng/L		96	72 - 129	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	39.0		ng/L		98	72 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	43.0		ng/L		108	71 - 133	2	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-641478/3-A**  
**Matrix: Water**  
**Analysis Batch: 642543**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 641478**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	38.5		ng/L		96	69 - 130	4	30
Perfluorodecanoic acid (PFDA)	40.0	42.2		ng/L		105	71 - 129	6	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.4		ng/L		103	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)	40.0	44.7		ng/L		112	72 - 134	0	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.7		ng/L		109	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.0		ng/L		98	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)	35.5	35.1		ng/L		99	72 - 130	7	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.1		ng/L		99	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	39.2		ng/L		105	65 - 140	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.8		ng/L		104	65 - 136	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.7		ng/L		99	61 - 135	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.4		ng/L		106	77 - 137	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.1		ng/L		95	72 - 132	8	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	41.8		ng/L		111	76 - 136	12	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.6		ng/L		115	81 - 141	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	108		50 - 150
13C4 PFHpA	108		50 - 150
13C4 PFOA	104		50 - 150
13C5 PFNA	117		50 - 150
13C2 PFDA	105		50 - 150
13C2 PFUnA	112		50 - 150
13C2 PFDoA	104		50 - 150
13C2 PFTeDA	111		50 - 150
13C3 PFBS	100		50 - 150
18O2 PFHxS	103		50 - 150
13C4 PFOS	98		50 - 150
d3-NMeFOSAA	96		50 - 150
d5-NEtFOSAA	100		50 - 150
13C3 HFPO-DA	114		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-95405-1

## LCMS

### Prep Batch: 641478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-95405-1	PW-063	Total/NA	Water	3535	
320-95405-2	PW-228	Total/NA	Water	3535	
320-95405-3	PW-5228	Total/NA	Water	3535	
320-95405-4	PW-033	Total/NA	Water	3535	
320-95405-5	PW-5033	Total/NA	Water	3535	
320-95405-6	PW-222	Total/NA	Water	3535	
320-95405-7	PW-137	Total/NA	Water	3535	
320-95405-8	PW-002	Total/NA	Water	3535	
320-95405-9	PW-061	Total/NA	Water	3535	
MB 320-641478/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-641478/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-641478/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 642543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-95405-1	PW-063	Total/NA	Water	EPA 537(Mod)	641478
320-95405-2	PW-228	Total/NA	Water	EPA 537(Mod)	641478
320-95405-3	PW-5228	Total/NA	Water	EPA 537(Mod)	641478
320-95405-4	PW-033	Total/NA	Water	EPA 537(Mod)	641478
320-95405-5	PW-5033	Total/NA	Water	EPA 537(Mod)	641478
320-95405-7	PW-137	Total/NA	Water	EPA 537(Mod)	641478
320-95405-8	PW-002	Total/NA	Water	EPA 537(Mod)	641478
320-95405-9	PW-061	Total/NA	Water	EPA 537(Mod)	641478
MB 320-641478/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	641478
LCS 320-641478/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	641478
LCSD 320-641478/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	641478

### Analysis Batch: 646517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-95405-6	PW-222	Total/NA	Water	EPA 537(Mod)	641478

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

**Client Sample ID: PW-063**

**Lab Sample ID: 320-95405-1**

Date Collected: 12/09/22 16:34

Matrix: Water

Date Received: 12/17/22 10:35

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	641478	12/19/22 18:03	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	642543	12/27/22 01:13	RS1	EET SAC

**Client Sample ID: PW-228**

**Lab Sample ID: 320-95405-2**

Date Collected: 12/09/22 10:30

Matrix: Water

Date Received: 12/17/22 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			300.7 mL	10.0 mL	641478	12/19/22 18:03	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	642543	12/27/22 01:24	RS1	EET SAC

**Client Sample ID: PW-5228**

**Lab Sample ID: 320-95405-3**

Date Collected: 12/09/22 11:00

Matrix: Water

Date Received: 12/17/22 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			296.2 mL	10.0 mL	641478	12/19/22 18:03	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	642543	12/27/22 01:34	RS1	EET SAC

**Client Sample ID: PW-033**

**Lab Sample ID: 320-95405-4**

Date Collected: 12/09/22 15:40

Matrix: Water

Date Received: 12/17/22 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			302.5 mL	10.0 mL	641478	12/19/22 18:03	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	642543	12/27/22 01:44	RS1	EET SAC

**Client Sample ID: PW-5033**

**Lab Sample ID: 320-95405-5**

Date Collected: 12/09/22 16:10

Matrix: Water

Date Received: 12/17/22 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			280.6 mL	10.0 mL	641478	12/19/22 18:03	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	642543	12/27/22 01:54	RS1	EET SAC

**Client Sample ID: PW-222**

**Lab Sample ID: 320-95405-6**

Date Collected: 12/15/22 10:02

Matrix: Water

Date Received: 12/17/22 10:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			303.7 mL	10.0 mL	641478	12/19/22 18:03	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		10	1 mL	1 mL	646517	01/12/23 13:05	AF	EET SAC

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

**Client Sample ID: PW-137**

**Date Collected: 12/14/22 12:32**

**Date Received: 12/17/22 10:35**

**Lab Sample ID: 320-95405-7**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			294.7 mL	10.0 mL	641478	12/19/22 18:03	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	642543	12/27/22 02:34	RS1	EET SAC

**Client Sample ID: PW-002**

**Date Collected: 12/13/22 13:18**

**Date Received: 12/17/22 10:35**

**Lab Sample ID: 320-95405-8**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			297.9 mL	10.0 mL	641478	12/19/22 18:03	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	642543	12/27/22 02:45	RS1	EET SAC

**Client Sample ID: PW-061**

**Date Collected: 12/16/22 12:17**

**Date Received: 12/17/22 10:35**

**Lab Sample ID: 320-95405-9**

**Matrix: Water**

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	641478	12/19/22 18:03	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	642543	12/27/22 02:55	RS1	EET SAC

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95405-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-95405-1	PW-063	Water	12/09/22 16:34	12/17/22 10:35
320-95405-2	PW-228	Water	12/09/22 10:30	12/17/22 10:35
320-95405-3	PW-5228	Water	12/09/22 11:00	12/17/22 10:35
320-95405-4	PW-033	Water	12/09/22 15:40	12/17/22 10:35
320-95405-5	PW-5033	Water	12/09/22 16:10	12/17/22 10:35
320-95405-6	PW-222	Water	12/15/22 10:02	12/17/22 10:35
320-95405-7	PW-137	Water	12/14/22 12:32	12/17/22 10:35
320-95405-8	PW-002	Water	12/13/22 13:18	12/17/22 10:35
320-95405-9	PW-061	Water	12/16/22 12:17	12/17/22 10:35

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

<b>Client Contact</b>		<b>Report To: Jessa Tibbets</b>		<b>Site Contact:</b>	
Shannon & Wilson, Inc.		Tel/Fax: 907-433-3251		Date: _____	
5430 Fairbanks Street, Suite 3		Analysis Turnaround Time		Carrier: Goldstreak	
Anchorage, Alaska 99518		Calendar (C) or Work Days (W)		COC No: _____ of _____ COCs	
907-561-2120		TAT: if different from Below		Job No: <b>106189-003</b>	
FAX:		<input checked="" type="checkbox"/> 2 weeks		SDG No. _____	
Project Name: AIA PFAS		<input type="checkbox"/> 1 week		Sample Specific Notes:	
Site:		<input type="checkbox"/> 2 days			
P.O.# 106189-003		<input type="checkbox"/> 1 day			
Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.
PW-063	12/9/22	16:34	G	W	2
PW-228	12/9/22	10:30			
PW-5228	12/9/22	11:00			
PW-033	12/9/22	15:40			
PW-5033	12/9/22	16:10			
PW-222	12/15/22	10:02			
PW-137	12/14/22	12:32			
PW-002	12/13/22	13:16			
PW-061	12/16/22	12:17			
 320-95405 Chain of Custody					
Preservation Used: <input checked="" type="checkbox"/> Ice; <input type="checkbox"/> 2= HCl; <input type="checkbox"/> 3= H2SO4; <input type="checkbox"/> 4= HNO3; <input type="checkbox"/> 5= NaOH; <input type="checkbox"/> 6= Other _____ Possible Hazard Identification: <input type="checkbox"/> Non-Hazard; <input type="checkbox"/> Flammable; <input type="checkbox"/> Skin Irritant; <input type="checkbox"/> Poison B; <input checked="" type="checkbox"/> Unknown					
Special Instructions/QC Requirements & Comments: _____ <input type="checkbox"/> Return To Client; <input type="checkbox"/> Disposal By Lab; <input checked="" type="checkbox"/> Archive For _____ Months					

Relinquished by: <i>[Signature]</i>	Company: <b>STW</b>	Date/Time: <b>12/16/22/1035</b>	Received by: <i>[Signature]</i>	Company: <b>FE7542</b>	Date/Time: <b>12-17-22 1035</b>
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

1.5°C

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-95405-1

**Login Number: 95405**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Oropeza, Salvador**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1838049/1838048
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	GEL PACKS ONLY
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?	False	Not requested on COC.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Jessa Tibbetts	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-95405-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	1/18/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 1.5°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: The laboratory noted the samplers name was not present on the COC; however, it was stated by the lab that was not requested on COC, and we do not consider the custody to be breached.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method EPA 537(Mod): Results for samples PW-222 (320-95405-6) were reported from the analysis of a diluted extract due to matrix interferences impacting Isotope Dilution Analyte recoveries 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.

- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with
- preparation batch 320-641478.
- Method 3535: The following samples in preparation batch 320-641478 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-222 (320-95405-6) and PW-137 (320-95405-7)

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

- c. What is the effect on data quality/usability according to the case narrative?  
Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

- b. Are all applicable holding times met?

Yes  No  N/A

Comments:

- c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

### a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A.

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

### b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)  
Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were not reported due to sample volume.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-95405-1

- v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: NA; see above.
- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments:
- vii. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability are not affected; see above.
- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only
- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?  
Yes  No  N/A   
Comments: IDAs were reported for the PFAS project samples.
- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)  
Yes  No  N/A   
Comments:
- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments: See above.
- iv. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The data quality and usability were not affected.
- e. Trip Blanks
- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A   
Comments: A trip blank is not required for PFAS analysis.
- ii. Are all results less than LoQ or RL?  
Yes  No  N/A   
Comments: A trip blank was not submitted with this work order.

iii. If above LoQ or RL, what samples are affected?  
Comments: N/A; a trip blank was not submitted with this work order.

iv. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

i. Is one field duplicate submitted per matrix, analysis, and 10 project samples?  
Yes  No  N/A   
Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. Field duplicate pairs *PW-033* and *PW-5033* and *PW-228* and *PW-5228* were submitted with this work order.

ii. Was the duplicate submitted blind to lab?  
Yes  No  N/A   
Comments:

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

iv. Is the data quality or usability affected? (Explain)  
Yes  No  N/A   
Comments: N/A. RPDs could not be calculated because PFAS were not detected in either sample for both duplicate pairs.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?  
Yes  No  N/A   
Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

ii. Are all results less than LoQ or RL?  
Yes  No  N/A   
Comments: An equipment blank was not submitted with this work order.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-95405-1

iii. If above LoQ or RL, specify what samples are affected.  
Comments: N/A; an equipment blank was not submitted with this work order.

iv. Are data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

a. Are they defined and appropriate?  
Yes  No  N/A   
Comments:



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 1/27/2023 12:27:03 PM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-95682-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
1/27/2023 12:27:03 PM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	9
QC Sample Results . . . . .	10
QC Association Summary . . . . .	13
Lab Chronicle . . . . .	14
Certification Summary . . . . .	15
Method Summary . . . . .	16
Sample Summary . . . . .	17
Chain of Custody . . . . .	18
Receipt Checklists . . . . .	19

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

---

**Job ID: 320-95682-1**

---

**Laboratory: Eurofins Sacramento**

---

**Narrative**

**Job Narrative  
320-95682-1**

**Receipt**

The samples were received on 1/4/2023 10:51 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 3.8° 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 320-644869.

Method 3535: The following samples in preparation batch 320-644869 were yellow in color following extraction. PW-111 (320-95682-1) and PW-5111 (320-95682-2)

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



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

## Client Sample ID: PW-111

## Lab Sample ID: 320-95682-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.55	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-5111

## Lab Sample ID: 320-95682-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.18	J	1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.58	J	1.7	0.47	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

**Client Sample ID: PW-111**

**Lab Sample ID: 320-95682-1**

**Date Collected: 12/27/22 09:50**

**Matrix: Water**

**Date Received: 01/04/23 10:51**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49	ng/L		01/05/23 20:48	01/21/23 15:45	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		01/05/23 20:48	01/21/23 15:45	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		01/05/23 20:48	01/21/23 15:45	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		01/05/23 20:48	01/21/23 15:45	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		01/05/23 20:48	01/21/23 15:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94	ng/L		01/05/23 20:48	01/21/23 15:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		01/05/23 20:48	01/21/23 15:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/05/23 20:48	01/21/23 15:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		01/05/23 20:48	01/21/23 15:45	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.55</b>	<b>J</b>	1.7	0.17	ng/L		01/05/23 20:48	01/21/23 15:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		01/05/23 20:48	01/21/23 15:45	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		01/05/23 20:48	01/21/23 15:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		01/05/23 20:48	01/21/23 15:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		01/05/23 20:48	01/21/23 15:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		01/05/23 20:48	01/21/23 15:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		01/05/23 20:48	01/21/23 15:45	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		01/05/23 20:48	01/21/23 15:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		01/05/23 20:48	01/21/23 15:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	108		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
13C4 PFHpA	103		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
13C4 PFOA	97		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
13C5 PFNA	96		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
13C2 PFDA	95		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
13C2 PFUnA	96		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
13C2 PFDoA	84		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
13C2 PFTeDA	90		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
13C3 PFBS	107		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
18O2 PFHxS	107		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
13C4 PFOS	98		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
d3-NMeFOSAA	86		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
d5-NEt FOSAA	93		50 - 150	01/05/23 20: 48	01/21/23 15: 45	
13C3 HFPODA	93		50 - 150	01/05/23 20: 48	01/21/23 15: 45	

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

**Client Sample ID: PW-5111**

**Lab Sample ID: 320-95682-2**

**Date Collected: 12/27/22 10:20**

**Matrix: Water**

**Date Received: 01/04/23 10:51**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		01/05/23 20:48	01/21/23 15:55	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		01/05/23 20:48	01/21/23 15:55	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		01/05/23 20:48	01/21/23 15:55	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		01/05/23 20:48	01/21/23 15:55	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		01/05/23 20:48	01/21/23 15:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		01/05/23 20:48	01/21/23 15:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		01/05/23 20:48	01/21/23 15:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/05/23 20:48	01/21/23 15:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		01/05/23 20:48	01/21/23 15:55	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.18</b>	<b>J</b>	1.7	0.17	ng/L		01/05/23 20:48	01/21/23 15:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		01/05/23 20:48	01/21/23 15:55	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>0.58</b>	<b>J</b>	1.7	0.47	ng/L		01/05/23 20:48	01/21/23 15:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		01/05/23 20:48	01/21/23 15:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		01/05/23 20:48	01/21/23 15:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		01/05/23 20:48	01/21/23 15:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/05/23 20:48	01/21/23 15:55	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		01/05/23 20:48	01/21/23 15:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		01/05/23 20:48	01/21/23 15:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
13C4 PFHpA	99		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
13C4 PFOA	97		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
13C5 PFNA	92		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
13C2 PFDA	91		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
13C2 PFUnA	97		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
13C2 PFDoA	90		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
13C2 PFTeDA	90		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
13C3 PFBS	104		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
18O2 PFHxS	103		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
13C4 PFOS	96		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
d3-NMeFOSAA	83		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
d5-NEt FOSAA	90		50 - 150	01/05/23 20: 48	01/21/23 15: 55	
13C3 HFPODA	95		50 - 150	01/05/23 20: 48	01/21/23 15: 55	

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-95682-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-95682-1	PW-111	108	103	97	96	95	96	84	90
320-95682-2	PW-5111	102	99	97	92	91	97	90	90
LCS 320-644869/2-A	Lab Control Sample	105	104	101	99	102	98	96	96
LCSD 320-644869/3-A	Lab Control Sample Dup	107	109	101	97	99	100	96	95
MB 320-644869/1-A	Method Blank	104	99	99	96	96	96	90	94

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-95682-1	PW-111	107	107	98	86	93	93
320-95682-2	PW-5111	104	103	96	83	90	95
LCS 320-644869/2-A	Lab Control Sample	114	108	106	89	94	98
LCSD 320-644869/3-A	Lab Control Sample Dup	110	107	103	94	92	99
MB 320-644869/1-A	Method Blank	106	104	100	89	96	94

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-644869/1-A**  
**Matrix: Water**  
**Analysis Batch: 648448**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 644869**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		01/05/23 20:48	01/21/23 15:14	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		01/05/23 20:48	01/21/23 15:14	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		01/05/23 20:48	01/21/23 15:14	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		01/05/23 20:48	01/21/23 15:14	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		01/05/23 20:48	01/21/23 15:14	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		01/05/23 20:48	01/21/23 15:14	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		01/05/23 20:48	01/21/23 15:14	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/05/23 20:48	01/21/23 15:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		01/05/23 20:48	01/21/23 15:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		01/05/23 20:48	01/21/23 15:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		01/05/23 20:48	01/21/23 15:14	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		01/05/23 20:48	01/21/23 15:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		01/05/23 20:48	01/21/23 15:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		01/05/23 20:48	01/21/23 15:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		01/05/23 20:48	01/21/23 15:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		01/05/23 20:48	01/21/23 15:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		01/05/23 20:48	01/21/23 15:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		01/05/23 20:48	01/21/23 15:14	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		50 - 150	01/05/23 20:48	01/21/23 15:14	1
13C4 PFHpA	99		50 - 150	01/05/23 20:48	01/21/23 15:14	
13C4 PFOA	99		50 - 150	01/05/23 20:48	01/21/23 15:14	
13C5 PFNA	96		50 - 150	01/05/23 20:48	01/21/23 15:14	
13C2 PFDA	96		50 - 150	01/05/23 20:48	01/21/23 15:14	
13C2 PFUnA	96		50 - 150	01/05/23 20:48	01/21/23 15:14	
13C2 PFDoA	90		50 - 150	01/05/23 20:48	01/21/23 15:14	
13C2 PFTeDA	94		50 - 150	01/05/23 20:48	01/21/23 15:14	
13C3 PFBS	106		50 - 150	01/05/23 20:48	01/21/23 15:14	
18O2 PFHxS	104		50 - 150	01/05/23 20:48	01/21/23 15:14	
13C4 PFOS	100		50 - 150	01/05/23 20:48	01/21/23 15:14	
d3-NMeFOSAA	89		50 - 150	01/05/23 20:48	01/21/23 15:14	
d5-NEtFOSAA	96		50 - 150	01/05/23 20:48	01/21/23 15:14	
13C3 HFPODA	94		50 - 150	01/05/23 20:48	01/21/23 15:14	

**Lab Sample ID: LCS 320-644869/2-A**  
**Matrix: Water**  
**Analysis Batch: 648448**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 644869**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.7		ng/L		104	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	44.7		ng/L		112	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	44.3		ng/L		111	71 - 133
Perfluorononanoic acid (PFNA)	40.0	44.4		ng/L		111	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-644869/2-A**  
**Matrix: Water**  
**Analysis Batch: 648448**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 644869**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	43.8		ng/L		109	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	46.8		ng/L		117	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	47.3		ng/L		118	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	44.7		ng/L		112	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.7		ng/L		99	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	38.0		ng/L		107	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.1		ng/L		105	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	38.5		ng/L		104	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.6		ng/L		109	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.1		ng/L		103	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.2		ng/L		105	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.2		ng/L		100	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	40.3		ng/L		107	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.0		ng/L		111	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	105		50 - 150
13C4 PFHpA	104		50 - 150
13C4 PFOA	101		50 - 150
13C5 PFNA	99		50 - 150
13C2 PFDA	102		50 - 150
13C2 PFUnA	98		50 - 150
13C2 PFDoA	96		50 - 150
13C2 PFTeDA	96		50 - 150
13C3 PFBS	114		50 - 150
18O2 PFHxS	108		50 - 150
13C4 PFOS	106		50 - 150
d3-NMeFOSAA	89		50 - 150
d5-NEtFOSAA	94		50 - 150
13C3 HFPODA	98		50 - 150

**Lab Sample ID: LCSD 320-644869/3-A**  
**Matrix: Water**  
**Analysis Batch: 648448**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 644869**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec	
							Limits	RPD
Perfluorohexanoic acid (PFHxA)	40.0	40.0		ng/L		100	72 - 129	4 30
Perfluoroheptanoic acid (PFHpA)	40.0	41.2		ng/L		103	72 - 130	8 30
Perfluorooctanoic acid (PFOA)	40.0	44.9		ng/L		112	71 - 133	2 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-644869/3-A**  
**Matrix: Water**  
**Analysis Batch: 648448**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 644869**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	43.4		ng/L		108	69 - 130	2	30
Perfluorodecanoic acid (PFDA)	40.0	41.5		ng/L		104	71 - 129	5	30
Perfluoroundecanoic acid (PFUnA)	40.0	42.5		ng/L		106	69 - 133	10	30
Perfluorododecanoic acid (PFDoA)	40.0	47.0		ng/L		117	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.3		ng/L		108	65 - 144	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.6		ng/L		102	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.3		ng/L		108	72 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.6		ng/L		97	68 - 131	7	30
Perfluorooctanesulfonic acid (PFOS)	37.2	38.5		ng/L		103	65 - 140	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.3		ng/L		106	65 - 136	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.4		ng/L		101	61 - 135	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	40.0		ng/L		107	77 - 137	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.3		ng/L		103	72 - 132	3	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	39.5		ng/L		105	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.4		ng/L		115	81 - 141	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	107		50 - 150
13C4 PFHpA	109		50 - 150
13C4 PFOA	101		50 - 150
13C5 PFNA	97		50 - 150
13C2 PFDA	99		50 - 150
13C2 PFUnA	100		50 - 150
13C2 PFDoA	96		50 - 150
13C2 PFTeDA	95		50 - 150
13C3 PFBS	110		50 - 150
18O2 PFHxS	107		50 - 150
13C4 PFOS	103		50 - 150
d3-NMeFOSAA	94		50 - 150
d5-NEtFOSAA	92		50 - 150
13C3 HFPODA	99		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

## LCMS

### Prep Batch: 644869

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-95682-1	PW-111	Total/NA	Water	3535	
320-95682-2	PW-5111	Total/NA	Water	3535	
MB 320-644869/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-644869/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-644869/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 648448

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-95682-1	PW-111	Total/NA	Water	EPA 537(Mod)	644869
320-95682-2	PW-5111	Total/NA	Water	EPA 537(Mod)	644869
MB 320-644869/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	644869
LCS 320-644869/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	644869
LCSD 320-644869/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	644869

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

**Client Sample ID: PW-111**  
**Date Collected: 12/27/22 09:50**  
**Date Received: 01/04/23 10:51**

**Lab Sample ID: 320-95682-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			293.6 mL	10.0 mL	644869	01/05/23 20:48	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	648448	01/21/23 15:45	K1S	EET SAC

**Client Sample ID: PW-5111**  
**Date Collected: 12/27/22 10:20**  
**Date Received: 01/04/23 10:51**

**Lab Sample ID: 320-95682-2**  
**Matrix: Water**

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 mL	10.0 mL	644869	01/05/23 20:48	PV	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	648448	01/21/23 15:55	K1S	EET SAC

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95682-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-95682-1	PW-111	Water	12/27/22 09:50	01/04/23 10:51
320-95682-2	PW-5111	Water	12/27/22 10:20	01/04/23 10:51

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-95682-1

**Login Number: 95682**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Her, David A**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	1845979/1845978
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Jessa Tibbetts	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-95682-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	1/27/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 3.8°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: All Sample Receipt Checklist questions are “true” or “N/A”.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-644869.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-95682-1

- Method 3535: The following samples in preparation batch 320-644869 were yellow in color following extraction. PW-111 (320-95682-1) and PW-5111 (320-95682-2)

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

- c. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

- b. Are all applicable holding times met?

Yes  No  N/A

Comments:

- c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

- a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-95682-1

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A.

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

**b. Laboratory Control Sample/Duplicate (LCS/LCSD)**

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-95682-1

- v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.
- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.
- vii. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?  
Yes  No  N/A   
Comments: MS/MSD samples were not reported due to sample volume.
- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?  
Yes  No  N/A   
Comments: Metal analyses were not requested for this work order.
- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?  
Yes  No  N/A   
Comments:
- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.  
Yes  No  N/A   
Comments:
- v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: NA; see above.
- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-95682-1

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments: IDAs were reported for the PFAS project samples.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: See above.

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: The data quality and usability were not affected.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments: A trip blank is not required for PFAS analysis.

ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: A trip blank was not submitted with this work order.

iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Is one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. Field duplicate pair *PW-111* and *PW-5111* was submitted with this work order.

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: The RPD for PFBS is 101%, which is greater than the specified project objective of 30%. The RPDs could not be calculated for remaining PFAS analytes, because they were not detected in both samples in the duplicate set. We do not consider the results to be affected by this RPD failure, as both the primary and duplicate sample were reported at estimated J-flag levels below the reporting limit and are already considered an estimate.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-95682-1

Comments: N/A; an equipment blank was not submitted with this work order.

iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

a. Are they defined and appropriate?

Yes  No  N/A

Comments:



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 2/20/2023 10:14:49 AM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-95999-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
2/20/2023 10:14:49 AM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	14
QC Sample Results . . . . .	15
QC Association Summary . . . . .	21
Lab Chronicle . . . . .	22
Certification Summary . . . . .	24
Method Summary . . . . .	25
Sample Summary . . . . .	26
Chain of Custody . . . . .	27
Receipt Checklists . . . . .	28

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

---

**Job ID: 320-95999-1**

---

**Laboratory: Eurofins Sacramento**

---

**Narrative**

**Job Narrative  
320-95999-1**

**Receipt**

The samples were received on 1/13/2023 2:44 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.7° C.

**LCMS**

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 320-647712.

Method 3535: The following samples in preparation batch 320-647712 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-147 (320-95999-4)

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-648638.

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



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

**Client Sample ID: PW-229**

**Lab Sample ID: 320-95999-1**

No Detections.

**Client Sample ID: PW-066**

**Lab Sample ID: 320-95999-2**

No Detections.

**Client Sample ID: PW-102**

**Lab Sample ID: 320-95999-3**

No Detections.

**Client Sample ID: PW-147**

**Lab Sample ID: 320-95999-4**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	2.7		1.8	0.53	ng/L	1			EPA 537(Mod)	Total/NA

**Client Sample ID: PW-036**

**Lab Sample ID: 320-95999-5**

No Detections.

**Client Sample ID: PW-120**

**Lab Sample ID: 320-95999-6**

No Detections.

**Client Sample ID: PW-5120**

**Lab Sample ID: 320-95999-7**

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

**Client Sample ID: PW-229**

**Lab Sample ID: 320-95999-1**

**Date Collected: 01/06/23 10:47**

**Matrix: Water**

**Date Received: 01/13/23 14:44**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		01/18/23 05:33	02/02/23 13:17	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		01/18/23 05:33	02/02/23 13:17	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		01/18/23 05:33	02/02/23 13:17	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/18/23 05:33	02/02/23 13:17	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/18/23 05:33	02/02/23 13:17	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/18/23 05:33	02/02/23 13:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/18/23 05:33	02/02/23 13:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/18/23 05:33	02/02/23 13:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/18/23 05:33	02/02/23 13:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		01/18/23 05:33	02/02/23 13:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		01/18/23 05:33	02/02/23 13:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		01/18/23 05:33	02/02/23 13:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/18/23 05:33	02/02/23 13:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/18/23 05:33	02/02/23 13:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		01/18/23 05:33	02/02/23 13:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/18/23 05:33	02/02/23 13:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		01/18/23 05:33	02/02/23 13:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/18/23 05:33	02/02/23 13:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		50 - 150	01/18/23 05:33	02/02/23 13:17	1
13C4 PFHpA	102		50 - 150	01/18/23 05:33	02/02/23 13:17	1
13C4 PFOA	89		50 - 150	01/18/23 05:33	02/02/23 13:17	1
13C5 PFNA	108		50 - 150	01/18/23 05:33	02/02/23 13:17	1
13C2 PFDA	92		50 - 150	01/18/23 05:33	02/02/23 13:17	1
13C2 PFUnA	107		50 - 150	01/18/23 05:33	02/02/23 13:17	1
13C2 PFDoA	93		50 - 150	01/18/23 05:33	02/02/23 13:17	1
13C2 PFTeDA	98		50 - 150	01/18/23 05:33	02/02/23 13:17	1
13C3 PFBS	100		50 - 150	01/18/23 05:33	02/02/23 13:17	1
18O2 PFHxS	104		50 - 150	01/18/23 05:33	02/02/23 13:17	1
13C4 PFOS	89		50 - 150	01/18/23 05:33	02/02/23 13:17	1
d3-NMeFOSAA	108		50 - 150	01/18/23 05:33	02/02/23 13:17	1
d5-NEtFOSAA	105		50 - 150	01/18/23 05:33	02/02/23 13:17	1
13C3 HFPO-DA	118		50 - 150	01/18/23 05:33	02/02/23 13:17	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

**Client Sample ID: PW-066**

**Lab Sample ID: 320-95999-2**

**Date Collected: 01/10/23 11:42**

**Matrix: Water**

**Date Received: 01/13/23 14:44**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		01/18/23 05:33	02/02/23 13:27	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/18/23 05:33	02/02/23 13:27	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		01/18/23 05:33	02/02/23 13:27	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/18/23 05:33	02/02/23 13:27	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/18/23 05:33	02/02/23 13:27	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/18/23 05:33	02/02/23 13:27	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/18/23 05:33	02/02/23 13:27	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/18/23 05:33	02/02/23 13:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		01/18/23 05:33	02/02/23 13:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		01/18/23 05:33	02/02/23 13:27	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		01/18/23 05:33	02/02/23 13:27	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		01/18/23 05:33	02/02/23 13:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		01/18/23 05:33	02/02/23 13:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		01/18/23 05:33	02/02/23 13:27	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/18/23 05:33	02/02/23 13:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		01/18/23 05:33	02/02/23 13:27	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		01/18/23 05:33	02/02/23 13:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/18/23 05:33	02/02/23 13:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		50 - 150	01/18/23 05:33	02/02/23 13:27	1
13C4 PFHpA	96		50 - 150	01/18/23 05:33	02/02/23 13:27	1
13C4 PFOA	101		50 - 150	01/18/23 05:33	02/02/23 13:27	1
13C5 PFNA	104		50 - 150	01/18/23 05:33	02/02/23 13:27	1
13C2 PFDA	97		50 - 150	01/18/23 05:33	02/02/23 13:27	1
13C2 PFUnA	106		50 - 150	01/18/23 05:33	02/02/23 13:27	1
13C2 PFDoA	97		50 - 150	01/18/23 05:33	02/02/23 13:27	1
13C2 PFTeDA	97		50 - 150	01/18/23 05:33	02/02/23 13:27	1
13C3 PFBS	96		50 - 150	01/18/23 05:33	02/02/23 13:27	1
18O2 PFHxS	105		50 - 150	01/18/23 05:33	02/02/23 13:27	1
13C4 PFOS	96		50 - 150	01/18/23 05:33	02/02/23 13:27	1
d3-NMeFOSAA	95		50 - 150	01/18/23 05:33	02/02/23 13:27	1
d5-NEtFOSAA	99		50 - 150	01/18/23 05:33	02/02/23 13:27	1
13C3 HFPO-DA	116		50 - 150	01/18/23 05:33	02/02/23 13:27	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

**Client Sample ID: PW-102**

**Lab Sample ID: 320-95999-3**

**Date Collected: 01/10/23 12:21**

**Matrix: Water**

**Date Received: 01/13/23 14:44**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		01/18/23 05:33	02/02/23 13:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		01/18/23 05:33	02/02/23 13:38	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		01/18/23 05:33	02/02/23 13:38	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/18/23 05:33	02/02/23 13:38	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/18/23 05:33	02/02/23 13:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/18/23 05:33	02/02/23 13:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/18/23 05:33	02/02/23 13:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/18/23 05:33	02/02/23 13:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/18/23 05:33	02/02/23 13:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		01/18/23 05:33	02/02/23 13:38	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		01/18/23 05:33	02/02/23 13:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		01/18/23 05:33	02/02/23 13:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		01/18/23 05:33	02/02/23 13:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		01/18/23 05:33	02/02/23 13:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		01/18/23 05:33	02/02/23 13:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/18/23 05:33	02/02/23 13:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		01/18/23 05:33	02/02/23 13:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/18/23 05:33	02/02/23 13:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		50 - 150	01/18/23 05:33	02/02/23 13:38	1
13C4 PFHpA	96		50 - 150	01/18/23 05:33	02/02/23 13:38	1
13C4 PFOA	100		50 - 150	01/18/23 05:33	02/02/23 13:38	1
13C5 PFNA	99		50 - 150	01/18/23 05:33	02/02/23 13:38	1
13C2 PFDA	91		50 - 150	01/18/23 05:33	02/02/23 13:38	1
13C2 PFUnA	96		50 - 150	01/18/23 05:33	02/02/23 13:38	1
13C2 PFDoA	84		50 - 150	01/18/23 05:33	02/02/23 13:38	1
13C2 PFTeDA	96		50 - 150	01/18/23 05:33	02/02/23 13:38	1
13C3 PFBS	99		50 - 150	01/18/23 05:33	02/02/23 13:38	1
18O2 PFHxS	100		50 - 150	01/18/23 05:33	02/02/23 13:38	1
13C4 PFOS	89		50 - 150	01/18/23 05:33	02/02/23 13:38	1
d3-NMeFOSAA	97		50 - 150	01/18/23 05:33	02/02/23 13:38	1
d5-NEtFOSAA	95		50 - 150	01/18/23 05:33	02/02/23 13:38	1
13C3 HFPO-DA	114		50 - 150	01/18/23 05:33	02/02/23 13:38	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

**Client Sample ID: PW-147**

**Lab Sample ID: 320-95999-4**

**Date Collected: 01/11/23 14:52**

**Matrix: Water**

**Date Received: 01/13/23 14:44**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>2.7</b>		1.8	0.53	ng/L		01/18/23 05:33	02/02/23 13:48	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/18/23 05:33	02/02/23 13:48	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		01/18/23 05:33	02/02/23 13:48	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/18/23 05:33	02/02/23 13:48	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/18/23 05:33	02/02/23 13:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/18/23 05:33	02/02/23 13:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/18/23 05:33	02/02/23 13:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/18/23 05:33	02/02/23 13:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/18/23 05:33	02/02/23 13:48	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		01/18/23 05:33	02/02/23 13:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		01/18/23 05:33	02/02/23 13:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		01/18/23 05:33	02/02/23 13:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/18/23 05:33	02/02/23 13:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/18/23 05:33	02/02/23 13:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/18/23 05:33	02/02/23 13:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		01/18/23 05:33	02/02/23 13:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		01/18/23 05:33	02/02/23 13:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		01/18/23 05:33	02/02/23 13:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	01/18/23 05:33	02/02/23 13:48	1
13C4 PFHpA	96		50 - 150	01/18/23 05:33	02/02/23 13:48	1
13C4 PFOA	104		50 - 150	01/18/23 05:33	02/02/23 13:48	1
13C5 PFNA	97		50 - 150	01/18/23 05:33	02/02/23 13:48	1
13C2 PFDA	87		50 - 150	01/18/23 05:33	02/02/23 13:48	1
13C2 PFUnA	100		50 - 150	01/18/23 05:33	02/02/23 13:48	1
13C2 PFDoA	83		50 - 150	01/18/23 05:33	02/02/23 13:48	1
13C2 PFTeDA	86		50 - 150	01/18/23 05:33	02/02/23 13:48	1
13C3 PFBS	96		50 - 150	01/18/23 05:33	02/02/23 13:48	1
18O2 PFHxS	93		50 - 150	01/18/23 05:33	02/02/23 13:48	1
13C4 PFOS	82		50 - 150	01/18/23 05:33	02/02/23 13:48	1
d3-NMeFOSAA	89		50 - 150	01/18/23 05:33	02/02/23 13:48	1
d5-NEtFOSAA	93		50 - 150	01/18/23 05:33	02/02/23 13:48	1
13C3 HFPO-DA	113		50 - 150	01/18/23 05:33	02/02/23 13:48	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

**Client Sample ID: PW-036**

**Lab Sample ID: 320-95999-5**

**Date Collected: 01/12/23 10:25**

**Matrix: Water**

**Date Received: 01/13/23 14:44**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		01/23/23 06:11	02/10/23 02:40	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		01/23/23 06:11	02/10/23 02:40	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		01/23/23 06:11	02/10/23 02:40	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/23/23 06:11	02/10/23 02:40	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/23/23 06:11	02/10/23 02:40	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/23/23 06:11	02/10/23 02:40	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/23/23 06:11	02/10/23 02:40	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/23/23 06:11	02/10/23 02:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/23/23 06:11	02/10/23 02:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		01/23/23 06:11	02/10/23 02:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		01/23/23 06:11	02/10/23 02:40	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		01/23/23 06:11	02/10/23 02:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		01/23/23 06:11	02/10/23 02:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		01/23/23 06:11	02/10/23 02:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		01/23/23 06:11	02/10/23 02:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/23/23 06:11	02/10/23 02:40	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		01/23/23 06:11	02/10/23 02:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/23/23 06:11	02/10/23 02:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	130		50 - 150	01/23/23 06:11	02/10/23 02:40	1
13C4 PFHpA	120		50 - 150	01/23/23 06:11	02/10/23 02:40	1
13C4 PFOA	119		50 - 150	01/23/23 06:11	02/10/23 02:40	1
13C5 PFNA	116		50 - 150	01/23/23 06:11	02/10/23 02:40	1
13C2 PFDA	125		50 - 150	01/23/23 06:11	02/10/23 02:40	1
13C2 PFUnA	134		50 - 150	01/23/23 06:11	02/10/23 02:40	1
13C2 PFDoA	126		50 - 150	01/23/23 06:11	02/10/23 02:40	1
13C2 PFTeDA	120		50 - 150	01/23/23 06:11	02/10/23 02:40	1
13C3 PFBS	122		50 - 150	01/23/23 06:11	02/10/23 02:40	1
18O2 PFHxS	113		50 - 150	01/23/23 06:11	02/10/23 02:40	1
13C4 PFOS	122		50 - 150	01/23/23 06:11	02/10/23 02:40	1
d3-NMeFOSAA	105		50 - 150	01/23/23 06:11	02/10/23 02:40	1
d5-NEtFOSAA	115		50 - 150	01/23/23 06:11	02/10/23 02:40	1
13C3 HFPO-DA	130		50 - 150	01/23/23 06:11	02/10/23 02:40	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

**Client Sample ID: PW-120**

**Lab Sample ID: 320-95999-6**

**Date Collected: 01/12/23 11:20**

**Matrix: Water**

**Date Received: 01/13/23 14:44**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		01/23/23 06:11	02/10/23 02:51	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		01/23/23 06:11	02/10/23 02:51	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		01/23/23 06:11	02/10/23 02:51	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		01/23/23 06:11	02/10/23 02:51	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		01/23/23 06:11	02/10/23 02:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		01/23/23 06:11	02/10/23 02:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		01/23/23 06:11	02/10/23 02:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		01/23/23 06:11	02/10/23 02:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		01/23/23 06:11	02/10/23 02:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		01/23/23 06:11	02/10/23 02:51	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		01/23/23 06:11	02/10/23 02:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		01/23/23 06:11	02/10/23 02:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/23/23 06:11	02/10/23 02:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/23/23 06:11	02/10/23 02:51	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		01/23/23 06:11	02/10/23 02:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/23/23 06:11	02/10/23 02:51	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		01/23/23 06:11	02/10/23 02:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.37	ng/L		01/23/23 06:11	02/10/23 02:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	137		50 - 150	01/23/23 06:11	02/10/23 02:51	1
13C4 PFHpA	127		50 - 150	01/23/23 06:11	02/10/23 02:51	1
13C4 PFOA	119		50 - 150	01/23/23 06:11	02/10/23 02:51	1
13C5 PFNA	118		50 - 150	01/23/23 06:11	02/10/23 02:51	1
13C2 PFDA	117		50 - 150	01/23/23 06:11	02/10/23 02:51	1
13C2 PFUnA	122		50 - 150	01/23/23 06:11	02/10/23 02:51	1
13C2 PFDoA	119		50 - 150	01/23/23 06:11	02/10/23 02:51	1
13C2 PFTeDA	105		50 - 150	01/23/23 06:11	02/10/23 02:51	1
13C3 PFBS	112		50 - 150	01/23/23 06:11	02/10/23 02:51	1
18O2 PFHxS	119		50 - 150	01/23/23 06:11	02/10/23 02:51	1
13C4 PFOS	112		50 - 150	01/23/23 06:11	02/10/23 02:51	1
d3-NMeFOSAA	99		50 - 150	01/23/23 06:11	02/10/23 02:51	1
d5-NEtFOSAA	104		50 - 150	01/23/23 06:11	02/10/23 02:51	1
13C3 HFPO-DA	133		50 - 150	01/23/23 06:11	02/10/23 02:51	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

**Client Sample ID: PW-5120**

**Lab Sample ID: 320-95999-7**

**Date Collected: 01/12/23 11:50**

**Matrix: Water**

**Date Received: 01/13/23 14:44**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		01/23/23 06:11	02/10/23 03:01	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		01/23/23 06:11	02/10/23 03:01	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		01/23/23 06:11	02/10/23 03:01	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/23/23 06:11	02/10/23 03:01	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/23/23 06:11	02/10/23 03:01	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/23/23 06:11	02/10/23 03:01	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/23/23 06:11	02/10/23 03:01	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/23/23 06:11	02/10/23 03:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/23/23 06:11	02/10/23 03:01	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		01/23/23 06:11	02/10/23 03:01	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		01/23/23 06:11	02/10/23 03:01	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		01/23/23 06:11	02/10/23 03:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/23/23 06:11	02/10/23 03:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/23/23 06:11	02/10/23 03:01	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		01/23/23 06:11	02/10/23 03:01	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/23/23 06:11	02/10/23 03:01	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		01/23/23 06:11	02/10/23 03:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/23/23 06:11	02/10/23 03:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	126		50 - 150	01/23/23 06:11	02/10/23 03:01	1
13C4 PFHpA	130		50 - 150	01/23/23 06:11	02/10/23 03:01	1
13C4 PFOA	126		50 - 150	01/23/23 06:11	02/10/23 03:01	1
13C5 PFNA	123		50 - 150	01/23/23 06:11	02/10/23 03:01	1
13C2 PFDA	126		50 - 150	01/23/23 06:11	02/10/23 03:01	1
13C2 PFUnA	125		50 - 150	01/23/23 06:11	02/10/23 03:01	1
13C2 PFDoA	115		50 - 150	01/23/23 06:11	02/10/23 03:01	1
13C2 PFTeDA	112		50 - 150	01/23/23 06:11	02/10/23 03:01	1
13C3 PFBS	112		50 - 150	01/23/23 06:11	02/10/23 03:01	1
18O2 PFHxS	111		50 - 150	01/23/23 06:11	02/10/23 03:01	1
13C4 PFOS	122		50 - 150	01/23/23 06:11	02/10/23 03:01	1
d3-NMeFOSAA	100		50 - 150	01/23/23 06:11	02/10/23 03:01	1
d5-NEtFOSAA	109		50 - 150	01/23/23 06:11	02/10/23 03:01	1
13C3 HFPO-DA	130		50 - 150	01/23/23 06:11	02/10/23 03:01	1

Eurofins Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-95999-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-95999-1	PW-229	90	102	89	108	92	107	93	98
320-95999-2	PW-066	101	96	101	104	97	106	97	97
320-95999-3	PW-102	96	96	100	99	91	96	84	96
320-95999-4	PW-147	95	96	104	97	87	100	83	86
320-95999-5	PW-036	130	120	119	116	125	134	126	120
320-95999-6	PW-120	137	127	119	118	117	122	119	105
320-95999-7	PW-5120	126	130	126	123	126	125	115	112
LCS 320-647712/2-A	Lab Control Sample	99	98	95	97	102	99	91	93
LCS 320-648638/2-A	Lab Control Sample	120	113	113	115	121	108	111	102
LCS 320-647712/3-A	Lab Control Sample Dup	102	102	99	100	93	106	92	94
LCS 320-648638/3-A	Lab Control Sample Dup	112	121	112	115	114	115	110	104
MB 320-647712/1-A	Method Blank	112	118	115	106	109	121	94	101
MB 320-648638/1-A	Method Blank	121	121	113	123	122	122	117	105

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-95999-1	PW-229	100	104	89	108	105	118
320-95999-2	PW-066	96	105	96	95	99	116
320-95999-3	PW-102	99	100	89	97	95	114
320-95999-4	PW-147	96	93	82	89	93	113
320-95999-5	PW-036	122	113	122	105	115	130
320-95999-6	PW-120	112	119	112	99	104	133
320-95999-7	PW-5120	112	111	122	100	109	130
LCS 320-647712/2-A	Lab Control Sample	81	88	86	95	100	114
LCS 320-648638/2-A	Lab Control Sample	110	110	119	97	90	120
LCS 320-647712/3-A	Lab Control Sample Dup	91	100	96	97	100	110
LCS 320-648638/3-A	Lab Control Sample Dup	105	108	113	91	99	122
MB 320-647712/1-A	Method Blank	110	117	98	109	107	125
MB 320-648638/1-A	Method Blank	112	111	118	105	105	124

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-647712/1-A**  
**Matrix: Water**  
**Analysis Batch: 651284**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 647712**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		01/18/23 05:33	02/02/23 10:02	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		01/18/23 05:33	02/02/23 10:02	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		01/18/23 05:33	02/02/23 10:02	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		01/18/23 05:33	02/02/23 10:02	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		01/18/23 05:33	02/02/23 10:02	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		01/18/23 05:33	02/02/23 10:02	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		01/18/23 05:33	02/02/23 10:02	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/18/23 05:33	02/02/23 10:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		01/18/23 05:33	02/02/23 10:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		01/18/23 05:33	02/02/23 10:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		01/18/23 05:33	02/02/23 10:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		01/18/23 05:33	02/02/23 10:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		01/18/23 05:33	02/02/23 10:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		01/18/23 05:33	02/02/23 10:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		01/18/23 05:33	02/02/23 10:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		01/18/23 05:33	02/02/23 10:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		01/18/23 05:33	02/02/23 10:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		01/18/23 05:33	02/02/23 10:02	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	112		50 - 150	01/18/23 05:33	02/02/23 10:02	1
13C4 PFHpA	118		50 - 150	01/18/23 05:33	02/02/23 10:02	1
13C4 PFOA	115		50 - 150	01/18/23 05:33	02/02/23 10:02	1
13C5 PFNA	106		50 - 150	01/18/23 05:33	02/02/23 10:02	1
13C2 PFDA	109		50 - 150	01/18/23 05:33	02/02/23 10:02	1
13C2 PFUnA	121		50 - 150	01/18/23 05:33	02/02/23 10:02	1
13C2 PFDoA	94		50 - 150	01/18/23 05:33	02/02/23 10:02	1
13C2 PFTeDA	101		50 - 150	01/18/23 05:33	02/02/23 10:02	1
13C3 PFBS	110		50 - 150	01/18/23 05:33	02/02/23 10:02	1
18O2 PFHxS	117		50 - 150	01/18/23 05:33	02/02/23 10:02	1
13C4 PFOS	98		50 - 150	01/18/23 05:33	02/02/23 10:02	1
d3-NMeFOSAA	109		50 - 150	01/18/23 05:33	02/02/23 10:02	1
d5-NEtFOSAA	107		50 - 150	01/18/23 05:33	02/02/23 10:02	1
13C3 HFPO-DA	125		50 - 150	01/18/23 05:33	02/02/23 10:02	1

**Lab Sample ID: LCS 320-647712/2-A**  
**Matrix: Water**  
**Analysis Batch: 651822**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 647712**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanoic acid (PFHpA)	40.0	44.0		ng/L		110	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.9		ng/L		107	71 - 133
Perfluorononanoic acid (PFNA)	40.0	44.8		ng/L		112	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-647712/2-A**  
**Matrix: Water**  
**Analysis Batch: 651822**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 647712**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	42.2		ng/L		106	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	43.2		ng/L		108	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	46.4		ng/L		116	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	45.9		ng/L		115	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.1		ng/L		100	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	38.9		ng/L		110	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.4		ng/L		105	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	40.2		ng/L		108	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	45.0		ng/L		113	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.3		ng/L		108	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.7		ng/L		112	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.3		ng/L		101	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	40.0		ng/L		106	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	46.5		ng/L		123	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	99		50 - 150
13C4 PFHpA	98		50 - 150
13C4 PFOA	95		50 - 150
13C5 PFNA	97		50 - 150
13C2 PFDA	102		50 - 150
13C2 PFUnA	99		50 - 150
13C2 PFDoA	91		50 - 150
13C2 PFTeDA	93		50 - 150
13C3 PFBS	81		50 - 150
18O2 PFHxS	88		50 - 150
13C4 PFOS	86		50 - 150
d3-NMeFOSAA	95		50 - 150
d5-NEtFOSAA	100		50 - 150
13C3 HFPO-DA	114		50 - 150

**Lab Sample ID: LCSD 320-647712/3-A**  
**Matrix: Water**  
**Analysis Batch: 651284**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 647712**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	39.7		ng/L		99	72 - 129	13 30
Perfluoroheptanoic acid (PFHpA)	40.0	40.4		ng/L		101	72 - 130	10 30
Perfluorooctanoic acid (PFOA)	40.0	43.4		ng/L		108	71 - 133	11 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-647712/3-A**  
**Matrix: Water**  
**Analysis Batch: 651284**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 647712**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	43.0		ng/L		108	69 - 130	0	30
Perfluorodecanoic acid (PFDA)	40.0	47.7		ng/L		119	71 - 129	8	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.0		ng/L		102	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)	40.0	49.9		ng/L		125	72 - 134	7	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.4		ng/L		108	65 - 144	17	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.7		ng/L		104	71 - 132	8	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.5		ng/L		108	72 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.0		ng/L		104	68 - 131	4	30
Perfluorooctanesulfonic acid (PFOS)	37.2	42.8		ng/L		115	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.7		ng/L		104	65 - 136	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.3		ng/L		103	61 - 135	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.5		ng/L		111	77 - 137	7	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.8		ng/L		100	72 - 132	2	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	42.5		ng/L		113	76 - 136	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	47.2		ng/L		125	81 - 141	2	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	102		50 - 150
13C4 PFHpA	102		50 - 150
13C4 PFOA	99		50 - 150
13C5 PFNA	100		50 - 150
13C2 PFDA	93		50 - 150
13C2 PFUnA	106		50 - 150
13C2 PFDoA	92		50 - 150
13C2 PFTeDA	94		50 - 150
13C3 PFBS	91		50 - 150
18O2 PFHxS	100		50 - 150
13C4 PFOS	96		50 - 150
d3-NMeFOSAA	97		50 - 150
d5-NEtFOSAA	100		50 - 150
13C3 HFPO-DA	110		50 - 150

**Lab Sample ID: MB 320-648638/1-A**  
**Matrix: Water**  
**Analysis Batch: 654158**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 648638**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		01/23/23 06:11	02/10/23 01:59	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		01/23/23 06:11	02/10/23 01:59	1

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-648638/1-A**  
**Matrix: Water**  
**Analysis Batch: 654158**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 648638**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		01/23/23 06:11	02/10/23 01:59	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		01/23/23 06:11	02/10/23 01:59	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		01/23/23 06:11	02/10/23 01:59	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		01/23/23 06:11	02/10/23 01:59	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		01/23/23 06:11	02/10/23 01:59	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/23/23 06:11	02/10/23 01:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		01/23/23 06:11	02/10/23 01:59	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		01/23/23 06:11	02/10/23 01:59	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		01/23/23 06:11	02/10/23 01:59	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		01/23/23 06:11	02/10/23 01:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		01/23/23 06:11	02/10/23 01:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		01/23/23 06:11	02/10/23 01:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		01/23/23 06:11	02/10/23 01:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		01/23/23 06:11	02/10/23 01:59	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		01/23/23 06:11	02/10/23 01:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		01/23/23 06:11	02/10/23 01:59	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	121		50 - 150	01/23/23 06:11	02/10/23 01:59	1
13C4 PFHpA	121		50 - 150	01/23/23 06:11	02/10/23 01:59	1
13C4 PFOA	113		50 - 150	01/23/23 06:11	02/10/23 01:59	1
13C5 PFNA	123		50 - 150	01/23/23 06:11	02/10/23 01:59	1
13C2 PFDA	122		50 - 150	01/23/23 06:11	02/10/23 01:59	1
13C2 PFUnA	122		50 - 150	01/23/23 06:11	02/10/23 01:59	1
13C2 PFDoA	117		50 - 150	01/23/23 06:11	02/10/23 01:59	1
13C2 PFTeDA	105		50 - 150	01/23/23 06:11	02/10/23 01:59	1
13C3 PFBS	112		50 - 150	01/23/23 06:11	02/10/23 01:59	1
18O2 PFHxS	111		50 - 150	01/23/23 06:11	02/10/23 01:59	1
13C4 PFOS	118		50 - 150	01/23/23 06:11	02/10/23 01:59	1
d3-NMeFOSAA	105		50 - 150	01/23/23 06:11	02/10/23 01:59	1
d5-NEtFOSAA	105		50 - 150	01/23/23 06:11	02/10/23 01:59	1
13C3 HFPO-DA	124		50 - 150	01/23/23 06:11	02/10/23 01:59	1

**Lab Sample ID: LCS 320-648638/2-A**  
**Matrix: Water**  
**Analysis Batch: 654158**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 648638**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	38.2		ng/L		95	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	42.4		ng/L		106	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	43.1		ng/L		108	71 - 133
Perfluorononanoic acid (PFNA)	40.0	38.5		ng/L		96	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	41.3		ng/L		103	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	39.8		ng/L		100	69 - 133

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-648638/2-A**  
**Matrix: Water**  
**Analysis Batch: 654158**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 648638**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	40.0	41.7		ng/L		104	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	39.6		ng/L		99	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.1		ng/L		98	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	37.1		ng/L		104	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.5		ng/L		100	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	36.7		ng/L		99	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.8		ng/L		107	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.2		ng/L		111	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	35.6		ng/L		95	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.6		ng/L		101	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	33.8		ng/L		90	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.8		ng/L		111	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	120		50 - 150
13C4 PFHpA	113		50 - 150
13C4 PFOA	113		50 - 150
13C5 PFNA	115		50 - 150
13C2 PFDA	121		50 - 150
13C2 PFUnA	108		50 - 150
13C2 PFDoA	111		50 - 150
13C2 PFTeDA	102		50 - 150
13C3 PFBS	110		50 - 150
18O2 PFHxS	110		50 - 150
13C4 PFOS	119		50 - 150
d3-NMeFOSAA	97		50 - 150
d5-NEtFOSAA	90		50 - 150
13C3 HFPO-DA	120		50 - 150

**Lab Sample ID: LCSD 320-648638/3-A**  
**Matrix: Water**  
**Analysis Batch: 654158**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 648638**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	42.7		ng/L		107	72 - 129	11 30
Perfluoroheptanoic acid (PFHpA)	40.0	42.5		ng/L		106	72 - 130	0 30
Perfluorooctanoic acid (PFOA)	40.0	39.8		ng/L		99	71 - 133	8 30
Perfluorononanoic acid (PFNA)	40.0	39.9		ng/L		100	69 - 130	4 30
Perfluorodecanoic acid (PFDA)	40.0	42.0		ng/L		105	71 - 129	2 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-648638/3-A**  
**Matrix: Water**  
**Analysis Batch: 654158**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 648638**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	39.4		ng/L		99	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)	40.0	41.5		ng/L		104	72 - 134	0	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.2		ng/L		103	65 - 144	4	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.7		ng/L		102	71 - 132	4	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.6		ng/L		109	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.5		ng/L		106	68 - 131	5	30
Perfluorooctanesulfonic acid (PFOS)	37.2	38.8		ng/L		104	65 - 140	5	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.1		ng/L		105	65 - 136	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.0		ng/L		100	61 - 135	10	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	38.3		ng/L		102	77 - 137	7	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.4		ng/L		103	72 - 132	2	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	37.1		ng/L		98	76 - 136	9	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.5		ng/L		110	81 - 141	1	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	112		50 - 150
13C4 PFHpA	121		50 - 150
13C4 PFOA	112		50 - 150
13C5 PFNA	115		50 - 150
13C2 PFDA	114		50 - 150
13C2 PFUnA	115		50 - 150
13C2 PFDoA	110		50 - 150
13C2 PFTeDA	104		50 - 150
13C3 PFBS	105		50 - 150
18O2 PFHxS	108		50 - 150
13C4 PFOS	113		50 - 150
d3-NMeFOSAA	91		50 - 150
d5-NEtFOSAA	99		50 - 150
13C3 HFPO-DA	122		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-95999-1

## LCMS

### Prep Batch: 647712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-95999-1	PW-229	Total/NA	Water	3535	
320-95999-2	PW-066	Total/NA	Water	3535	
320-95999-3	PW-102	Total/NA	Water	3535	
320-95999-4	PW-147	Total/NA	Water	3535	
MB 320-647712/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-647712/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-647712/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Prep Batch: 648638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-95999-5	PW-036	Total/NA	Water	3535	
320-95999-6	PW-120	Total/NA	Water	3535	
320-95999-7	PW-5120	Total/NA	Water	3535	
MB 320-648638/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-648638/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-648638/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 651284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-95999-1	PW-229	Total/NA	Water	EPA 537(Mod)	647712
320-95999-2	PW-066	Total/NA	Water	EPA 537(Mod)	647712
320-95999-3	PW-102	Total/NA	Water	EPA 537(Mod)	647712
320-95999-4	PW-147	Total/NA	Water	EPA 537(Mod)	647712
MB 320-647712/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	647712
LCSD 320-647712/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	647712

### Analysis Batch: 651822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-647712/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	647712

### Analysis Batch: 654158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-95999-5	PW-036	Total/NA	Water	EPA 537(Mod)	648638
320-95999-6	PW-120	Total/NA	Water	EPA 537(Mod)	648638
320-95999-7	PW-5120	Total/NA	Water	EPA 537(Mod)	648638
MB 320-648638/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	648638
LCS 320-648638/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	648638
LCSD 320-648638/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	648638

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

**Client Sample ID: PW-229**

**Date Collected: 01/06/23 10:47**

**Date Received: 01/13/23 14:44**

**Lab Sample ID: 320-95999-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.6 mL	10.0 mL	647712	01/18/23 05:33	HK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651284	02/02/23 13:17	S1M	EET SAC

**Client Sample ID: PW-066**

**Date Collected: 01/10/23 11:42**

**Date Received: 01/13/23 14:44**

**Lab Sample ID: 320-95999-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.1 mL	10.0 mL	647712	01/18/23 05:33	HK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651284	02/02/23 13:27	S1M	EET SAC

**Client Sample ID: PW-102**

**Date Collected: 01/10/23 12:21**

**Date Received: 01/13/23 14:44**

**Lab Sample ID: 320-95999-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.3 mL	10.0 mL	647712	01/18/23 05:33	HK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651284	02/02/23 13:38	S1M	EET SAC

**Client Sample ID: PW-147**

**Date Collected: 01/11/23 14:52**

**Date Received: 01/13/23 14:44**

**Lab Sample ID: 320-95999-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.1 mL	10.0 mL	647712	01/18/23 05:33	HK	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	651284	02/02/23 13:48	S1M	EET SAC

**Client Sample ID: PW-036**

**Date Collected: 01/12/23 10:25**

**Date Received: 01/13/23 14:44**

**Lab Sample ID: 320-95999-5**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.3 mL	10.0 mL	648638	01/23/23 06:11	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	654158	02/10/23 02:40	K1S	EET SAC

**Client Sample ID: PW-120**

**Date Collected: 01/12/23 11:20**

**Date Received: 01/13/23 14:44**

**Lab Sample ID: 320-95999-6**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.8 mL	10.0 mL	648638	01/23/23 06:11	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	654158	02/10/23 02:51	K1S	EET SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

**Client Sample ID: PW-5120**

**Lab Sample ID: 320-95999-7**

**Date Collected: 01/12/23 11:50**

**Matrix: Water**

**Date Received: 01/13/23 14:44**

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 mL	10.0 mL	648638	01/23/23 06:11	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	654158	02/10/23 03:01	K1S	EET SAC

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-95999-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-95999-1	PW-229	Water	01/06/23 10:47	01/13/23 14:44
320-95999-2	PW-066	Water	01/10/23 11:42	01/13/23 14:44
320-95999-3	PW-102	Water	01/10/23 12:21	01/13/23 14:44
320-95999-4	PW-147	Water	01/11/23 14:52	01/13/23 14:44
320-95999-5	PW-036	Water	01/12/23 10:25	01/13/23 14:44
320-95999-6	PW-120	Water	01/12/23 11:20	01/13/23 14:44
320-95999-7	PW-5120	Water	01/12/23 11:50	01/13/23 14:44

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-95999-1

**Login Number: 95999**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Pratali, Sandra 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	1722158
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?	False	Not requested on COC.
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	

# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Chris Pepe	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-95999-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	2/20/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 1.7°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: All Sample Receipt Checklist (SRC) questions are “true” or “N/A”, with the exception of “Is the Field Sampler’s name present on COC?” which was marked as “False” on the SRC. The sampler’s name is on the COC and the results are not impacted.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-95999-1

- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-647712.
- Method 3535: The following samples in preparation batch 320-647712 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-147 (320-9599-4)
- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-648638.

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

- c. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

- b. Are all applicable holding times met?

Yes  No  N/A

Comments:

- c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

### a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?  
Yes  No  N/A   
Comments:
- ii. Are all method blank results less than LOQ (or RL)?  
Yes  No   
Comments:
- iii. If above LoQ or RL, what samples are affected?  
Comments: N/A.
- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments: N/A; see above.
- v. Data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability were not affected.

### b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)  
Yes  No  N/A   
Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.
- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?  
Yes  No  N/A   
Comments: Metals were not reported for this work order.
- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)  
Yes  No  N/A   
Comments:

CS Site Name: AIA Anchorage Airport Sitewide PFAS

Lab Report No.: 320-95999-1

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were not reported due to sample volume.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-95999-1

- v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: NA; see above.
- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments:
- vii. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability are not affected; see above.
- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only
- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?  
Yes  No  N/A   
Comments: IDAs were reported for the PFAS project samples.
- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)  
Yes  No  N/A   
Comments:
- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments: See above.
- iv. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The data quality and usability were not affected.
- e. Trip Blanks
- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A   
Comments: A trip blank is not required for PFAS analysis.
- ii. Are all results less than LoQ or RL?  
Yes  No  N/A   
Comments: A trip blank was not submitted with this work order.

iii. If above LoQ or RL, what samples are affected?  
Comments: N/A; a trip blank was not submitted with this work order.

iv. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

i. Is one field duplicate submitted per matrix, analysis, and 10 project samples?  
Yes  No  N/A   
Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. Field duplicate pair *PW-120* and *PW-5120* was submitted with this work order.

ii. Was the duplicate submitted blind to lab?  
Yes  No  N/A   
Comments:

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

iv. Is the data quality or usability affected? (Explain)  
Yes  No  N/A   
Comments: RPDs could not be calculated because PFAS were not detected in the project field duplicate pair. Results are not affected.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?  
Yes  No  N/A   
Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

ii. Are all results less than LoQ or RL?  
Yes  No  N/A   
Comments: An equipment blank was not submitted with this work order.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-95999-1

iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

a. Are they defined and appropriate?

Yes  No  N/A

Comments:



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 2/26/2023 5:14:15 PM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-96369-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
2/26/2023 5:14:15 PM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	15
QC Sample Results . . . . .	16
QC Association Summary . . . . .	19
Lab Chronicle . . . . .	20
Certification Summary . . . . .	22
Method Summary . . . . .	23
Sample Summary . . . . .	24
Chain of Custody . . . . .	25
Receipt Checklists . . . . .	26

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

---

## Job ID: 320-96369-1

---

### Laboratory: Eurofins Sacramento

#### Narrative

---

#### Job Narrative 320-96369-1

#### Receipt

The samples were received on 1/27/2023 3:18 PM. 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 5.0° C.

#### LCMS

Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: PW-125 (320-96369-3). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

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 320-650400.

Method 3535: The following samples were light yellow and contained a thin layer of sediment at the bottom of the bottle prior to extraction: PW-089 (320-96369-2), PW-105 (320-96369-4), PW-5105 (320-96369-5) and PW-077 (320-96369-7).  
preparation batch 320-650400

Method 3535: The following samples were light yellow prior to extraction: PW-047 (320-96369-1), PW-125 (320-96369-3) and PW-069 (320-96369-6).  
preparation batch 320-650400

Method 3535: During the solid phase extraction process, the following samples contained non-settable particulates which clogged the solid phase extraction column: PW-089 (320-96369-2), PW-125 (320-96369-3), PW-5105 (320-96369-5) and PW-077 (320-96369-7).  
preparation batch 320-650400

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

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

## Client Sample ID: PW-047

Lab Sample ID: 320-96369-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	16		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.1		1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	12		1.7	0.71	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorononanoic acid (PFNA)	35		1.7	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.36	J	1.7	0.26	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.0		1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	21		1.7	0.48	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	240		1.7	0.45	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-089

Lab Sample ID: 320-96369-2

No Detections.

## Client Sample ID: PW-125

Lab Sample ID: 320-96369-3

No Detections.

## Client Sample ID: PW-105

Lab Sample ID: 320-96369-4

No Detections.

## Client Sample ID: PW-5105

Lab Sample ID: 320-96369-5

No Detections.

## Client Sample ID: PW-069

Lab Sample ID: 320-96369-6

No Detections.

## Client Sample ID: PW-077

Lab Sample ID: 320-96369-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.54	J	1.7	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-130

Lab Sample ID: 320-96369-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.22	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

**Client Sample ID: PW-047**

**Lab Sample ID: 320-96369-1**

Date Collected: 01/17/23 14:20

Matrix: Water

Date Received: 01/27/23 15:18

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	16		1.7	0.49	ng/L		01/30/23 12:02	02/23/23 13:17	1
Perfluoroheptanoic acid (PFHpA)	6.1		1.7	0.21	ng/L		01/30/23 12:02	02/23/23 13:17	1
Perfluorooctanoic acid (PFOA)	12		1.7	0.71	ng/L		01/30/23 12:02	02/23/23 13:17	1
Perfluorononanoic acid (PFNA)	35		1.7	0.23	ng/L		01/30/23 12:02	02/23/23 13:17	1
Perfluorodecanoic acid (PFDA)	0.36	J	1.7	0.26	ng/L		01/30/23 12:02	02/23/23 13:17	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.92	ng/L		01/30/23 12:02	02/23/23 13:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		01/30/23 12:02	02/23/23 13:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/30/23 12:02	02/23/23 13:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.61	ng/L		01/30/23 12:02	02/23/23 13:17	1
Perfluorobutanesulfonic acid (PFBS)	2.0		1.7	0.17	ng/L		01/30/23 12:02	02/23/23 13:17	1
Perfluorohexanesulfonic acid (PFHxS)	21		1.7	0.48	ng/L		01/30/23 12:02	02/23/23 13:17	1
Perfluorooctanesulfonic acid (PFOS)	240		1.7	0.45	ng/L		01/30/23 12:02	02/23/23 13:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		01/30/23 12:02	02/23/23 13:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		01/30/23 12:02	02/23/23 13:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		01/30/23 12:02	02/23/23 13:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		01/30/23 12:02	02/23/23 13:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		01/30/23 12:02	02/23/23 13:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		01/30/23 12:02	02/23/23 13:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		50 - 150	01/30/23 12:02	02/23/23 13:17	1
13C4 PFHpA	102		50 - 150	01/30/23 12:02	02/23/23 13:17	1
13C4 PFOA	106		50 - 150	01/30/23 12:02	02/23/23 13:17	1
13C5 PFNA	101		50 - 150	01/30/23 12:02	02/23/23 13:17	1
13C2 PFDA	108		50 - 150	01/30/23 12:02	02/23/23 13:17	1
13C2 PFUnA	99		50 - 150	01/30/23 12:02	02/23/23 13:17	1
13C2 PFDoA	104		50 - 150	01/30/23 12:02	02/23/23 13:17	1
13C2 PFTeDA	99		50 - 150	01/30/23 12:02	02/23/23 13:17	1
13C3 PFBS	96		50 - 150	01/30/23 12:02	02/23/23 13:17	1
18O2 PFHxS	100		50 - 150	01/30/23 12:02	02/23/23 13:17	1
13C4 PFOS	95		50 - 150	01/30/23 12:02	02/23/23 13:17	1
d3-NMeFOSAA	93		50 - 150	01/30/23 12:02	02/23/23 13:17	1
d5-NEtFOSAA	104		50 - 150	01/30/23 12:02	02/23/23 13:17	1
13C3 HFPO-DA	88		50 - 150	01/30/23 12:02	02/23/23 13:17	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

**Client Sample ID: PW-089**

**Lab Sample ID: 320-96369-2**

**Date Collected: 01/19/23 14:40**

**Matrix: Water**

**Date Received: 01/27/23 15:18**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49	ng/L		01/30/23 12:02	02/23/23 13:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		01/30/23 12:02	02/23/23 13:28	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.72	ng/L		01/30/23 12:02	02/23/23 13:28	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		01/30/23 12:02	02/23/23 13:28	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		01/30/23 12:02	02/23/23 13:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		01/30/23 12:02	02/23/23 13:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47	ng/L		01/30/23 12:02	02/23/23 13:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/30/23 12:02	02/23/23 13:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.62	ng/L		01/30/23 12:02	02/23/23 13:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		01/30/23 12:02	02/23/23 13:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.48	ng/L		01/30/23 12:02	02/23/23 13:28	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46	ng/L		01/30/23 12:02	02/23/23 13:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		01/30/23 12:02	02/23/23 13:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		01/30/23 12:02	02/23/23 13:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		01/30/23 12:02	02/23/23 13:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.4	1.3	ng/L		01/30/23 12:02	02/23/23 13:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		01/30/23 12:02	02/23/23 13:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.34	ng/L		01/30/23 12:02	02/23/23 13:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		50 - 150	01/30/23 12:02	02/23/23 13:28	1
13C4 PFHpA	82		50 - 150	01/30/23 12:02	02/23/23 13:28	1
13C4 PFOA	83		50 - 150	01/30/23 12:02	02/23/23 13:28	1
13C5 PFNA	79		50 - 150	01/30/23 12:02	02/23/23 13:28	1
13C2 PFDA	80		50 - 150	01/30/23 12:02	02/23/23 13:28	1
13C2 PFUnA	64		50 - 150	01/30/23 12:02	02/23/23 13:28	1
13C2 PFDoA	58		50 - 150	01/30/23 12:02	02/23/23 13:28	1
13C2 PFTeDA	58		50 - 150	01/30/23 12:02	02/23/23 13:28	1
13C3 PFBS	75		50 - 150	01/30/23 12:02	02/23/23 13:28	1
18O2 PFHxS	77		50 - 150	01/30/23 12:02	02/23/23 13:28	1
13C4 PFOS	68		50 - 150	01/30/23 12:02	02/23/23 13:28	1
d3-NMeFOSAA	56		50 - 150	01/30/23 12:02	02/23/23 13:28	1
d5-NEtFOSAA	59		50 - 150	01/30/23 12:02	02/23/23 13:28	1
13C3 HFPO-DA	73		50 - 150	01/30/23 12:02	02/23/23 13:28	1

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

**Client Sample ID: PW-125**

**Lab Sample ID: 320-96369-3**

**Date Collected: 01/20/23 15:00**

**Matrix: Water**

**Date Received: 01/27/23 15:18**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		01/30/23 12:02	02/23/23 13:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		01/30/23 12:02	02/23/23 13:38	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		01/30/23 12:02	02/23/23 13:38	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		01/30/23 12:02	02/23/23 13:38	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		01/30/23 12:02	02/23/23 13:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		01/30/23 12:02	02/23/23 13:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		01/30/23 12:02	02/23/23 13:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/30/23 12:02	02/23/23 13:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		01/30/23 12:02	02/23/23 13:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		01/30/23 12:02	02/23/23 13:38	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.50	ng/L		01/30/23 12:02	02/23/23 13:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		01/30/23 12:02	02/23/23 13:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		01/30/23 12:02	02/23/23 13:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		01/30/23 12:02	02/23/23 13:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		01/30/23 12:02	02/23/23 13:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/30/23 12:02	02/23/23 13:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		01/30/23 12:02	02/23/23 13:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		01/30/23 12:02	02/23/23 13:38	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	68		50 - 150				01/30/23 12:02	02/23/23 13:38	1
13C4 PFHpA	69		50 - 150				01/30/23 12:02	02/23/23 13:38	1
13C4 PFOA	69		50 - 150				01/30/23 12:02	02/23/23 13:38	1
13C5 PFNA	67		50 - 150				01/30/23 12:02	02/23/23 13:38	1
13C2 PFDA	65		50 - 150				01/30/23 12:02	02/23/23 13:38	1
13C2 PFUnA	52		50 - 150				01/30/23 12:02	02/23/23 13:38	1
13C2 PFDoA	48	*5-	50 - 150				01/30/23 12:02	02/23/23 13:38	1
13C2 PFTeDA	47	*5-	50 - 150				01/30/23 12:02	02/23/23 13:38	1
13C3 PFBS	61		50 - 150				01/30/23 12:02	02/23/23 13:38	1
18O2 PFHxS	62		50 - 150				01/30/23 12:02	02/23/23 13:38	1
13C4 PFOS	56		50 - 150				01/30/23 12:02	02/23/23 13:38	1
d3-NMeFOSAA	46	*5-	50 - 150				01/30/23 12:02	02/23/23 13:38	1
d5-NEtFOSAA	47	*5-	50 - 150				01/30/23 12:02	02/23/23 13:38	1
13C3 HFPO-DA	60		50 - 150				01/30/23 12:02	02/23/23 13:38	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

**Client Sample ID: PW-105**

**Lab Sample ID: 320-96369-4**

**Date Collected: 01/20/23 15:25**

**Matrix: Water**

**Date Received: 01/27/23 15:18**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		01/30/23 12:02	02/23/23 13:48	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		01/30/23 12:02	02/23/23 13:48	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		01/30/23 12:02	02/23/23 13:48	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/30/23 12:02	02/23/23 13:48	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		01/30/23 12:02	02/23/23 13:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		01/30/23 12:02	02/23/23 13:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		01/30/23 12:02	02/23/23 13:48	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		01/30/23 12:02	02/23/23 13:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		01/30/23 12:02	02/23/23 13:48	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		01/30/23 12:02	02/23/23 13:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		01/30/23 12:02	02/23/23 13:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		01/30/23 12:02	02/23/23 13:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		01/30/23 12:02	02/23/23 13:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		01/30/23 12:02	02/23/23 13:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		01/30/23 12:02	02/23/23 13:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/30/23 12:02	02/23/23 13:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		01/30/23 12:02	02/23/23 13:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		01/30/23 12:02	02/23/23 13:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	105		50 - 150	01/30/23 12:02	02/23/23 13:48	1
13C4 PFHpA	104		50 - 150	01/30/23 12:02	02/23/23 13:48	1
13C4 PFOA	106		50 - 150	01/30/23 12:02	02/23/23 13:48	1
13C5 PFNA	103		50 - 150	01/30/23 12:02	02/23/23 13:48	1
13C2 PFDA	105		50 - 150	01/30/23 12:02	02/23/23 13:48	1
13C2 PFUnA	98		50 - 150	01/30/23 12:02	02/23/23 13:48	1
13C2 PFDoA	100		50 - 150	01/30/23 12:02	02/23/23 13:48	1
13C2 PFTeDA	95		50 - 150	01/30/23 12:02	02/23/23 13:48	1
13C3 PFBS	94		50 - 150	01/30/23 12:02	02/23/23 13:48	1
18O2 PFHxS	99		50 - 150	01/30/23 12:02	02/23/23 13:48	1
13C4 PFOS	90		50 - 150	01/30/23 12:02	02/23/23 13:48	1
d3-NMeFOSAA	87		50 - 150	01/30/23 12:02	02/23/23 13:48	1
d5-NEtFOSAA	98		50 - 150	01/30/23 12:02	02/23/23 13:48	1
13C3 HFPO-DA	93		50 - 150	01/30/23 12:02	02/23/23 13:48	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

**Client Sample ID: PW-5105**

**Lab Sample ID: 320-96369-5**

**Date Collected: 01/20/23 15:55**

**Matrix: Water**

**Date Received: 01/27/23 15:18**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50	ng/L		01/30/23 12:02	02/23/23 13:58	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		01/30/23 12:02	02/23/23 13:58	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		01/30/23 12:02	02/23/23 13:58	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		01/30/23 12:02	02/23/23 13:58	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		01/30/23 12:02	02/23/23 13:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95	ng/L		01/30/23 12:02	02/23/23 13:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		01/30/23 12:02	02/23/23 13:58	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/30/23 12:02	02/23/23 13:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.63	ng/L		01/30/23 12:02	02/23/23 13:58	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		01/30/23 12:02	02/23/23 13:58	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.49	ng/L		01/30/23 12:02	02/23/23 13:58	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		01/30/23 12:02	02/23/23 13:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	1.0	ng/L		01/30/23 12:02	02/23/23 13:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	1.1	ng/L		01/30/23 12:02	02/23/23 13:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		01/30/23 12:02	02/23/23 13:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/30/23 12:02	02/23/23 13:58	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		01/30/23 12:02	02/23/23 13:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		01/30/23 12:02	02/23/23 13:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		50 - 150	01/30/23 12:02	02/23/23 13:58	1
13C4 PFHpA	86		50 - 150	01/30/23 12:02	02/23/23 13:58	1
13C4 PFOA	86		50 - 150	01/30/23 12:02	02/23/23 13:58	1
13C5 PFNA	80		50 - 150	01/30/23 12:02	02/23/23 13:58	1
13C2 PFDA	90		50 - 150	01/30/23 12:02	02/23/23 13:58	1
13C2 PFUnA	80		50 - 150	01/30/23 12:02	02/23/23 13:58	1
13C2 PFDoA	79		50 - 150	01/30/23 12:02	02/23/23 13:58	1
13C2 PFTeDA	77		50 - 150	01/30/23 12:02	02/23/23 13:58	1
13C3 PFBS	78		50 - 150	01/30/23 12:02	02/23/23 13:58	1
18O2 PFHxS	81		50 - 150	01/30/23 12:02	02/23/23 13:58	1
13C4 PFOS	73		50 - 150	01/30/23 12:02	02/23/23 13:58	1
d3-NMeFOSAA	71		50 - 150	01/30/23 12:02	02/23/23 13:58	1
d5-NEtFOSAA	78		50 - 150	01/30/23 12:02	02/23/23 13:58	1
13C3 HFPO-DA	75		50 - 150	01/30/23 12:02	02/23/23 13:58	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

**Client Sample ID: PW-069**

**Lab Sample ID: 320-96369-6**

**Date Collected: 01/20/23 13:40**

**Matrix: Water**

**Date Received: 01/27/23 15:18**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		01/30/23 12:02	02/23/23 14:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		01/30/23 12:02	02/23/23 14:08	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.74	ng/L		01/30/23 12:02	02/23/23 14:08	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		01/30/23 12:02	02/23/23 14:08	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		01/30/23 12:02	02/23/23 14:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.96	ng/L		01/30/23 12:02	02/23/23 14:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		01/30/23 12:02	02/23/23 14:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		01/30/23 12:02	02/23/23 14:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		01/30/23 12:02	02/23/23 14:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		01/30/23 12:02	02/23/23 14:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		01/30/23 12:02	02/23/23 14:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47	ng/L		01/30/23 12:02	02/23/23 14:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		01/30/23 12:02	02/23/23 14:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		01/30/23 12:02	02/23/23 14:08	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		01/30/23 12:02	02/23/23 14:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/30/23 12:02	02/23/23 14:08	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		01/30/23 12:02	02/23/23 14:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		01/30/23 12:02	02/23/23 14:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		50 - 150	01/30/23 12:02	02/23/23 14:08	1
13C4 PFHpA	102		50 - 150	01/30/23 12:02	02/23/23 14:08	1
13C4 PFOA	103		50 - 150	01/30/23 12:02	02/23/23 14:08	1
13C5 PFNA	99		50 - 150	01/30/23 12:02	02/23/23 14:08	1
13C2 PFDA	106		50 - 150	01/30/23 12:02	02/23/23 14:08	1
13C2 PFUnA	97		50 - 150	01/30/23 12:02	02/23/23 14:08	1
13C2 PFDoA	102		50 - 150	01/30/23 12:02	02/23/23 14:08	1
13C2 PFTeDA	97		50 - 150	01/30/23 12:02	02/23/23 14:08	1
13C3 PFBS	95		50 - 150	01/30/23 12:02	02/23/23 14:08	1
18O2 PFHxS	99		50 - 150	01/30/23 12:02	02/23/23 14:08	1
13C4 PFOS	95		50 - 150	01/30/23 12:02	02/23/23 14:08	1
d3-NMeFOSAA	94		50 - 150	01/30/23 12:02	02/23/23 14:08	1
d5-NEtFOSAA	99		50 - 150	01/30/23 12:02	02/23/23 14:08	1
13C3 HFPO-DA	90		50 - 150	01/30/23 12:02	02/23/23 14:08	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

**Client Sample ID: PW-077**

**Lab Sample ID: 320-96369-7**

**Date Collected: 01/23/23 11:50**

**Matrix: Water**

**Date Received: 01/27/23 15:18**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.54</b>	<b>J</b>	1.7	0.51	ng/L		01/30/23 12:02	02/23/23 14:18	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22	ng/L		01/30/23 12:02	02/23/23 14:18	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.74	ng/L		01/30/23 12:02	02/23/23 14:18	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		01/30/23 12:02	02/23/23 14:18	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.27	ng/L		01/30/23 12:02	02/23/23 14:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.96	ng/L		01/30/23 12:02	02/23/23 14:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		01/30/23 12:02	02/23/23 14:18	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		01/30/23 12:02	02/23/23 14:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.64	ng/L		01/30/23 12:02	02/23/23 14:18	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17	ng/L		01/30/23 12:02	02/23/23 14:18	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.50	ng/L		01/30/23 12:02	02/23/23 14:18	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47	ng/L		01/30/23 12:02	02/23/23 14:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.0	ng/L		01/30/23 12:02	02/23/23 14:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		01/30/23 12:02	02/23/23 14:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.21	ng/L		01/30/23 12:02	02/23/23 14:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		01/30/23 12:02	02/23/23 14:18	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.28	ng/L		01/30/23 12:02	02/23/23 14:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.35	ng/L		01/30/23 12:02	02/23/23 14:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	68		50 - 150	01/30/23 12:02	02/23/23 14:18	1
13C4 PFHpA	69		50 - 150	01/30/23 12:02	02/23/23 14:18	1
13C4 PFOA	70		50 - 150	01/30/23 12:02	02/23/23 14:18	1
13C5 PFNA	67		50 - 150	01/30/23 12:02	02/23/23 14:18	1
13C2 PFDA	69		50 - 150	01/30/23 12:02	02/23/23 14:18	1
13C2 PFUnA	57		50 - 150	01/30/23 12:02	02/23/23 14:18	1
13C2 PFDoA	53		50 - 150	01/30/23 12:02	02/23/23 14:18	1
13C2 PFTeDA	50		50 - 150	01/30/23 12:02	02/23/23 14:18	1
13C3 PFBS	61		50 - 150	01/30/23 12:02	02/23/23 14:18	1
18O2 PFHxS	65		50 - 150	01/30/23 12:02	02/23/23 14:18	1
13C4 PFOS	61		50 - 150	01/30/23 12:02	02/23/23 14:18	1
d3-NMeFOSAA	52		50 - 150	01/30/23 12:02	02/23/23 14:18	1
d5-NEtFOSAA	52		50 - 150	01/30/23 12:02	02/23/23 14:18	1
13C3 HFPO-DA	63		50 - 150	01/30/23 12:02	02/23/23 14:18	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

**Client Sample ID: PW-130**

**Lab Sample ID: 320-96369-8**

**Date Collected: 01/24/23 13:00**

**Matrix: Water**

**Date Received: 01/27/23 15:18**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54	ng/L		01/30/23 12:02	02/23/23 14:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		01/30/23 12:02	02/23/23 14:38	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		01/30/23 12:02	02/23/23 14:38	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		01/30/23 12:02	02/23/23 14:38	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		01/30/23 12:02	02/23/23 14:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		01/30/23 12:02	02/23/23 14:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		01/30/23 12:02	02/23/23 14:38	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		01/30/23 12:02	02/23/23 14:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		01/30/23 12:02	02/23/23 14:38	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.22</b>	<b>J</b>	1.9	0.19	ng/L		01/30/23 12:02	02/23/23 14:38	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		01/30/23 12:02	02/23/23 14:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		01/30/23 12:02	02/23/23 14:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		01/30/23 12:02	02/23/23 14:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		01/30/23 12:02	02/23/23 14:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		01/30/23 12:02	02/23/23 14:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		01/30/23 12:02	02/23/23 14:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		01/30/23 12:02	02/23/23 14:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		01/30/23 12:02	02/23/23 14:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	103		50 - 150	01/30/23 12:02	02/23/23 14:38	1
13C4 PFHpA	106		50 - 150	01/30/23 12:02	02/23/23 14:38	1
13C4 PFOA	108		50 - 150	01/30/23 12:02	02/23/23 14:38	1
13C5 PFNA	107		50 - 150	01/30/23 12:02	02/23/23 14:38	1
13C2 PFDA	112		50 - 150	01/30/23 12:02	02/23/23 14:38	1
13C2 PFUnA	99		50 - 150	01/30/23 12:02	02/23/23 14:38	1
13C2 PFDoA	115		50 - 150	01/30/23 12:02	02/23/23 14:38	1
13C2 PFTeDA	105		50 - 150	01/30/23 12:02	02/23/23 14:38	1
13C3 PFBS	93		50 - 150	01/30/23 12:02	02/23/23 14:38	1
18O2 PFHxS	97		50 - 150	01/30/23 12:02	02/23/23 14:38	1
13C4 PFOS	92		50 - 150	01/30/23 12:02	02/23/23 14:38	1
d3-NMeFOSAA	91		50 - 150	01/30/23 12:02	02/23/23 14:38	1
d5-NEtFOSAA	101		50 - 150	01/30/23 12:02	02/23/23 14:38	1
13C3 HFPO-DA	98		50 - 150	01/30/23 12:02	02/23/23 14:38	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-96369-1	PW-047	104	102	106	101	108	99	104	99
320-96369-2	PW-089	84	82	83	79	80	64	58	58
320-96369-3	PW-125	68	69	69	67	65	52	48 *5-	47 *5-
320-96369-4	PW-105	105	104	106	103	105	98	100	95
320-96369-5	PW-5105	88	86	86	80	90	80	79	77
320-96369-6	PW-069	104	102	103	99	106	97	102	97
320-96369-7	PW-077	68	69	70	67	69	57	53	50
320-96369-8	PW-130	103	106	108	107	112	99	115	105
LCS 320-650400/2-A	Lab Control Sample	108	109	109	108	109	102	109	104
LCSD 320-650400/3-A	Lab Control Sample Dup	104	100	105	101	113	100	103	99
MB 320-650400/1-A	Method Blank	106	105	107	100	105	96	100	98

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-96369-1	PW-047	96	100	95	93	104	88
320-96369-2	PW-089	75	77	68	56	59	73
320-96369-3	PW-125	61	62	56	46 *5-	47 *5-	60
320-96369-4	PW-105	94	99	90	87	98	93
320-96369-5	PW-5105	78	81	73	71	78	75
320-96369-6	PW-069	95	99	95	94	99	90
320-96369-7	PW-077	61	65	61	52	52	63
320-96369-8	PW-130	93	97	92	91	101	98
LCS 320-650400/2-A	Lab Control Sample	93	102	94	93	104	102
LCSD 320-650400/3-A	Lab Control Sample Dup	97	98	92	94	103	99
MB 320-650400/1-A	Method Blank	96	97	87	89	97	100

#### Surrogate Legend

PFHxA = 13C2 PFHxA  
C4PFHA = 13C4 PFHpA  
PFOA = 13C4 PFOA  
PFNA = 13C5 PFNA  
PFDA = 13C2 PFDA  
PFUnA = 13C2 PFUnA  
PFDoA = 13C2 PFDoA  
PFTDA = 13C2 PFTeDA  
C3PFBS = 13C3 PFBS  
PFHxS = 18O2 PFHxS  
PFOS = 13C4 PFOS  
d3NMFOS = d3-NMeFOSAA  
d5NEFOS = d5-NEtFOSAA  
HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-650400/1-A**  
**Matrix: Water**  
**Analysis Batch: 655864**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 650400**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		01/30/23 12:02	02/23/23 12:47	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		01/30/23 12:02	02/23/23 12:47	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		01/30/23 12:02	02/23/23 12:47	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		01/30/23 12:02	02/23/23 12:47	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		01/30/23 12:02	02/23/23 12:47	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		01/30/23 12:02	02/23/23 12:47	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		01/30/23 12:02	02/23/23 12:47	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		01/30/23 12:02	02/23/23 12:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		01/30/23 12:02	02/23/23 12:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		01/30/23 12:02	02/23/23 12:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		01/30/23 12:02	02/23/23 12:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		01/30/23 12:02	02/23/23 12:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		01/30/23 12:02	02/23/23 12:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		01/30/23 12:02	02/23/23 12:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		01/30/23 12:02	02/23/23 12:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		01/30/23 12:02	02/23/23 12:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		01/30/23 12:02	02/23/23 12:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		01/30/23 12:02	02/23/23 12:47	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	106		50 - 150	01/30/23 12:02	02/23/23 12:47	1
13C4 PFHpA	105		50 - 150	01/30/23 12:02	02/23/23 12:47	1
13C4 PFOA	107		50 - 150	01/30/23 12:02	02/23/23 12:47	1
13C5 PFNA	100		50 - 150	01/30/23 12:02	02/23/23 12:47	1
13C2 PFDA	105		50 - 150	01/30/23 12:02	02/23/23 12:47	1
13C2 PFUnA	96		50 - 150	01/30/23 12:02	02/23/23 12:47	1
13C2 PFDoA	100		50 - 150	01/30/23 12:02	02/23/23 12:47	1
13C2 PFTeDA	98		50 - 150	01/30/23 12:02	02/23/23 12:47	1
13C3 PFBS	96		50 - 150	01/30/23 12:02	02/23/23 12:47	1
18O2 PFHxS	97		50 - 150	01/30/23 12:02	02/23/23 12:47	1
13C4 PFOS	87		50 - 150	01/30/23 12:02	02/23/23 12:47	1
d3-NMeFOSAA	89		50 - 150	01/30/23 12:02	02/23/23 12:47	1
d5-NEtFOSAA	97		50 - 150	01/30/23 12:02	02/23/23 12:47	1
13C3 HFPO-DA	100		50 - 150	01/30/23 12:02	02/23/23 12:47	1

**Lab Sample ID: LCS 320-650400/2-A**  
**Matrix: Water**  
**Analysis Batch: 655864**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 650400**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	40.0		ng/L		100	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	40.4		ng/L		101	71 - 133
Perfluorononanoic acid (PFNA)	40.0	41.2		ng/L		103	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-650400/2-A**  
**Matrix: Water**  
**Analysis Batch: 655864**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 650400**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	42.0		ng/L		105	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	45.3		ng/L		113	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	41.1		ng/L		103	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	39.6		ng/L		99	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.1		ng/L		98	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	38.4		ng/L		108	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.7		ng/L		95	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	39.2		ng/L		105	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.2		ng/L		103	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.8		ng/L		100	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	38.4		ng/L		103	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	37.8		ng/L		94	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	37.9		ng/L		100	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.8		ng/L		116	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	108		50 - 150
13C4 PFHpA	109		50 - 150
13C4 PFOA	109		50 - 150
13C5 PFNA	108		50 - 150
13C2 PFDA	109		50 - 150
13C2 PFUnA	102		50 - 150
13C2 PFDoA	109		50 - 150
13C2 PFTeDA	104		50 - 150
13C3 PFBS	93		50 - 150
18O2 PFHxS	102		50 - 150
13C4 PFOS	94		50 - 150
d3-NMeFOSAA	93		50 - 150
d5-NEtFOSAA	104		50 - 150
13C3 HFPO-DA	102		50 - 150

**Lab Sample ID: LCSD 320-650400/3-A**  
**Matrix: Water**  
**Analysis Batch: 655864**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 650400**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	40.8		ng/L		102	72 - 129	3 30
Perfluoroheptanoic acid (PFHpA)	40.0	42.0		ng/L		105	72 - 130	5 30
Perfluorooctanoic acid (PFOA)	40.0	42.0		ng/L		105	71 - 133	4 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-650400/3-A**  
**Matrix: Water**  
**Analysis Batch: 655864**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 650400**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	44.9		ng/L		112	69 - 130	9	30
Perfluorodecanoic acid (PFDA)	40.0	40.1		ng/L		100	71 - 129	4	30
Perfluoroundecanoic acid (PFUnA)	40.0	49.6		ng/L		124	69 - 133	9	30
Perfluorododecanoic acid (PFDoA)	40.0	42.4		ng/L		106	72 - 134	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	42.3		ng/L		106	65 - 144	7	30
Perfluorotetradecanoic acid (PFTeA)	40.0	42.6		ng/L		107	71 - 132	9	30
Perfluorobutanesulfonic acid (PFBS)	35.5	39.0		ng/L		110	72 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.8		ng/L		101	68 - 131	6	30
Perfluorooctanesulfonic acid (PFOS)	37.2	42.4		ng/L		114	65 - 140	8	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.4		ng/L		103	65 - 136	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.2		ng/L		105	61 - 135	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.4		ng/L		106	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.5		ng/L		106	72 - 132	12	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	39.7		ng/L		105	76 - 136	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.0		ng/L		119	81 - 141	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	104		50 - 150
13C4 PFHpA	100		50 - 150
13C4 PFOA	105		50 - 150
13C5 PFNA	101		50 - 150
13C2 PFDA	113		50 - 150
13C2 PFUnA	100		50 - 150
13C2 PFDoA	103		50 - 150
13C2 PFTeDA	99		50 - 150
13C3 PFBS	97		50 - 150
18O2 PFHxS	98		50 - 150
13C4 PFOS	92		50 - 150
d3-NMeFOSAA	94		50 - 150
d5-NEtFOSAA	103		50 - 150
13C3 HFPO-DA	99		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-96369-1

## LCMS

### Prep Batch: 650400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96369-1	PW-047	Total/NA	Water	3535	
320-96369-2	PW-089	Total/NA	Water	3535	
320-96369-3	PW-125	Total/NA	Water	3535	
320-96369-4	PW-105	Total/NA	Water	3535	
320-96369-5	PW-5105	Total/NA	Water	3535	
320-96369-6	PW-069	Total/NA	Water	3535	
320-96369-7	PW-077	Total/NA	Water	3535	
320-96369-8	PW-130	Total/NA	Water	3535	
MB 320-650400/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-650400/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-650400/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 655864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96369-1	PW-047	Total/NA	Water	EPA 537(Mod)	650400
320-96369-2	PW-089	Total/NA	Water	EPA 537(Mod)	650400
320-96369-3	PW-125	Total/NA	Water	EPA 537(Mod)	650400
320-96369-4	PW-105	Total/NA	Water	EPA 537(Mod)	650400
320-96369-5	PW-5105	Total/NA	Water	EPA 537(Mod)	650400
320-96369-6	PW-069	Total/NA	Water	EPA 537(Mod)	650400
320-96369-7	PW-077	Total/NA	Water	EPA 537(Mod)	650400
320-96369-8	PW-130	Total/NA	Water	EPA 537(Mod)	650400
MB 320-650400/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	650400
LCS 320-650400/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	650400
LCSD 320-650400/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	650400

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

**Client Sample ID: PW-047**

**Date Collected: 01/17/23 14:20**

**Date Received: 01/27/23 15:18**

**Lab Sample ID: 320-96369-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			297.5 mL	10.0 mL	650400	01/30/23 12:02	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	655864	02/23/23 13:17	K1S	EET SAC

**Client Sample ID: PW-089**

**Date Collected: 01/19/23 14:40**

**Date Received: 01/27/23 15:18**

**Lab Sample ID: 320-96369-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			294.4 mL	10.0 mL	650400	01/30/23 12:02	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	655864	02/23/23 13:28	K1S	EET SAC

**Client Sample ID: PW-125**

**Date Collected: 01/20/23 15:00**

**Date Received: 01/27/23 15:18**

**Lab Sample ID: 320-96369-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287.3 mL	10.0 mL	650400	01/30/23 12:02	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	655864	02/23/23 13:38	K1S	EET SAC

**Client Sample ID: PW-105**

**Date Collected: 01/20/23 15:25**

**Date Received: 01/27/23 15:18**

**Lab Sample ID: 320-96369-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			284.6 mL	10.0 mL	650400	01/30/23 12:02	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	655864	02/23/23 13:48	K1S	EET SAC

**Client Sample ID: PW-5105**

**Date Collected: 01/20/23 15:55**

**Date Received: 01/27/23 15:18**

**Lab Sample ID: 320-96369-5**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			289 mL	10.0 mL	650400	01/30/23 12:02	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	655864	02/23/23 13:58	K1S	EET SAC

**Client Sample ID: PW-069**

**Date Collected: 01/20/23 13:40**

**Date Received: 01/27/23 15:18**

**Lab Sample ID: 320-96369-6**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			285.5 mL	10.0 mL	650400	01/30/23 12:02	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	655864	02/23/23 14:08	K1S	EET SAC

Eurofins Sacramento

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

**Client Sample ID: PW-077**

**Date Collected: 01/23/23 11:50**

**Date Received: 01/27/23 15:18**

**Lab Sample ID: 320-96369-7**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			286.3 mL	10.0 mL	650400	01/30/23 12:02	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	655864	02/23/23 14:18	K1S	EET SAC

**Client Sample ID: PW-130**

**Date Collected: 01/24/23 13:00**

**Date Received: 01/27/23 15:18**

**Lab Sample ID: 320-96369-8**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.5 mL	10.0 mL	650400	01/30/23 12:02	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	655864	02/23/23 14:38	K1S	EET SAC

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96369-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-96369-1	PW-047	Water	01/17/23 14:20	01/27/23 15:18
320-96369-2	PW-089	Water	01/19/23 14:40	01/27/23 15:18
320-96369-3	PW-125	Water	01/20/23 15:00	01/27/23 15:18
320-96369-4	PW-105	Water	01/20/23 15:25	01/27/23 15:18
320-96369-5	PW-5105	Water	01/20/23 15:55	01/27/23 15:18
320-96369-6	PW-069	Water	01/20/23 13:40	01/27/23 15:18
320-96369-7	PW-077	Water	01/23/23 11:50	01/27/23 15:18
320-96369-8	PW-130	Water	01/24/23 13:00	01/27/23 15:18

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



## Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-96369-1

**Login Number: 96369**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Pratali, Sandra A**

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

# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Jessa Tibbetts	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-96369-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	2/26/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A

Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?

Yes  No  N/A

Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A

Comments:

- b. Were the correct analyses requested?

Yes  No  N/A

Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.

Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 5.0°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: All Sample Receipt Checklist questions are “true” or “N/A” except for “Is the Field Sampler’s name present on COC?” was denoted as “false”. It was noted in the comment section that the Field Sampler’s name is not requested on the COC.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method EPA 537(Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended

limit: PW-125 (320-96369-3). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-650400.
- Method 3535: The following samples were light yellow and contained a thin layer of sediment at the bottom of the bottle prior to extraction:
- PW-089 (320-96369-2), PW-105 (320-96369-4), PW-5105 (320-96369-5) and PW-077 (320-96369-7). preparation batch 320-650400
- Method 3535: The following samples were light yellow prior to extraction: PW-047 (320-96369-1), PW-125 (320-96369-3) and PW-069 (320-96369-6). preparation batch 320-650400
- Method 3535: During the solid phase extraction process, the following samples contained non-settable particulates which clogged the solid phase extraction column: PW-089 (320-96369-2), PW-125 (320-96369-3), PW-5105 (320-96369-5) and PW-077 (320-96369-7). preparation batch 320-650400

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

c. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

b. Are all applicable holding times met?

Yes  No  N/A

Comments:

c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

- a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

- b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS  
**Lab Report No.:** 320-96369-1

Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were not reported due to sample volume.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if

applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: NA; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments: IDAs were reported for the PFAS project samples.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

Comments: However, the IDA %R associated sample *PW-125* is outside QC limits for the following IDAs:  $^{13}\text{C}_2\text{-PFDoA}$ ,  $^{13}\text{C}_2\text{-PFTeDA}$ ,  $\text{d}_3\text{-NMeFOSAA}$ , and  $\text{d}_5\text{-NEtFOSAA}$ .

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: According to the laboratory, generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in project sample *PW-125*. Per our data validation program for the Statewide projects, we consider the results for the associated results to be estimated. The associated analytes include

PFDoA, PFTrDA, PFTeA, NMeFOSAA, and NEtFOSAA. These analytes were not detected in the project samples *PW-125* and have been flagged as "UJ" in the analytical database/table.

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments: A trip blank is not required for PFAS analysis.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: A trip blank was not submitted with this work order.

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Is one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. Field duplicate pair *PW-105* and *PW-5105* was submitted with this work order.

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS  
**Lab Report No.:** 320-96369-1

Comments: The RPDs could not be calculated for the PFAS analytes, because they were not detected in either sample of the duplicate set.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

- iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

- a. Are they defined and appropriate?

Yes  No  N/A

Comments:



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 2/20/2023 10:44:31 AM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-96541-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
2/20/2023 10:44:31 AM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	10
QC Sample Results . . . . .	11
QC Association Summary . . . . .	14
Lab Chronicle . . . . .	15
Certification Summary . . . . .	16
Method Summary . . . . .	17
Sample Summary . . . . .	18
Chain of Custody . . . . .	19
Receipt Checklists . . . . .	20

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

---

## Job ID: 320-96541-1

---

### Laboratory: Eurofins Sacramento

#### Narrative

---

#### Job Narrative 320-96541-1

#### Receipt

The samples were received on 2/3/2023 6:30 PM. 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 3.1° C.

#### LCMS

Method EPA 537(Mod): The continuing calibration verification (CCV) associated with batch 320-653471 recovered above the upper control limit for isotope dilution analyte (IDA) d3-NMeFOSAA and d5-NEtFOSAA. The associated target analytes, N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) and N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) were within control limits in the CCV, therefore the data is reported. PW-127 (320-96541-1), PW-5127 (320-96541-2), PW-221 (320-96541-3), (CCV 320-653471/1) and (CCV 320-653471/12)

Method EPA 537(Mod): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples: PW-5127 (320-96541-2) and PW-221 (320-96541-3). 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 320-652219.

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

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

## Client Sample ID: PW-127

## Lab Sample ID: 320-96541-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.83	J	2.0	0.57	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.45	J	2.0	0.20	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-5127

## Lab Sample ID: 320-96541-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.73	J	1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.48	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-221

## Lab Sample ID: 320-96541-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	10		1.9	0.54	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.52	J	1.9	0.23	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.1	J	1.9	0.79	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.9	0.19	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.57	J	1.9	0.50	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

**Client Sample ID: PW-127**

**Lab Sample ID: 320-96541-1**

**Date Collected: 01/26/23 13:20**

**Matrix: Water**

**Date Received: 02/03/23 18:30**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.83</b>	<b>J</b>	2.0	0.57	ng/L		02/07/23 05:47	02/14/23 06:47	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.24	ng/L		02/07/23 05:47	02/14/23 06:47	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.83	ng/L		02/07/23 05:47	02/14/23 06:47	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.26	ng/L		02/07/23 05:47	02/14/23 06:47	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		02/07/23 05:47	02/14/23 06:47	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/07/23 05:47	02/14/23 06:47	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54	ng/L		02/07/23 05:47	02/14/23 06:47	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/07/23 05:47	02/14/23 06:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.71	ng/L		02/07/23 05:47	02/14/23 06:47	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.45</b>	<b>J</b>	2.0	0.20	ng/L		02/07/23 05:47	02/14/23 06:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.56	ng/L		02/07/23 05:47	02/14/23 06:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.53	ng/L		02/07/23 05:47	02/14/23 06:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.9	1.2	ng/L		02/07/23 05:47	02/14/23 06:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.9	1.3	ng/L		02/07/23 05:47	02/14/23 06:47	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.23	ng/L		02/07/23 05:47	02/14/23 06:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.9	1.5	ng/L		02/07/23 05:47	02/14/23 06:47	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.31	ng/L		02/07/23 05:47	02/14/23 06:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.39	ng/L		02/07/23 05:47	02/14/23 06:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		50 - 150	02/07/23 05:47	02/14/23 06:47	1
13C4 PFHpA	112		50 - 150	02/07/23 05:47	02/14/23 06:47	1
13C4 PFOA	107		50 - 150	02/07/23 05:47	02/14/23 06:47	1
13C5 PFNA	109		50 - 150	02/07/23 05:47	02/14/23 06:47	1
13C2 PFDA	104		50 - 150	02/07/23 05:47	02/14/23 06:47	1
13C2 PFUnA	109		50 - 150	02/07/23 05:47	02/14/23 06:47	1
13C2 PFDoA	103		50 - 150	02/07/23 05:47	02/14/23 06:47	1
13C2 PFTeDA	105		50 - 150	02/07/23 05:47	02/14/23 06:47	1
13C3 PFBS	107		50 - 150	02/07/23 05:47	02/14/23 06:47	1
18O2 PFHxS	108		50 - 150	02/07/23 05:47	02/14/23 06:47	1
13C4 PFOS	105		50 - 150	02/07/23 05:47	02/14/23 06:47	1
d3-NMeFOSAA	141		50 - 150	02/07/23 05:47	02/14/23 06:47	1
d5-NEtFOSAA	144		50 - 150	02/07/23 05:47	02/14/23 06:47	1
13C3 HFPO-DA	101		50 - 150	02/07/23 05:47	02/14/23 06:47	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

**Client Sample ID: PW-5127**

**Lab Sample ID: 320-96541-2**

Date Collected: 01/26/23 13:50

Matrix: Water

Date Received: 02/03/23 18:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>0.73</b>	<b>J</b>	1.9	0.54	ng/L		02/07/23 05:47	02/14/23 06:57	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23	ng/L		02/07/23 05:47	02/14/23 06:57	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.79	ng/L		02/07/23 05:47	02/14/23 06:57	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/07/23 05:47	02/14/23 06:57	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/07/23 05:47	02/14/23 06:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/07/23 05:47	02/14/23 06:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		02/07/23 05:47	02/14/23 06:57	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/07/23 05:47	02/14/23 06:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		02/07/23 05:47	02/14/23 06:57	1
<b>Perfluorobutanesulfonic acid (PFBS)</b>	<b>0.48</b>	<b>J</b>	1.9	0.19	ng/L		02/07/23 05:47	02/14/23 06:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		02/07/23 05:47	02/14/23 06:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.50	ng/L		02/07/23 05:47	02/14/23 06:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/07/23 05:47	02/14/23 06:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		02/07/23 05:47	02/14/23 06:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		02/07/23 05:47	02/14/23 06:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		02/07/23 05:47	02/14/23 06:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/07/23 05:47	02/14/23 06:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		02/07/23 05:47	02/14/23 06:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	112		50 - 150	02/07/23 05:47	02/14/23 06:57	1
13C4 PFHpA	113		50 - 150	02/07/23 05:47	02/14/23 06:57	1
13C4 PFOA	110		50 - 150	02/07/23 05:47	02/14/23 06:57	1
13C5 PFNA	116		50 - 150	02/07/23 05:47	02/14/23 06:57	1
13C2 PFDA	120		50 - 150	02/07/23 05:47	02/14/23 06:57	1
13C2 PFUnA	111		50 - 150	02/07/23 05:47	02/14/23 06:57	1
13C2 PFDoA	121		50 - 150	02/07/23 05:47	02/14/23 06:57	1
13C2 PFTeDA	119		50 - 150	02/07/23 05:47	02/14/23 06:57	1
13C3 PFBS	112		50 - 150	02/07/23 05:47	02/14/23 06:57	1
18O2 PFHxS	112		50 - 150	02/07/23 05:47	02/14/23 06:57	1
13C4 PFOS	113		50 - 150	02/07/23 05:47	02/14/23 06:57	1
d3-NMeFOSAA	160	*5+	50 - 150	02/07/23 05:47	02/14/23 06:57	1
d5-NEtFOSAA	165	*5+	50 - 150	02/07/23 05:47	02/14/23 06:57	1
13C3 HFPO-DA	108		50 - 150	02/07/23 05:47	02/14/23 06:57	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

**Client Sample ID: PW-221**

**Lab Sample ID: 320-96541-3**

Date Collected: 02/01/23 12:20

Matrix: Water

Date Received: 02/03/23 18:30

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	10		1.9	0.54	ng/L		02/07/23 05:47	02/14/23 07:07	1
Perfluoroheptanoic acid (PFHpA)	0.52	J	1.9	0.23	ng/L		02/07/23 05:47	02/14/23 07:07	1
Perfluorooctanoic acid (PFOA)	1.1	J	1.9	0.79	ng/L		02/07/23 05:47	02/14/23 07:07	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/07/23 05:47	02/14/23 07:07	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/07/23 05:47	02/14/23 07:07	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/07/23 05:47	02/14/23 07:07	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51	ng/L		02/07/23 05:47	02/14/23 07:07	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/07/23 05:47	02/14/23 07:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.68	ng/L		02/07/23 05:47	02/14/23 07:07	1
Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.9	0.19	ng/L		02/07/23 05:47	02/14/23 07:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.53	ng/L		02/07/23 05:47	02/14/23 07:07	1
Perfluorooctanesulfonic acid (PFOS)	0.57	J	1.9	0.50	ng/L		02/07/23 05:47	02/14/23 07:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		02/07/23 05:47	02/14/23 07:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		02/07/23 05:47	02/14/23 07:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.22	ng/L		02/07/23 05:47	02/14/23 07:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.7	1.4	ng/L		02/07/23 05:47	02/14/23 07:07	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/07/23 05:47	02/14/23 07:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.37	ng/L		02/07/23 05:47	02/14/23 07:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	114		50 - 150	02/07/23 05:47	02/14/23 07:07	1
13C4 PFHpA	115		50 - 150	02/07/23 05:47	02/14/23 07:07	1
13C4 PFOA	112		50 - 150	02/07/23 05:47	02/14/23 07:07	1
13C5 PFNA	114		50 - 150	02/07/23 05:47	02/14/23 07:07	1
13C2 PFDA	118		50 - 150	02/07/23 05:47	02/14/23 07:07	1
13C2 PFUnA	112		50 - 150	02/07/23 05:47	02/14/23 07:07	1
13C2 PFDoA	118		50 - 150	02/07/23 05:47	02/14/23 07:07	1
13C2 PFTeDA	117		50 - 150	02/07/23 05:47	02/14/23 07:07	1
13C3 PFBS	110		50 - 150	02/07/23 05:47	02/14/23 07:07	1
18O2 PFHxS	115		50 - 150	02/07/23 05:47	02/14/23 07:07	1
13C4 PFOS	113		50 - 150	02/07/23 05:47	02/14/23 07:07	1
d3-NMeFOSAA	160	*5+	50 - 150	02/07/23 05:47	02/14/23 07:07	1
d5-NEtFOSAA	163	*5+	50 - 150	02/07/23 05:47	02/14/23 07:07	1
13C3 HFPO-DA	104		50 - 150	02/07/23 05:47	02/14/23 07:07	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-96541-1	PW-127	102	112	107	109	104	109	103	105
320-96541-2	PW-5127	112	113	110	116	120	111	121	119
320-96541-3	PW-221	114	115	112	114	118	112	118	117
LCS 320-652219/2-A	Lab Control Sample	75	81	80	83	82	82	82	80
LCSD 320-652219/3-A	Lab Control Sample Dup	78	85	80	85	86	85	84	83
MB 320-652219/1-A	Method Blank	84	86	85	85	88	81	90	83

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-96541-1	PW-127	107	108	105	141	144	101
320-96541-2	PW-5127	112	112	113	160 *5+	165 *5+	108
320-96541-3	PW-221	110	115	113	160 *5+	163 *5+	104
LCS 320-652219/2-A	Lab Control Sample	80	82	78	114	110	77
LCSD 320-652219/3-A	Lab Control Sample Dup	84	88	82	116	111	76
MB 320-652219/1-A	Method Blank	84	90	84	122	114	80

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-652219/1-A**  
**Matrix: Water**  
**Analysis Batch: 653471**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 652219**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		02/07/23 05:47	02/14/23 05:37	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		02/07/23 05:47	02/14/23 05:37	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		02/07/23 05:47	02/14/23 05:37	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		02/07/23 05:47	02/14/23 05:37	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		02/07/23 05:47	02/14/23 05:37	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/07/23 05:47	02/14/23 05:37	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		02/07/23 05:47	02/14/23 05:37	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/07/23 05:47	02/14/23 05:37	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		02/07/23 05:47	02/14/23 05:37	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		02/07/23 05:47	02/14/23 05:37	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		02/07/23 05:47	02/14/23 05:37	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		02/07/23 05:47	02/14/23 05:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		02/07/23 05:47	02/14/23 05:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		02/07/23 05:47	02/14/23 05:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		02/07/23 05:47	02/14/23 05:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		02/07/23 05:47	02/14/23 05:37	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		02/07/23 05:47	02/14/23 05:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		02/07/23 05:47	02/14/23 05:37	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	84		50 - 150	02/07/23 05:47	02/14/23 05:37	1
13C4 PFHpA	86		50 - 150	02/07/23 05:47	02/14/23 05:37	1
13C4 PFOA	85		50 - 150	02/07/23 05:47	02/14/23 05:37	1
13C5 PFNA	85		50 - 150	02/07/23 05:47	02/14/23 05:37	1
13C2 PFDA	88		50 - 150	02/07/23 05:47	02/14/23 05:37	1
13C2 PFUnA	81		50 - 150	02/07/23 05:47	02/14/23 05:37	1
13C2 PFDoA	90		50 - 150	02/07/23 05:47	02/14/23 05:37	1
13C2 PFTeDA	83		50 - 150	02/07/23 05:47	02/14/23 05:37	1
13C3 PFBS	84		50 - 150	02/07/23 05:47	02/14/23 05:37	1
18O2 PFHxS	90		50 - 150	02/07/23 05:47	02/14/23 05:37	1
13C4 PFOS	84		50 - 150	02/07/23 05:47	02/14/23 05:37	1
d3-NMeFOSAA	122		50 - 150	02/07/23 05:47	02/14/23 05:37	1
d5-NEtFOSAA	114		50 - 150	02/07/23 05:47	02/14/23 05:37	1
13C3 HFPO-DA	80		50 - 150	02/07/23 05:47	02/14/23 05:37	1

**Lab Sample ID: LCS 320-652219/2-A**  
**Matrix: Water**  
**Analysis Batch: 653471**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 652219**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	44.3		ng/L		111	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	43.3		ng/L		108	71 - 133
Perfluorononanoic acid (PFNA)	40.0	43.7		ng/L		109	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-652219/2-A**  
**Matrix: Water**  
**Analysis Batch: 653471**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 652219**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	43.9		ng/L		110	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	44.6		ng/L		112	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.7		ng/L		114	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	47.7		ng/L		119	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	40.1		ng/L		100	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	41.1		ng/L		116	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.6		ng/L		103	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	39.1		ng/L		105	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.9		ng/L		102	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.1		ng/L		108	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.5		ng/L		111	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.4		ng/L		111	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	42.6		ng/L		113	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.7		ng/L		118	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	75		50 - 150
13C4 PFHpA	81		50 - 150
13C4 PFOA	80		50 - 150
13C5 PFNA	83		50 - 150
13C2 PFDA	82		50 - 150
13C2 PFUnA	82		50 - 150
13C2 PFDoA	82		50 - 150
13C2 PFTeDA	80		50 - 150
13C3 PFBS	80		50 - 150
18O2 PFHxS	82		50 - 150
13C4 PFOS	78		50 - 150
d3-NMeFOSAA	114		50 - 150
d5-NEtFOSAA	110		50 - 150
13C3 HFPO-DA	77		50 - 150

**Lab Sample ID: LCSD 320-652219/3-A**  
**Matrix: Water**  
**Analysis Batch: 653471**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 652219**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	44.2		ng/L		111	72 - 129	3 30
Perfluoroheptanoic acid (PFHpA)	40.0	41.4		ng/L		103	72 - 130	7 30
Perfluorooctanoic acid (PFOA)	40.0	44.5		ng/L		111	71 - 133	3 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-652219/3-A**  
**Matrix: Water**  
**Analysis Batch: 653471**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 652219**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	42.2		ng/L		106	69 - 130	3	30
Perfluorodecanoic acid (PFDA)	40.0	43.7		ng/L		109	71 - 129	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	43.5		ng/L		109	69 - 133	2	30
Perfluorododecanoic acid (PFDoA)	40.0	43.7		ng/L		109	72 - 134	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	45.3		ng/L		113	65 - 144	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.4		ng/L		103	71 - 132	3	30
Perfluorobutanesulfonic acid (PFBS)	35.5	40.5		ng/L		114	72 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.7		ng/L		101	68 - 131	3	30
Perfluorooctanesulfonic acid (PFOS)	37.2	38.8		ng/L		104	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.4		ng/L		106	65 - 136	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.3		ng/L		96	61 - 135	12	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.7		ng/L		106	77 - 137	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.8		ng/L		107	72 - 132	4	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	41.1		ng/L		109	76 - 136	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.4		ng/L		115	81 - 141	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	78		50 - 150
13C4 PFHpA	85		50 - 150
13C4 PFOA	80		50 - 150
13C5 PFNA	85		50 - 150
13C2 PFDA	86		50 - 150
13C2 PFUnA	85		50 - 150
13C2 PFDoA	84		50 - 150
13C2 PFTeDA	83		50 - 150
13C3 PFBS	84		50 - 150
18O2 PFHxS	88		50 - 150
13C4 PFOS	82		50 - 150
d3-NMeFOSAA	116		50 - 150
d5-NEtFOSAA	111		50 - 150
13C3 HFPO-DA	76		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

## LCMS

### Prep Batch: 652219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96541-1	PW-127	Total/NA	Water	3535	
320-96541-2	PW-5127	Total/NA	Water	3535	
320-96541-3	PW-221	Total/NA	Water	3535	
MB 320-652219/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-652219/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-652219/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 653471

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96541-1	PW-127	Total/NA	Water	EPA 537(Mod)	652219
320-96541-2	PW-5127	Total/NA	Water	EPA 537(Mod)	652219
320-96541-3	PW-221	Total/NA	Water	EPA 537(Mod)	652219
MB 320-652219/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	652219
LCS 320-652219/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	652219
LCSD 320-652219/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	652219

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

**Client Sample ID: PW-127**

**Date Collected: 01/26/23 13:20**

**Date Received: 02/03/23 18:30**

**Lab Sample ID: 320-96541-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256 mL	10.0 mL	652219	02/07/23 05:47	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	653471	02/14/23 06:47	K1S	EET SAC

**Client Sample ID: PW-5127**

**Date Collected: 01/26/23 13:50**

**Date Received: 02/03/23 18:30**

**Lab Sample ID: 320-96541-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.7 mL	10.0 mL	652219	02/07/23 05:47	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	653471	02/14/23 06:57	K1S	EET SAC

**Client Sample ID: PW-221**

**Date Collected: 02/01/23 12:20**

**Date Received: 02/03/23 18:30**

**Lab Sample ID: 320-96541-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.1 mL	10.0 mL	652219	02/07/23 05:47	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	653471	02/14/23 07:07	K1S	EET SAC

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96541-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-96541-1	PW-127	Water	01/26/23 13:20	02/03/23 18:30
320-96541-2	PW-5127	Water	01/26/23 13:50	02/03/23 18:30
320-96541-3	PW-221	Water	02/01/23 12:20	02/03/23 18:30

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-96541-1

**Login Number: 96541**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Pratali, Sandra A**

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



# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Chris Pepe	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-96541-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	2/20/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 3.1°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: All Sample Receipt Checklist (SRC) questions are “true” or “N/A”, with the exception of “Is the Field Sampler’s name present on COC?” which was marked as “False” on the SRC. The sampler’s name is on the COC and the results are not impacted.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method EPA 537(Mod): The continuing calibration verification (CCV) associated with batch 320-653471 recovered above the upper control

limit of isotope dilution analyte (IDA) d3-NMeFOSAA and d5-NEtFOSAA, The associated target analytes, N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA) and N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA) were within control limits in the CCV, therefore the data is reported. PW-127 320-96541-1), PW-5127 (320-96541-2), PW-221 (320-96541-3), CCV 320-653471/1) and (CCV 320-653471/12)

- Method EPA 537(Mod): Isotope Dilution Analyte (IDA) recovery is above the method recommend limit for the following samples: PW-5127 (320-96541-2) and PW-221 (320-96541-3). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.
- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-652219.

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

c. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

b. Are all applicable holding times met?

Yes  No  N/A

Comments:

c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

### a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A.

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

### b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS  
**Lab Report No.:** 320-96541-1

Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were not reported due to sample volume.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if

applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: NA; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments: IDAs were reported for the PFAS project samples.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

Comments:

- Samples *PW-5127* and *PW-221*: Method EPA 537(Mod)- IDA recoveries for d3-NMeFOSAA and d5-NEtFOSAA do not meet QC criteria.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: Shannon & Wilson-applied data flags “UJ” are presented in Table 1 which indicate the reporting limits are potentially estimated due to the IDA failure.

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: See above

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments: A trip blank is not required for PFAS analysis.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: A trip blank was not submitted with this work order.

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Is one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. Field duplicate pair *PW-117* and *PW-5127* was submitted with this work order.

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: RPDs were within limits, where calculable.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS  
**Lab Report No.:** 320-96541-1

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

- iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

- a. Are they defined and appropriate?

Yes  No  N/A

Comments:



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 3/3/2023 2:45:43 PM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-96821-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
3/3/2023 2:45:43 PM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	9
QC Sample Results . . . . .	10
QC Association Summary . . . . .	13
Lab Chronicle . . . . .	14
Certification Summary . . . . .	15
Method Summary . . . . .	16
Sample Summary . . . . .	17
Chain of Custody . . . . .	18
Receipt Checklists . . . . .	19

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

---

**Job ID: 320-96821-1**

---

**Laboratory: Eurofins Sacramento**

---

**Narrative**

**Job Narrative  
320-96821-1**

**Receipt**

The samples were received on 2/15/2023 12:39 PM. 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 6.0° 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 320-654144.

Method 3535: The following sample was light yellow prior to extraction: PW-151 (320-96821-1).  
preparation batch 320-654144

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



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

## Client Sample ID: PW-151

## Lab Sample ID: 320-96821-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	24		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8		1.8	0.22	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	7.5		1.8	0.75	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	7.9		1.8	0.18	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.8		1.8	0.51	ng/L	1		EPA 537(Mod)	Total/NA

## Client Sample ID: PW-113

## Lab Sample ID: 320-96821-2

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

**Client Sample ID: PW-151**

**Lab Sample ID: 320-96821-1**

Date Collected: 02/08/23 09:15

Matrix: Water

Date Received: 02/15/23 12:39

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	24		1.8	0.51	ng/L		02/16/23 11:37	03/01/23 09:42	1
Perfluoroheptanoic acid (PFHpA)	1.8		1.8	0.22	ng/L		02/16/23 11:37	03/01/23 09:42	1
Perfluorooctanoic acid (PFOA)	7.5		1.8	0.75	ng/L		02/16/23 11:37	03/01/23 09:42	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		02/16/23 11:37	03/01/23 09:42	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		02/16/23 11:37	03/01/23 09:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		02/16/23 11:37	03/01/23 09:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		02/16/23 11:37	03/01/23 09:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		02/16/23 11:37	03/01/23 09:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		02/16/23 11:37	03/01/23 09:42	1
Perfluorobutanesulfonic acid (PFBS)	7.9		1.8	0.18	ng/L		02/16/23 11:37	03/01/23 09:42	1
Perfluorohexanesulfonic acid (PFHxS)	7.8		1.8	0.51	ng/L		02/16/23 11:37	03/01/23 09:42	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		02/16/23 11:37	03/01/23 09:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		02/16/23 11:37	03/01/23 09:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.2	ng/L		02/16/23 11:37	03/01/23 09:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		02/16/23 11:37	03/01/23 09:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		02/16/23 11:37	03/01/23 09:42	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		02/16/23 11:37	03/01/23 09:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		02/16/23 11:37	03/01/23 09:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	113		50 - 150	02/16/23 11:37	03/01/23 09:42	1
13C4 PFHpA	101		50 - 150	02/16/23 11:37	03/01/23 09:42	1
13C4 PFOA	108		50 - 150	02/16/23 11:37	03/01/23 09:42	1
13C5 PFNA	105		50 - 150	02/16/23 11:37	03/01/23 09:42	1
13C2 PFDA	106		50 - 150	02/16/23 11:37	03/01/23 09:42	1
13C2 PFUnA	108		50 - 150	02/16/23 11:37	03/01/23 09:42	1
13C2 PFDoA	100		50 - 150	02/16/23 11:37	03/01/23 09:42	1
13C2 PFTeDA	99		50 - 150	02/16/23 11:37	03/01/23 09:42	1
13C3 PFBS	104		50 - 150	02/16/23 11:37	03/01/23 09:42	1
18O2 PFHxS	106		50 - 150	02/16/23 11:37	03/01/23 09:42	1
13C4 PFOS	106		50 - 150	02/16/23 11:37	03/01/23 09:42	1
d3-NMeFOSAA	115		50 - 150	02/16/23 11:37	03/01/23 09:42	1
d5-NEtFOSAA	122		50 - 150	02/16/23 11:37	03/01/23 09:42	1
13C3 HFPO-DA	103		50 - 150	02/16/23 11:37	03/01/23 09:42	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

**Client Sample ID: PW-113**

**Lab Sample ID: 320-96821-2**

**Date Collected: 02/08/23 10:20**

**Matrix: Water**

**Date Received: 02/15/23 12:39**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51	ng/L		02/16/23 11:37	03/01/23 09:53	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		02/16/23 11:37	03/01/23 09:53	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.75	ng/L		02/16/23 11:37	03/01/23 09:53	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		02/16/23 11:37	03/01/23 09:53	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		02/16/23 11:37	03/01/23 09:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		02/16/23 11:37	03/01/23 09:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		02/16/23 11:37	03/01/23 09:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.1	ng/L		02/16/23 11:37	03/01/23 09:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.64	ng/L		02/16/23 11:37	03/01/23 09:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		02/16/23 11:37	03/01/23 09:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.50	ng/L		02/16/23 11:37	03/01/23 09:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		02/16/23 11:37	03/01/23 09:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	1.1	ng/L		02/16/23 11:37	03/01/23 09:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	1.1	ng/L		02/16/23 11:37	03/01/23 09:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		02/16/23 11:37	03/01/23 09:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.5	1.3	ng/L		02/16/23 11:37	03/01/23 09:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.28	ng/L		02/16/23 11:37	03/01/23 09:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.35	ng/L		02/16/23 11:37	03/01/23 09:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	109		50 - 150	02/16/23 11:37	03/01/23 09:53	1
13C4 PFHpA	107		50 - 150	02/16/23 11:37	03/01/23 09:53	1
13C4 PFOA	109		50 - 150	02/16/23 11:37	03/01/23 09:53	1
13C5 PFNA	105		50 - 150	02/16/23 11:37	03/01/23 09:53	1
13C2 PFDA	113		50 - 150	02/16/23 11:37	03/01/23 09:53	1
13C2 PFUnA	110		50 - 150	02/16/23 11:37	03/01/23 09:53	1
13C2 PFDoA	103		50 - 150	02/16/23 11:37	03/01/23 09:53	1
13C2 PFTeDA	106		50 - 150	02/16/23 11:37	03/01/23 09:53	1
13C3 PFBS	102		50 - 150	02/16/23 11:37	03/01/23 09:53	1
18O2 PFHxS	107		50 - 150	02/16/23 11:37	03/01/23 09:53	1
13C4 PFOS	109		50 - 150	02/16/23 11:37	03/01/23 09:53	1
d3-NMeFOSAA	122		50 - 150	02/16/23 11:37	03/01/23 09:53	1
d5-NEtFOSAA	127		50 - 150	02/16/23 11:37	03/01/23 09:53	1
13C3 HFPO-DA	99		50 - 150	02/16/23 11:37	03/01/23 09:53	1

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDoA (50-150)	PFTDA (50-150)
320-96821-1	PW-151	113	101	108	105	106	108	100	99
320-96821-2	PW-113	109	107	109	105	113	110	103	106
LCS 320-654144/2-A	Lab Control Sample	107	105	108	104	109	104	106	109
LCSD 320-654144/3-A	Lab Control Sample Dup	104	102	108	102	107	106	101	104
MB 320-654144/1-A	Method Blank	104	102	107	107	107	110	102	107

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-96821-1	PW-151	104	106	106	115	122	103
320-96821-2	PW-113	102	107	109	122	127	99
LCS 320-654144/2-A	Lab Control Sample	107	102	103	113	121	101
LCSD 320-654144/3-A	Lab Control Sample Dup	103	105	106	111	117	95
MB 320-654144/1-A	Method Blank	101	98	103	118	128	105

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-654144/1-A**  
**Matrix: Water**  
**Analysis Batch: 657267**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 654144**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		02/16/23 11:37	03/01/23 08:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		02/16/23 11:37	03/01/23 08:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		02/16/23 11:37	03/01/23 08:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		02/16/23 11:37	03/01/23 08:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		02/16/23 11:37	03/01/23 08:11	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		02/16/23 11:37	03/01/23 08:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		02/16/23 11:37	03/01/23 08:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		02/16/23 11:37	03/01/23 08:11	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	104		50 - 150	02/16/23 11:37	03/01/23 08:11	1
13C4 PFHpA	102		50 - 150	02/16/23 11:37	03/01/23 08:11	1
13C4 PFOA	107		50 - 150	02/16/23 11:37	03/01/23 08:11	1
13C5 PFNA	107		50 - 150	02/16/23 11:37	03/01/23 08:11	1
13C2 PFDA	107		50 - 150	02/16/23 11:37	03/01/23 08:11	1
13C2 PFUnA	110		50 - 150	02/16/23 11:37	03/01/23 08:11	1
13C2 PFDoA	102		50 - 150	02/16/23 11:37	03/01/23 08:11	1
13C2 PFTeDA	107		50 - 150	02/16/23 11:37	03/01/23 08:11	1
13C3 PFBS	101		50 - 150	02/16/23 11:37	03/01/23 08:11	1
18O2 PFHxS	98		50 - 150	02/16/23 11:37	03/01/23 08:11	1
13C4 PFOS	103		50 - 150	02/16/23 11:37	03/01/23 08:11	1
d3-NMeFOSAA	118		50 - 150	02/16/23 11:37	03/01/23 08:11	1
d5-NEtFOSAA	128		50 - 150	02/16/23 11:37	03/01/23 08:11	1
13C3 HFPO-DA	105		50 - 150	02/16/23 11:37	03/01/23 08:11	1

**Lab Sample ID: LCS 320-654144/2-A**  
**Matrix: Water**  
**Analysis Batch: 657267**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 654144**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	41.1		ng/L		103	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	39.5		ng/L		99	71 - 133
Perfluorononanoic acid (PFNA)	40.0	42.2		ng/L		105	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-654144/2-A**  
**Matrix: Water**  
**Analysis Batch: 657267**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 654144**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	41.9		ng/L		105	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	43.0		ng/L		107	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	41.8		ng/L		105	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	40.8		ng/L		102	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	41.8		ng/L		105	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	36.9		ng/L		104	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.9		ng/L		98	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	37.0		ng/L		99	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.1		ng/L		103	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.3		ng/L		101	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	37.8		ng/L		101	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.5		ng/L		99	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	38.5		ng/L		102	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.7		ng/L		110	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	107		50 - 150
13C4 PFHpA	105		50 - 150
13C4 PFOA	108		50 - 150
13C5 PFNA	104		50 - 150
13C2 PFDA	109		50 - 150
13C2 PFUnA	104		50 - 150
13C2 PFDoA	106		50 - 150
13C2 PFTeDA	109		50 - 150
13C3 PFBS	107		50 - 150
18O2 PFHxS	102		50 - 150
13C4 PFOS	103		50 - 150
d3-NMeFOSAA	113		50 - 150
d5-NEtFOSAA	121		50 - 150
13C3 HFPO-DA	101		50 - 150

**Lab Sample ID: LCSD 320-654144/3-A**  
**Matrix: Water**  
**Analysis Batch: 657267**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 654144**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD Limit
							Limits	RPD	
Perfluorohexanoic acid (PFHxA)	40.0	41.6		ng/L		104	72 - 129	8	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.4		ng/L		104	72 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	39.6		ng/L		99	71 - 133	0	30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-654144/3-A**  
**Matrix: Water**  
**Analysis Batch: 657267**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 654144**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	44.1		ng/L		110	69 - 130	5	30
Perfluorodecanoic acid (PFDA)	40.0	41.5		ng/L		104	71 - 129	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.8		ng/L		104	69 - 133	3	30
Perfluorododecanoic acid (PFDoA)	40.0	43.1		ng/L		108	72 - 134	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	44.5		ng/L		111	65 - 144	9	30
Perfluorotetradecanoic acid (PFTeA)	40.0	42.5		ng/L		106	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)	35.5	37.0		ng/L		104	72 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.2		ng/L		97	68 - 131	2	30
Perfluorooctanesulfonic acid (PFOS)	37.2	37.3		ng/L		100	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.8		ng/L		102	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.4		ng/L		104	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	37.9		ng/L		101	77 - 137	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.6		ng/L		104	72 - 132	5	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	37.7		ng/L		100	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.3		ng/L		107	81 - 141	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	104		50 - 150
13C4 PFHpA	102		50 - 150
13C4 PFOA	108		50 - 150
13C5 PFNA	102		50 - 150
13C2 PFDA	107		50 - 150
13C2 PFUnA	106		50 - 150
13C2 PFDoA	101		50 - 150
13C2 PFTeDA	104		50 - 150
13C3 PFBS	103		50 - 150
18O2 PFHxS	105		50 - 150
13C4 PFOS	106		50 - 150
d3-NMeFOSAA	111		50 - 150
d5-NEtFOSAA	117		50 - 150
13C3 HFPO-DA	95		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

## LCMS

### Prep Batch: 654144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96821-1	PW-151	Total/NA	Water	3535	
320-96821-2	PW-113	Total/NA	Water	3535	
MB 320-654144/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-654144/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-654144/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 657267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-96821-1	PW-151	Total/NA	Water	EPA 537(Mod)	654144
320-96821-2	PW-113	Total/NA	Water	EPA 537(Mod)	654144
MB 320-654144/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	654144
LCS 320-654144/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	654144
LCSD 320-654144/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	654144

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

**Client Sample ID: PW-151**  
**Date Collected: 02/08/23 09:15**  
**Date Received: 02/15/23 12:39**

**Lab Sample ID: 320-96821-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			282.1 mL	10.0 mL	654144	02/16/23 11:37	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	657267	03/01/23 09:42	K1S	EET SAC

**Client Sample ID: PW-113**  
**Date Collected: 02/08/23 10:20**  
**Date Received: 02/15/23 12:39**

**Lab Sample ID: 320-96821-2**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			283.2 mL	10.0 mL	654144	02/16/23 11:37	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	657267	03/01/23 09:53	K1S	EET SAC

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-96821-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-96821-1	PW-151	Water	02/08/23 09:15	02/15/23 12:39
320-96821-2	PW-113	Water	02/08/23 10:20	02/15/23 12:39

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-96821-1

**Login Number: 96821**

**List Source: Eurofins 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	SEALS
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?	False	Not requested on COC.
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	

# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Jessa Tibbetts	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-96821-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	3/3/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A

Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?

Yes  No  N/A

Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A

Comments:

- b. Were the correct analyses requested?

Yes  No  N/A

Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.

Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 6.0°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: All Sample Receipt Checklist questions are “true” or “N/A” except for “Is the Field Sampler’s name present on COC?” was denoted as “false”. It was noted in the comment section that the Field Sampler’s name is not requested on the COC.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-96821-1

- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-654144.
- Method 3535: The following sample was light yellow prior to extraction: PW-151 (320-96821-1). preparation batch 320-654144.

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

- c. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

- b. Are all applicable holding times met?

Yes  No  N/A

Comments:

- c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

- a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

**b. Laboratory Control Sample/Duplicate (LCS/LCSD)**

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-96821-1

v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were not reported due to limited sample volume.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: NA; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments: IDAs were reported for the PFAS project samples.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments:

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments: A trip blank is not required for PFAS analysis.

ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: A trip blank was not submitted with this work order.

iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Is one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. A field duplicate pair was not submitted with this work order.

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: see above.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

- iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-96821-1

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

a. Are they defined and appropriate?

Yes  No  N/A

Comments:



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 3/26/2023 6:36:06 PM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-97039-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

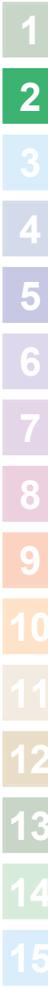
The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed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

## Authorization



Generated  
3/26/2023 6:36:06 PM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	9
QC Sample Results . . . . .	10
QC Association Summary . . . . .	16
Lab Chronicle . . . . .	17
Certification Summary . . . . .	18
Method Summary . . . . .	19
Sample Summary . . . . .	20
Chain of Custody . . . . .	21
Receipt Checklists . . . . .	22

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

---

## Job ID: 320-97039-1

---

### Laboratory: Eurofins Sacramento

#### Narrative

---

#### Job Narrative 320-97039-1

#### Receipt

The samples were received on 2/22/2023 2:47 PM. 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 1.2° C.

#### LCMS

Method EPA 537(Mod): The continuing calibration verification (CCV) associated with batch 320-658077 recovered above the upper control limit for isotope dilution analyte (IDA) 13C3 HFPO-DA, The associated target analyte, Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) was within control limits in the CCV, therefore the data is reported. The IDA 13C3 HFPO-DA, was in control in all associated samples. PW-108 (320-97039-2) and (CCV 320-658077/12)

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 320-656772.

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-656959.

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



# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

---

**Client Sample ID: PW-131**

**Lab Sample ID: 320-97039-1**

No Detections.

---

**Client Sample ID: PW-108**

**Lab Sample ID: 320-97039-2**

No Detections.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

**Client Sample ID: PW-131**

**Lab Sample ID: 320-97039-1**

**Date Collected: 02/15/23 11:25**

**Matrix: Water**

**Date Received: 02/22/23 14:47**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.55	ng/L		02/27/23 05:33	03/04/23 19:14	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24	ng/L		02/27/23 05:33	03/04/23 19:14	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.80	ng/L		02/27/23 05:33	03/04/23 19:14	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.25	ng/L		02/27/23 05:33	03/04/23 19:14	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.29	ng/L		02/27/23 05:33	03/04/23 19:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0	ng/L		02/27/23 05:33	03/04/23 19:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52	ng/L		02/27/23 05:33	03/04/23 19:14	1
Perfluorotridecanoic acid (PFTriA)	ND		1.9	1.2	ng/L		02/27/23 05:33	03/04/23 19:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.69	ng/L		02/27/23 05:33	03/04/23 19:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19	ng/L		02/27/23 05:33	03/04/23 19:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.54	ng/L		02/27/23 05:33	03/04/23 19:14	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51	ng/L		02/27/23 05:33	03/04/23 19:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.7	1.1	ng/L		02/27/23 05:33	03/04/23 19:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.7	1.2	ng/L		02/27/23 05:33	03/04/23 19:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.9	0.23	ng/L		02/27/23 05:33	03/04/23 19:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.8	1.4	ng/L		02/27/23 05:33	03/04/23 19:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.9	0.30	ng/L		02/27/23 05:33	03/04/23 19:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	0.38	ng/L		02/27/23 05:33	03/04/23 19:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		50 - 150	02/27/23 05:33	03/04/23 19:14	1
13C4 PFHpA	92		50 - 150	02/27/23 05:33	03/04/23 19:14	1
13C4 PFOA	89		50 - 150	02/27/23 05:33	03/04/23 19:14	1
13C5 PFNA	90		50 - 150	02/27/23 05:33	03/04/23 19:14	1
13C2 PFDA	87		50 - 150	02/27/23 05:33	03/04/23 19:14	1
13C2 PFUnA	84		50 - 150	02/27/23 05:33	03/04/23 19:14	1
13C2 PFDoA	82		50 - 150	02/27/23 05:33	03/04/23 19:14	1
13C2 PFTeDA	78		50 - 150	02/27/23 05:33	03/04/23 19:14	1
13C3 PFBS	80		50 - 150	02/27/23 05:33	03/04/23 19:14	1
18O2 PFHxS	90		50 - 150	02/27/23 05:33	03/04/23 19:14	1
13C4 PFOS	84		50 - 150	02/27/23 05:33	03/04/23 19:14	1
d3-NMeFOSAA	97		50 - 150	02/27/23 05:33	03/04/23 19:14	1
d5-NEtFOSAA	93		50 - 150	02/27/23 05:33	03/04/23 19:14	1
13C3 HFPO-DA	110		50 - 150	02/27/23 05:33	03/04/23 19:14	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

**Client Sample ID: PW-108**

**Lab Sample ID: 320-97039-2**

**Date Collected: 02/21/23 14:20**

**Matrix: Water**

**Date Received: 02/22/23 14:47**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		02/27/23 12:17	03/04/23 05:03	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22	ng/L		02/27/23 12:17	03/04/23 05:03	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.76	ng/L		02/27/23 12:17	03/04/23 05:03	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		02/27/23 12:17	03/04/23 05:03	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		02/27/23 12:17	03/04/23 05:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.98	ng/L		02/27/23 12:17	03/04/23 05:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		02/27/23 12:17	03/04/23 05:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		02/27/23 12:17	03/04/23 05:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.65	ng/L		02/27/23 12:17	03/04/23 05:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		02/27/23 12:17	03/04/23 05:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.51	ng/L		02/27/23 12:17	03/04/23 05:03	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.48	ng/L		02/27/23 12:17	03/04/23 05:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		02/27/23 12:17	03/04/23 05:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		02/27/23 12:17	03/04/23 05:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.21	ng/L		02/27/23 12:17	03/04/23 05:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.3	ng/L		02/27/23 12:17	03/04/23 05:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		02/27/23 12:17	03/04/23 05:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		02/27/23 12:17	03/04/23 05:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		50 - 150	02/27/23 12:17	03/04/23 05:03	1
13C4 PFHpA	107		50 - 150	02/27/23 12:17	03/04/23 05:03	1
13C4 PFOA	98		50 - 150	02/27/23 12:17	03/04/23 05:03	1
13C5 PFNA	109		50 - 150	02/27/23 12:17	03/04/23 05:03	1
13C2 PFDA	100		50 - 150	02/27/23 12:17	03/04/23 05:03	1
13C2 PFUnA	102		50 - 150	02/27/23 12:17	03/04/23 05:03	1
13C2 PFDoA	99		50 - 150	02/27/23 12:17	03/04/23 05:03	1
13C2 PFTeDA	96		50 - 150	02/27/23 12:17	03/04/23 05:03	1
13C3 PFBS	95		50 - 150	02/27/23 12:17	03/04/23 05:03	1
18O2 PFHxS	101		50 - 150	02/27/23 12:17	03/04/23 05:03	1
13C4 PFOS	99		50 - 150	02/27/23 12:17	03/04/23 05:03	1
d3-NMeFOSAA	110		50 - 150	02/27/23 12:17	03/04/23 05:03	1
d5-NEtFOSAA	113		50 - 150	02/27/23 12:17	03/04/23 05:03	1
13C3 HFPO-DA	120		50 - 150	02/27/23 12:17	03/04/23 05:03	1

Eurofins Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-97039-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-97039-1	PW-131	86	92	89	90	87	84	82	78
320-97039-2	PW-108	100	107	98	109	100	102	99	96
LCS 320-656772/2-A	Lab Control Sample	89	102	93	99	90	92	77	90
LCS 320-656959/2-A	Lab Control Sample	94	102	109	99	99	102	93	97
LCSD 320-656772/3-A	Lab Control Sample Dup	71	82	80	78	82	76	74	72
LCSD 320-656959/3-A	Lab Control Sample Dup	93	98	96	99	96	92	92	89
MB 320-656772/1-A	Method Blank	73	92	90	81	84	81	71	72
MB 320-656959/1-A	Method Blank	99	111	115	115	115	112	104	105

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-97039-1	PW-131	80	90	84	97	93	110
320-97039-2	PW-108	95	101	99	110	113	120
LCS 320-656772/2-A	Lab Control Sample	80	90	91	109	86	112
LCS 320-656959/2-A	Lab Control Sample	85	97	96	121	117	114
LCSD 320-656772/3-A	Lab Control Sample Dup	69	82	78	82	84	93
LCSD 320-656959/3-A	Lab Control Sample Dup	83	94	92	106	106	109
MB 320-656772/1-A	Method Blank	75	76	81	96	84	92
MB 320-656959/1-A	Method Blank	101	108	107	117	116	126

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-656772/1-A**  
**Matrix: Water**  
**Analysis Batch: 658101**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 656772**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		02/27/23 05:33	03/04/23 16:09	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		02/27/23 05:33	03/04/23 16:09	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		02/27/23 05:33	03/04/23 16:09	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		02/27/23 05:33	03/04/23 16:09	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		02/27/23 05:33	03/04/23 16:09	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/27/23 05:33	03/04/23 16:09	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		02/27/23 05:33	03/04/23 16:09	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/27/23 05:33	03/04/23 16:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		02/27/23 05:33	03/04/23 16:09	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		02/27/23 05:33	03/04/23 16:09	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		02/27/23 05:33	03/04/23 16:09	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		02/27/23 05:33	03/04/23 16:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		02/27/23 05:33	03/04/23 16:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		02/27/23 05:33	03/04/23 16:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		02/27/23 05:33	03/04/23 16:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		02/27/23 05:33	03/04/23 16:09	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		02/27/23 05:33	03/04/23 16:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		02/27/23 05:33	03/04/23 16:09	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	73		50 - 150	02/27/23 05:33	03/04/23 16:09	1
13C4 PFHpA	92		50 - 150	02/27/23 05:33	03/04/23 16:09	1
13C4 PFOA	90		50 - 150	02/27/23 05:33	03/04/23 16:09	1
13C5 PFNA	81		50 - 150	02/27/23 05:33	03/04/23 16:09	1
13C2 PFDA	84		50 - 150	02/27/23 05:33	03/04/23 16:09	1
13C2 PFUnA	81		50 - 150	02/27/23 05:33	03/04/23 16:09	1
13C2 PFDoA	71		50 - 150	02/27/23 05:33	03/04/23 16:09	1
13C2 PFTeDA	72		50 - 150	02/27/23 05:33	03/04/23 16:09	1
13C3 PFBS	75		50 - 150	02/27/23 05:33	03/04/23 16:09	1
18O2 PFHxS	76		50 - 150	02/27/23 05:33	03/04/23 16:09	1
13C4 PFOS	81		50 - 150	02/27/23 05:33	03/04/23 16:09	1
d3-NMeFOSAA	96		50 - 150	02/27/23 05:33	03/04/23 16:09	1
d5-NEtFOSAA	84		50 - 150	02/27/23 05:33	03/04/23 16:09	1
13C3 HFPODA	92		50 - 150	02/27/23 05:33	03/04/23 16:09	1

**Lab Sample ID: LCS 320-656772/2-A**  
**Matrix: Water**  
**Analysis Batch: 658101**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 656772**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroheptanoic acid (PFHpA)	40.0	37.4		ng/L		93	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.7		ng/L		107	71 - 133
Perfluorononanoic acid (PFNA)	40.0	39.1		ng/L		98	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-656772/2-A**  
**Matrix: Water**  
**Analysis Batch: 658101**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 656772**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	41.5		ng/L		104	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	38.3		ng/L		96	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	46.3		ng/L		116	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	43.6		ng/L		109	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	37.5		ng/L		94	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	36.5		ng/L		103	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.1		ng/L		94	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	35.5		ng/L		95	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.5		ng/L		99	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.9		ng/L		110	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	38.0		ng/L		102	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	37.6		ng/L		94	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	37.2		ng/L		99	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.3		ng/L		115	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	89		50 - 150
13C4 PFHpA	102		50 - 150
13C4 PFOA	93		50 - 150
13C5 PFNA	99		50 - 150
13C2 PFDA	90		50 - 150
13C2 PFUnA	92		50 - 150
13C2 PFDoA	77		50 - 150
13C2 PFTeDA	90		50 - 150
13C3 PFBS	80		50 - 150
18O2 PFHxS	90		50 - 150
13C4 PFOS	91		50 - 150
d3-NMeFOSAA	109		50 - 150
d5-NEtFOSAA	86		50 - 150
13C3 HFPODA	112		50 - 150

**Lab Sample ID: LCSD 320-656772/3-A**  
**Matrix: Water**  
**Analysis Batch: 658101**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 656772**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec	
							Limits	RPD
Perfluorohexanoic acid (PFHxA)	40.0	44.6		ng/L		112	72 - 129	14
Perfluoroheptanoic acid (PFHpA)	40.0	37.0		ng/L		93	72 - 130	1
Perfluorooctanoic acid (PFOA)	40.0	40.7		ng/L		102	71 - 133	5

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-656772/3-A**  
**Matrix: Water**  
**Analysis Batch: 658101**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 656772**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	44.0		ng/L		110	69 - 130	12	30
Perfluorodecanoic acid (PFDA)	40.0	42.6		ng/L		107	71 - 129	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.9		ng/L		105	69 - 133	9	30
Perfluorododecanoic acid (PFDoA)	40.0	41.0		ng/L		102	72 - 134	12	30
Perfluorotridecanoic acid (PFTriA)	40.0	42.6		ng/L		106	65 - 144	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	42.3		ng/L		106	71 - 132	12	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.9		ng/L		110	72 - 130	7	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	33.9		ng/L		93	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	35.9		ng/L		97	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.0		ng/L		105	65 - 136	6	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.0		ng/L		103	61 - 135	7	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.1		ng/L		105	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.6		ng/L		101	72 - 132	8	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	38.2		ng/L		101	76 - 136	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.2		ng/L		109	81 - 141	5	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	71		50 - 150
13C4 PFHpA	82		50 - 150
13C4 PFOA	80		50 - 150
13C5 PFNA	78		50 - 150
13C2 PFDA	82		50 - 150
13C2 PFUnA	76		50 - 150
13C2 PFDoA	74		50 - 150
13C2 PFTeDA	72		50 - 150
13C3 PFBS	69		50 - 150
18O2 PFHxS	82		50 - 150
13C4 PFOS	78		50 - 150
d3-NMeFOSAA	82		50 - 150
d5-NEtFOSAA	84		50 - 150
13C3 HFPODA	93		50 - 150

**Lab Sample ID: MB 320-656959/1-A**  
**Matrix: Water**  
**Analysis Batch: 658077**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 656959**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		02/27/23 12:17	03/04/23 04:32	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		02/27/23 12:17	03/04/23 04:32	1

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: MB 320-656959/1-A**  
**Matrix: Water**  
**Analysis Batch: 658077**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 656959**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		02/27/23 12:17	03/04/23 04:32	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		02/27/23 12:17	03/04/23 04:32	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		02/27/23 12:17	03/04/23 04:32	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		02/27/23 12:17	03/04/23 04:32	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		02/27/23 12:17	03/04/23 04:32	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		02/27/23 12:17	03/04/23 04:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		02/27/23 12:17	03/04/23 04:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		02/27/23 12:17	03/04/23 04:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		02/27/23 12:17	03/04/23 04:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		02/27/23 12:17	03/04/23 04:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		02/27/23 12:17	03/04/23 04:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		02/27/23 12:17	03/04/23 04:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		02/27/23 12:17	03/04/23 04:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		02/27/23 12:17	03/04/23 04:32	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		02/27/23 12:17	03/04/23 04:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		02/27/23 12:17	03/04/23 04:32	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	99		50 - 150	02/27/23 12:17	03/04/23 04:32	1
13C4 PFHpA	111		50 - 150	02/27/23 12:17	03/04/23 04:32	1
13C4 PFOA	115		50 - 150	02/27/23 12:17	03/04/23 04:32	1
13C5 PFNA	115		50 - 150	02/27/23 12:17	03/04/23 04:32	1
13C2 PFDA	115		50 - 150	02/27/23 12:17	03/04/23 04:32	1
13C2 PFUnA	112		50 - 150	02/27/23 12:17	03/04/23 04:32	1
13C2 PFDoA	104		50 - 150	02/27/23 12:17	03/04/23 04:32	1
13C2 PFTeDA	105		50 - 150	02/27/23 12:17	03/04/23 04:32	1
13C3 PFBS	101		50 - 150	02/27/23 12:17	03/04/23 04:32	1
18O2 PFHxS	108		50 - 150	02/27/23 12:17	03/04/23 04:32	1
13C4 PFOS	107		50 - 150	02/27/23 12:17	03/04/23 04:32	1
d3-NMeFOSAA	117		50 - 150	02/27/23 12:17	03/04/23 04:32	1
d5-NEtFOSAA	116		50 - 150	02/27/23 12:17	03/04/23 04:32	1
13C3 HFPODA	126		50 - 150	02/27/23 12:17	03/04/23 04:32	1

**Lab Sample ID: LCS 320-656959/2-A**  
**Matrix: Water**  
**Analysis Batch: 658077**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 656959**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
Perfluorohexanoic acid (PFHxA)	40.0	40.7		ng/L		102	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	36.4		ng/L		91	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	38.0		ng/L		95	71 - 133
Perfluorononanoic acid (PFNA)	40.0	41.8		ng/L		105	69 - 130
Perfluorodecanoic acid (PFDA)	40.0	42.8		ng/L		107	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.5		ng/L		101	69 - 133

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-656959/2-A**  
**Matrix: Water**  
**Analysis Batch: 658077**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 656959**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	40.0	41.4		ng/L		103	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	44.4		ng/L		111	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	39.3		ng/L		98	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	35.2		ng/L		99	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.5		ng/L		97	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	36.2		ng/L		97	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	36.6		ng/L		92	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.2		ng/L		93	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	38.9		ng/L		104	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.7		ng/L		102	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	39.4		ng/L		104	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.3		ng/L		109	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	94		50 - 150
13C4 PFHpA	102		50 - 150
13C4 PFOA	109		50 - 150
13C5 PFNA	99		50 - 150
13C2 PFDA	99		50 - 150
13C2 PFUnA	102		50 - 150
13C2 PFDoA	93		50 - 150
13C2 PFTeDA	97		50 - 150
13C3 PFBS	85		50 - 150
18O2 PFHxS	97		50 - 150
13C4 PFOS	96		50 - 150
d3-NMeFOSAA	121		50 - 150
d5-NEtFOSAA	117		50 - 150
13C3 HFPODA	114		50 - 150

**Lab Sample ID: LCSD 320-656959/3-A**  
**Matrix: Water**  
**Analysis Batch: 658077**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 656959**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	38.4		ng/L		96	72 - 129	6 30
Perfluoroheptanoic acid (PFHpA)	40.0	41.4		ng/L		103	72 - 130	13 30
Perfluorooctanoic acid (PFOA)	40.0	45.0		ng/L		112	71 - 133	17 30
Perfluorononanoic acid (PFNA)	40.0	40.2		ng/L		101	69 - 130	4 30
Perfluorodecanoic acid (PFDA)	40.0	40.6		ng/L		101	71 - 129	5 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-656959/3-A**  
**Matrix: Water**  
**Analysis Batch: 658077**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 656959**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	43.6		ng/L		109	69 - 133	7	30
Perfluorododecanoic acid (PFDoA)	40.0	42.7		ng/L		107	72 - 134	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	42.4		ng/L		106	65 - 144	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	36.3		ng/L		91	71 - 132	8	30
Perfluorobutanesulfonic acid (PFBS)	35.5	35.5		ng/L		100	72 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.8		ng/L		103	68 - 131	6	30
Perfluorooctanesulfonic acid (PFOS)	37.2	35.9		ng/L		96	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.1		ng/L		100	65 - 136	9	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.8		ng/L		100	61 - 135	7	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.9		ng/L		107	77 - 137	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.4		ng/L		101	72 - 132	1	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	37.2		ng/L		98	76 - 136	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	47.1		ng/L		125	81 - 141	13	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	93		50 - 150
13C4 PFHpA	98		50 - 150
13C4 PFOA	96		50 - 150
13C5 PFNA	99		50 - 150
13C2 PFDA	96		50 - 150
13C2 PFUnA	92		50 - 150
13C2 PFDoA	92		50 - 150
13C2 PFTeDA	89		50 - 150
13C3 PFBS	83		50 - 150
18O2 PFHxS	94		50 - 150
13C4 PFOS	92		50 - 150
d3-NMeFOSAA	106		50 - 150
d5-NEtFOSAA	106		50 - 150
13C3 HFPODA	109		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-97039-1

## LCMS

### Prep Batch: 656772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-97039-1	PW-131	Total/NA	Water	3535	
MB 320-656772/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-656772/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-656772/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Prep Batch: 656959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-97039-2	PW-108	Total/NA	Water	3535	
MB 320-656959/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-656959/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-656959/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 658077

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-97039-2	PW-108	Total/NA	Water	EPA 537(Mod)	656959
MB 320-656959/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	656959
LCS 320-656959/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	656959
LCSD 320-656959/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	656959

### Analysis Batch: 658101

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-97039-1	PW-131	Total/NA	Water	EPA 537(Mod)	656772
MB 320-656772/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	656772
LCS 320-656772/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	656772
LCSD 320-656772/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	656772

# Lab Chronicle

Client: Shannon & Wilson, Inc  
 Project/Site: AIA PFAS

Job ID: 320-97039-1

**Client Sample ID: PW-131**  
**Date Collected: 02/15/23 11:25**  
**Date Received: 02/22/23 14:47**

**Lab Sample ID: 320-97039-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.5 mL	10.0 mL	656772	02/27/23 05:33	RLT	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	658101	03/04/23 19:14	RS1	EET SAC

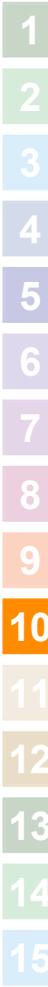
**Client Sample ID: PW-108**  
**Date Collected: 02/21/23 14:20**  
**Date Received: 02/22/23 14:47**

**Lab Sample ID: 320-97039-2**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.6 mL	10.0 mL	656959	02/27/23 12:17	SEY	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	658077	03/04/23 05:03	RS1	EET SAC

**Laboratory References:**

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



# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97039-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-97039-1	PW-131	Water	02/15/23 11:25	02/22/23 14:47
320-97039-2	PW-108	Water	02/21/23 14:20	02/22/23 14:47

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

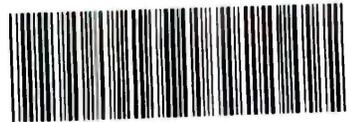
**Eurofins Environment Testing Northern California**

880 Riverside Parkway  
West Sacramento, CA 95605  
Phone: 916.373.5600

**Chain of Custody Record**



Environment Testing  
America

<b>Client Contact</b>		<b>Report To: Jessa Tibbetts</b>			<b>Site Contact:</b>			<b>Date:</b>			<b>COC No:</b>		
Shannon & Wilson Inc.		Tel/Fax: 907-433-3251			Lab Contact:			Carrier: Goldstreak			_____ of _____ COCs		
5430 Fairbanks Street, Suite 3		<b>Analysis Turnaround Time</b>			Filtered Sample PFAS QSM 5.3, Tab. B-15						Job No. 106189-003		
Anchorage, AK 99578		Calendar ( C ) or Work Days ( W ) _____											
Phone: 907-561-2120		TAT if different from Below _____											
FAX:		<input checked="" type="checkbox"/> 2 weeks											
Project Name: AIA PFAS		<input type="checkbox"/> 1 week											
Site:		<input type="checkbox"/> 2 days											
P O # 106189-003		<input type="checkbox"/> 1 day									SDG No.		
<b>Sample Identification</b>		<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type</b>	<b>Matrix</b>	<b># of Cont.</b>				Sample Specific Notes:			
PW-131		2-15-23	11:25	G	W	2	X						
PW-108		2-21-23	14:20	G	W	2	X						
 320-97039 Chain of Custody													
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____													
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown						Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month ) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For _____ Months							
Special Instructions/QC Requirements & Comments: Level II Data Package  <div style="text-align: center; font-size: 2em;">1.2c</div>													
Relinquished by: 		Company: <u>Stw</u>		Date/Time: <u>2-21-23 14:45</u>		Received by: 		Company: <u>ELTEA</u>		Date/Time: <u>2-22-23 1447</u>			
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:			
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:			

Page 21 of 22

9/26/2023



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-97039-1

**Login Number: 97039**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Pratali, Sandra A**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEAL
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Jessa Tibbetts	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-97039-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	3/26/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 1.2°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: All Sample Receipt Checklist questions are “true” or “N/A”.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method EPA 537(Mod): The continuing calibration verification (CCV) associated with batch 320-658077 recovered above the upper control limit for isotope dilution analyte (IDA) 13C3 HFPO-DA. The associated target analyte, Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) was within control limits in the CCV, therefore the data is reported. The IDA

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS  
**Lab Report No.:** 320-97039-1

13C3 HFPO-DA, was in control in all associated samples. PW-108 (320-97039-2) and (CCV 320-658077/12).

- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-656772.
- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-656959.

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

- c. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability. See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

- b. Are all applicable holding times met?

Yes  No  N/A

Comments:

- c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

### a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

### b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

CS Site Name: AIA Anchorage Airport Sitewide PFAS

Lab Report No.: 320-97039-1

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were not reported due to limited sample volume.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-97039-1

- v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: NA; see above.
- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments:
- vii. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability are not affected; see above.
- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only
- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?  
Yes  No  N/A   
Comments: IDAs were reported for the PFAS project samples.
- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)  
Yes  No  N/A   
Comments:
- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments:
- iv. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability are not affected; see above.
- e. Trip Blanks
- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A   
Comments: A trip blank is not required for PFAS analysis.
- ii. Are all results less than LoQ or RL?  
Yes  No  N/A   
Comments: A trip blank was not submitted with this work order.

CS Site Name: AIA Anchorage Airport Sitewide PFAS

Lab Report No.: 320-97039-1

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Is one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. A field duplicate pair was not submitted with this work order.

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: See above.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-97039-1

iii. If above LoQ or RL, specify what samples are affected.  
Comments: N/A; an equipment blank was not submitted with this work order.

iv. Are data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

a. Are they defined and appropriate?  
Yes  No  N/A   
Comments:



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 3/26/2023 6:47:58 PM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-97803-1

# Eurofins Sacramento

## Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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

## Authorization



Generated  
3/26/2023 6:47:58 PM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	9
QC Sample Results . . . . .	10
QC Association Summary . . . . .	13
Lab Chronicle . . . . .	14
Certification Summary . . . . .	15
Method Summary . . . . .	16
Sample Summary . . . . .	17
Chain of Custody . . . . .	18
Receipt Checklists . . . . .	19

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

---

**Job ID: 320-97803-1**

---

**Laboratory: Eurofins Sacramento**

---

**Narrative**

**Job Narrative  
320-97803-1**

**Receipt**

The samples were received on 3/16/2023 1:06 PM. 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 2.5° 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 320-661978.

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

---

**Client Sample ID: PW-135**

**Lab Sample ID: 320-97803-1**

No Detections.

---

**Client Sample ID: PW-039**

**Lab Sample ID: 320-97803-2**

No Detections.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

**Client Sample ID: PW-135**

**Lab Sample ID: 320-97803-1**

**Date Collected: 03/09/23 10:45**

**Matrix: Water**

**Date Received: 03/16/23 13:06**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		03/20/23 06:24	03/23/23 09:35	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		03/20/23 06:24	03/23/23 09:35	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		03/20/23 06:24	03/23/23 09:35	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/20/23 06:24	03/23/23 09:35	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/20/23 06:24	03/23/23 09:35	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		03/20/23 06:24	03/23/23 09:35	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		03/20/23 06:24	03/23/23 09:35	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/20/23 06:24	03/23/23 09:35	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.66	ng/L		03/20/23 06:24	03/23/23 09:35	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/20/23 06:24	03/23/23 09:35	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		03/20/23 06:24	03/23/23 09:35	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		03/20/23 06:24	03/23/23 09:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	1.1	ng/L		03/20/23 06:24	03/23/23 09:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	1.2	ng/L		03/20/23 06:24	03/23/23 09:35	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		03/20/23 06:24	03/23/23 09:35	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		03/20/23 06:24	03/23/23 09:35	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/20/23 06:24	03/23/23 09:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/20/23 06:24	03/23/23 09:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	103		50 - 150	03/20/23 06:24	03/23/23 09:35	1
13C4 PFHpA	103		50 - 150	03/20/23 06:24	03/23/23 09:35	1
13C4 PFOA	105		50 - 150	03/20/23 06:24	03/23/23 09:35	1
13C5 PFNA	102		50 - 150	03/20/23 06:24	03/23/23 09:35	1
13C2 PFDA	106		50 - 150	03/20/23 06:24	03/23/23 09:35	1
13C2 PFUnA	106		50 - 150	03/20/23 06:24	03/23/23 09:35	1
13C2 PFDoA	107		50 - 150	03/20/23 06:24	03/23/23 09:35	1
13C2 PFTeDA	106		50 - 150	03/20/23 06:24	03/23/23 09:35	1
13C3 PFBS	109		50 - 150	03/20/23 06:24	03/23/23 09:35	1
18O2 PFHxS	116		50 - 150	03/20/23 06:24	03/23/23 09:35	1
13C4 PFOS	118		50 - 150	03/20/23 06:24	03/23/23 09:35	1
d3-NMeFOSAA	103		50 - 150	03/20/23 06:24	03/23/23 09:35	1
d5-NEtFOSAA	110		50 - 150	03/20/23 06:24	03/23/23 09:35	1
13C3 HFPO-DA	91		50 - 150	03/20/23 06:24	03/23/23 09:35	1

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

**Client Sample ID: PW-039**

**Lab Sample ID: 320-97803-2**

**Date Collected: 03/09/23 15:40**

**Matrix: Water**

**Date Received: 03/16/23 13:06**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		03/20/23 06:24	03/23/23 09:45	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		03/20/23 06:24	03/23/23 09:45	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.78	ng/L		03/20/23 06:24	03/23/23 09:45	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		03/20/23 06:24	03/23/23 09:45	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		03/20/23 06:24	03/23/23 09:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		03/20/23 06:24	03/23/23 09:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		03/20/23 06:24	03/23/23 09:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		03/20/23 06:24	03/23/23 09:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.67	ng/L		03/20/23 06:24	03/23/23 09:45	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		03/20/23 06:24	03/23/23 09:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.52	ng/L		03/20/23 06:24	03/23/23 09:45	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		03/20/23 06:24	03/23/23 09:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.6	1.1	ng/L		03/20/23 06:24	03/23/23 09:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.6	1.2	ng/L		03/20/23 06:24	03/23/23 09:45	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.8	0.22	ng/L		03/20/23 06:24	03/23/23 09:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.6	1.4	ng/L		03/20/23 06:24	03/23/23 09:45	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.8	0.29	ng/L		03/20/23 06:24	03/23/23 09:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.8	0.36	ng/L		03/20/23 06:24	03/23/23 09:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		50 - 150	03/20/23 06:24	03/23/23 09:45	1
13C4 PFHpA	97		50 - 150	03/20/23 06:24	03/23/23 09:45	1
13C4 PFOA	99		50 - 150	03/20/23 06:24	03/23/23 09:45	1
13C5 PFNA	97		50 - 150	03/20/23 06:24	03/23/23 09:45	1
13C2 PFDA	98		50 - 150	03/20/23 06:24	03/23/23 09:45	1
13C2 PFUnA	99		50 - 150	03/20/23 06:24	03/23/23 09:45	1
13C2 PFDoA	98		50 - 150	03/20/23 06:24	03/23/23 09:45	1
13C2 PFTeDA	98		50 - 150	03/20/23 06:24	03/23/23 09:45	1
13C3 PFBS	107		50 - 150	03/20/23 06:24	03/23/23 09:45	1
18O2 PFHxS	111		50 - 150	03/20/23 06:24	03/23/23 09:45	1
13C4 PFOS	110		50 - 150	03/20/23 06:24	03/23/23 09:45	1
d3-NMeFOSAA	104		50 - 150	03/20/23 06:24	03/23/23 09:45	1
d5-NEtFOSAA	103		50 - 150	03/20/23 06:24	03/23/23 09:45	1
13C3 HFPO-DA	88		50 - 150	03/20/23 06:24	03/23/23 09:45	1

Eurofins Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-97803-1	PW-135	103	103	105	102	106	106	107	106
320-97803-2	PW-039	101	97	99	97	98	99	98	98
LCS 320-661978/2-A	Lab Control Sample	98	103	101	104	100	101	97	90
LCSD 320-661978/3-A	Lab Control Sample Dup	101	96	98	95	99	101	98	96
MB 320-661978/1-A	Method Blank	93	96	97	94	97	98	96	96

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-97803-1	PW-135	109	116	118	103	110	91
320-97803-2	PW-039	107	111	110	104	103	88
LCS 320-661978/2-A	Lab Control Sample	103	110	112	95	92	96
LCSD 320-661978/3-A	Lab Control Sample Dup	103	106	109	95	95	90
MB 320-661978/1-A	Method Blank	100	105	105	88	90	95

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-661978/1-A**  
**Matrix: Water**  
**Analysis Batch: 662718**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 661978**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		03/20/23 06:24	03/23/23 09:05	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		03/20/23 06:24	03/23/23 09:05	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		03/20/23 06:24	03/23/23 09:05	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		03/20/23 06:24	03/23/23 09:05	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		03/20/23 06:24	03/23/23 09:05	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		03/20/23 06:24	03/23/23 09:05	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		03/20/23 06:24	03/23/23 09:05	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		03/20/23 06:24	03/23/23 09:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		03/20/23 06:24	03/23/23 09:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		03/20/23 06:24	03/23/23 09:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		03/20/23 06:24	03/23/23 09:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		03/20/23 06:24	03/23/23 09:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		03/20/23 06:24	03/23/23 09:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		03/20/23 06:24	03/23/23 09:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		03/20/23 06:24	03/23/23 09:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		03/20/23 06:24	03/23/23 09:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		03/20/23 06:24	03/23/23 09:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		03/20/23 06:24	03/23/23 09:05	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		50 - 150	03/20/23 06:24	03/23/23 09:05	1
13C4 PFHpA	96		50 - 150	03/20/23 06:24	03/23/23 09:05	1
13C4 PFOA	97		50 - 150	03/20/23 06:24	03/23/23 09:05	1
13C5 PFNA	94		50 - 150	03/20/23 06:24	03/23/23 09:05	1
13C2 PFDA	97		50 - 150	03/20/23 06:24	03/23/23 09:05	1
13C2 PFUnA	98		50 - 150	03/20/23 06:24	03/23/23 09:05	1
13C2 PFDoA	96		50 - 150	03/20/23 06:24	03/23/23 09:05	1
13C2 PFTeDA	96		50 - 150	03/20/23 06:24	03/23/23 09:05	1
13C3 PFBS	100		50 - 150	03/20/23 06:24	03/23/23 09:05	1
18O2 PFHxS	105		50 - 150	03/20/23 06:24	03/23/23 09:05	1
13C4 PFOS	105		50 - 150	03/20/23 06:24	03/23/23 09:05	1
d3-NMeFOSAA	88		50 - 150	03/20/23 06:24	03/23/23 09:05	1
d5-NEtFOSAA	90		50 - 150	03/20/23 06:24	03/23/23 09:05	1
13C3 HFPO-DA	95		50 - 150	03/20/23 06:24	03/23/23 09:05	1

**Lab Sample ID: LCS 320-661978/2-A**  
**Matrix: Water**  
**Analysis Batch: 662718**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 661978**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanoic acid (PFHxA)	40.0	43.7		ng/L		109	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	43.1		ng/L		108	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	43.9		ng/L		110	71 - 133
Perfluorononanoic acid (PFNA)	40.0	43.6		ng/L		109	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-661978/2-A**  
**Matrix: Water**  
**Analysis Batch: 662718**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 661978**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	43.1		ng/L		108	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	43.0		ng/L		108	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	42.2		ng/L		105	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	41.8		ng/L		105	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	45.0		ng/L		113	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	39.4		ng/L		111	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.9		ng/L		101	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	40.0		ng/L		108	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.8		ng/L		109	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	45.7		ng/L		114	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.4		ng/L		106	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.6		ng/L		107	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	38.1		ng/L		101	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	38.3		ng/L		101	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	98		50 - 150
13C4 PFHpA	103		50 - 150
13C4 PFOA	101		50 - 150
13C5 PFNA	104		50 - 150
13C2 PFDA	100		50 - 150
13C2 PFUnA	101		50 - 150
13C2 PFDoA	97		50 - 150
13C2 PFTeDA	90		50 - 150
13C3 PFBS	103		50 - 150
18O2 PFHxS	110		50 - 150
13C4 PFOS	112		50 - 150
d3-NMeFOSAA	95		50 - 150
d5-NEtFOSAA	92		50 - 150
13C3 HFPO-DA	96		50 - 150

**Lab Sample ID: LCSD 320-661978/3-A**  
**Matrix: Water**  
**Analysis Batch: 662718**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 661978**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec	
							Limits	RPD
Perfluorohexanoic acid (PFHxA)	40.0	41.0		ng/L		103	72 - 129	6 30
Perfluoroheptanoic acid (PFHpA)	40.0	44.8		ng/L		112	72 - 130	4 30
Perfluorooctanoic acid (PFOA)	40.0	44.2		ng/L		110	71 - 133	1 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-661978/3-A**  
**Matrix: Water**  
**Analysis Batch: 662718**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 661978**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	46.8		ng/L		117	69 - 130	7	30
Perfluorodecanoic acid (PFDA)	40.0	41.5		ng/L		104	71 - 129	4	30
Perfluoroundecanoic acid (PFUnA)	40.0	47.3		ng/L		118	69 - 133	9	30
Perfluorododecanoic acid (PFDoA)	40.0	42.8		ng/L		107	72 - 134	1	30
Perfluorotridecanoic acid (PFTriA)	40.0	42.3		ng/L		106	65 - 144	1	30
Perfluorotetradecanoic acid (PFTeA)	40.0	44.5		ng/L		111	71 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)	35.5	40.9		ng/L		115	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	39.3		ng/L		108	68 - 131	6	30
Perfluorooctanesulfonic acid (PFOS)	37.2	40.3		ng/L		108	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.3		ng/L		111	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	46.4		ng/L		116	61 - 135	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	39.2		ng/L		105	77 - 137	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	46.9		ng/L		117	72 - 132	10	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	38.7		ng/L		103	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	39.1		ng/L		104	81 - 141	2	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	101		50 - 150
13C4 PFHpA	96		50 - 150
13C4 PFOA	98		50 - 150
13C5 PFNA	95		50 - 150
13C2 PFDA	99		50 - 150
13C2 PFUnA	101		50 - 150
13C2 PFDoA	98		50 - 150
13C2 PFTeDA	96		50 - 150
13C3 PFBS	103		50 - 150
18O2 PFHxS	106		50 - 150
13C4 PFOS	109		50 - 150
d3-NMeFOSAA	95		50 - 150
d5-NEtFOSAA	95		50 - 150
13C3 HFPO-DA	90		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

## LCMS

### Prep Batch: 661978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-97803-1	PW-135	Total/NA	Water	3535	
320-97803-2	PW-039	Total/NA	Water	3535	
MB 320-661978/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-661978/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-661978/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 662718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-97803-1	PW-135	Total/NA	Water	EPA 537(Mod)	661978
320-97803-2	PW-039	Total/NA	Water	EPA 537(Mod)	661978
MB 320-661978/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	661978
LCS 320-661978/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	661978
LCSD 320-661978/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	661978

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

**Client Sample ID: PW-135**  
**Date Collected: 03/09/23 10:45**  
**Date Received: 03/16/23 13:06**

**Lab Sample ID: 320-97803-1**  
**Matrix: Water**

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	661978	03/20/23 06:24	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	662718	03/23/23 09:35	VPM	EET SAC

**Client Sample ID: PW-039**  
**Date Collected: 03/09/23 15:40**  
**Date Received: 03/16/23 13:06**

**Lab Sample ID: 320-97803-2**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.1 mL	10.0 mL	661978	03/20/23 06:24	EJR	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	662718	03/23/23 09:45	VPM	EET SAC

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-97803-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-97803-1	PW-135	Water	03/09/23 10:45	03/16/23 13:06
320-97803-2	PW-039	Water	03/09/23 15:40	03/16/23 13:06

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-97803-1

**Login Number: 97803**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Pratali, Sandra A**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEAL
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?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Jessa Tibbetts	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-97803-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	3/26/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 2.5°C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: All Sample Receipt Checklist questions are “true” or “N/A”.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-661978.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-97803-1

Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

c. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability.  
See the following sections for our assessment.

## 5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

b. Are all applicable holding times met?

Yes  No  N/A

Comments:

c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?  
Comments: N/A
- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments: N/A; see above.
- v. Data quality or usability affected?  
Yes  No  N/A   
Comments: Data quality and usability were not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)  
Yes  No  N/A   
Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.
- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?  
Yes  No  N/A   
Comments: Metals were not reported for this work order.
- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)  
Yes  No  N/A   
Comments:
- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)  
Yes  No  N/A   
Comments:
- v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were not reported due to limited sample volume.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: NA; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments: IDAs were reported for the PFAS project samples.

- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments: A trip blank is not required for PFAS analysis.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: A trip blank was not submitted with this work order.

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Is one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: This is an ongoing project with a field duplicate collected for every 10 project samples. A field duplicate pair was not submitted with this work order.

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments:

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: see above.

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

- iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-97803-1

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

a. Are they defined and appropriate?

Yes  No  N/A

Comments:

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

Attn: Jessa Tibbetts  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 6/13/2023 9:08:05 AM

**JOB DESCRIPTION**

AIA PFAS

**JOB NUMBER**

320-100265-1

# Eurofins Sacramento

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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

## Authorization



Generated  
6/13/2023 9:08:05 AM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	8
QC Sample Results . . . . .	9
QC Association Summary . . . . .	12
Lab Chronicle . . . . .	13
Certification Summary . . . . .	14
Method Summary . . . . .	15
Sample Summary . . . . .	16
Chain of Custody . . . . .	17
Receipt Checklists . . . . .	18

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

---

**Job ID: 320-100265-1**

---

**Laboratory: Eurofins Sacramento**

---

**Narrative**

**Job Narrative  
320-100265-1**

**Receipt**

The sample was received on 5/13/2023 11:25 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.5° C.

**LCMS**

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

**Organic Prep**

Method 3535: The following samples in preparation batch 320-675299 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-035 (320-100265-1)

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

**Client Sample ID: PW-035**

**Lab Sample ID: 320-100265-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	6.7		1.7	0.49	ng/L	1		EPA 537(Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.87	J	1.7	0.21	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.9		1.7	0.71	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.8		1.7	0.17	ng/L	1		EPA 537(Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.4		1.7	0.48	ng/L	1		EPA 537(Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento



# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

**Client Sample ID: PW-035**

**Lab Sample ID: 320-100265-1**

Date Collected: 05/12/23 12:23

Matrix: Water

Date Received: 05/13/23 11:25

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	6.7		1.7	0.49	ng/L		05/16/23 21:46	05/21/23 16:36	1
Perfluoroheptanoic acid (PFHpA)	0.87	J	1.7	0.21	ng/L		05/16/23 21:46	05/21/23 16:36	1
Perfluorooctanoic acid (PFOA)	1.9		1.7	0.71	ng/L		05/16/23 21:46	05/21/23 16:36	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		05/16/23 21:46	05/21/23 16:36	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		05/16/23 21:46	05/21/23 16:36	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.92	ng/L		05/16/23 21:46	05/21/23 16:36	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		05/16/23 21:46	05/21/23 16:36	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		05/16/23 21:46	05/21/23 16:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.61	ng/L		05/16/23 21:46	05/21/23 16:36	1
Perfluorobutanesulfonic acid (PFBS)	4.8		1.7	0.17	ng/L		05/16/23 21:46	05/21/23 16:36	1
Perfluorohexanesulfonic acid (PFHxS)	2.4		1.7	0.48	ng/L		05/16/23 21:46	05/21/23 16:36	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.45	ng/L		05/16/23 21:46	05/21/23 16:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		05/16/23 21:46	05/21/23 16:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		05/16/23 21:46	05/21/23 16:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.7	0.20	ng/L		05/16/23 21:46	05/21/23 16:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.3	1.3	ng/L		05/16/23 21:46	05/21/23 16:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.7	0.27	ng/L		05/16/23 21:46	05/21/23 16:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.7	0.33	ng/L		05/16/23 21:46	05/21/23 16:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		50 - 150	05/16/23 21:46	05/21/23 16:36	1
13C4 PFHpA	104		50 - 150	05/16/23 21:46	05/21/23 16:36	1
13C4 PFOA	97		50 - 150	05/16/23 21:46	05/21/23 16:36	1
13C5 PFNA	99		50 - 150	05/16/23 21:46	05/21/23 16:36	1
13C2 PFDA	97		50 - 150	05/16/23 21:46	05/21/23 16:36	1
13C2 PFUnA	103		50 - 150	05/16/23 21:46	05/21/23 16:36	1
13C2 PFDoA	98		50 - 150	05/16/23 21:46	05/21/23 16:36	1
13C2 PFTeDA	87		50 - 150	05/16/23 21:46	05/21/23 16:36	1
13C3 PFBS	84		50 - 150	05/16/23 21:46	05/21/23 16:36	1
18O2 PFHxS	85		50 - 150	05/16/23 21:46	05/21/23 16:36	1
13C4 PFOS	91		50 - 150	05/16/23 21:46	05/21/23 16:36	1
d3-NMeFOSAA	97		50 - 150	05/16/23 21:46	05/21/23 16:36	1
d5-NEtFOSAA	95		50 - 150	05/16/23 21:46	05/21/23 16:36	1
13C3 HFPO-DA	100		50 - 150	05/16/23 21:46	05/21/23 16:36	1

# Isotope Dilution Summary

Client: Shannon & Wilcox, Inc  
 Project/Site: AIA PFAS

Job ID: 320-100265-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-100265-1	PW-035	101	104	97	99	97	103	98	87
LCS 320-675299/2-A	Lab Control Sample	99	100	96	106	100	98	95	85
LCSD 320-675299/3-A	Lab Control SampleDup	110	111	106	108	103	109	97	92
MB 320-675299/1-A	Method Blank	95	102	101	101	101	102	100	96

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-100265-1	PW-035	84	85	91	97	95	100
LCS 320-675299/2-A	Lab Control Sample	96	100	101	107	96	102
LCSD 320-675299/3-A	Lab Control SampleDup	107	109	110	112	110	100
MB 320-675299/1-A	Method Blank	95	100	96	108	97	92

#### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOS
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-675299/1-A**  
**Matrix: Water**  
**Analysis Batch: 676553**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 675299**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		05/16/23 21:46	05/21/23 12:09	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		05/16/23 21:46	05/21/23 12:09	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		05/16/23 21:46	05/21/23 12:09	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		05/16/23 21:46	05/21/23 12:09	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		05/16/23 21:46	05/21/23 12:09	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		05/16/23 21:46	05/21/23 12:09	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		05/16/23 21:46	05/21/23 12:09	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		05/16/23 21:46	05/21/23 12:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		05/16/23 21:46	05/21/23 12:09	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		05/16/23 21:46	05/21/23 12:09	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		05/16/23 21:46	05/21/23 12:09	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		05/16/23 21:46	05/21/23 12:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		05/16/23 21:46	05/21/23 12:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		05/16/23 21:46	05/21/23 12:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		05/16/23 21:46	05/21/23 12:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		05/16/23 21:46	05/21/23 12:09	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		05/16/23 21:46	05/21/23 12:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		05/16/23 21:46	05/21/23 12:09	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		50 - 150	05/16/23 21:46	05/21/23 12:09	1
13C4 PFHpA	102		50 - 150	05/16/23 21:46	05/21/23 12:09	1
13C4 PFOA	101		50 - 150	05/16/23 21:46	05/21/23 12:09	1
13C5 PFNA	101		50 - 150	05/16/23 21:46	05/21/23 12:09	1
13C2 PFDA	101		50 - 150	05/16/23 21:46	05/21/23 12:09	1
13C2 PFUnA	102		50 - 150	05/16/23 21:46	05/21/23 12:09	1
13C2 PFDoA	100		50 - 150	05/16/23 21:46	05/21/23 12:09	1
13C2 PFTeDA	96		50 - 150	05/16/23 21:46	05/21/23 12:09	1
13C3 PFBS	95		50 - 150	05/16/23 21:46	05/21/23 12:09	1
18O2 PFHxS	100		50 - 150	05/16/23 21:46	05/21/23 12:09	1
13C4 PFOS	96		50 - 150	05/16/23 21:46	05/21/23 12:09	1
d3-NMeFOSAA	108		50 - 150	05/16/23 21:46	05/21/23 12:09	1
d5-NEtFOSAA	97		50 - 150	05/16/23 21:46	05/21/23 12:09	1
13C3 HFPODA	92		50 - 150	05/16/23 21:46	05/21/23 12:09	1

**Lab Sample ID: LCS 320-675299/2-A**  
**Matrix: Water**  
**Analysis Batch: 676553**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 675299**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	44.9		ng/L		112	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	44.8		ng/L		112	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	48.0		ng/L		120	71 - 133
Perfluorononanoic acid (PFNA)	40.0	45.3		ng/L		113	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-675299/2-A**  
**Matrix: Water**  
**Analysis Batch: 676553**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 675299**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	46.9		ng/L		117	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	43.2		ng/L		108	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.7		ng/L		114	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	41.9		ng/L		105	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	42.4		ng/L		106	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	38.1		ng/L		107	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.7		ng/L		106	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	39.7		ng/L		107	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.1		ng/L		103	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	45.3		ng/L		113	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	43.2		ng/L		116	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.7		ng/L		99	72 - 132
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	37.8	38.7		ng/L		103	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.2		ng/L		114	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	99		50 - 150
13C4 PFHpA	100		50 - 150
13C4 PFOA	96		50 - 150
13C5 PFNA	106		50 - 150
13C2 PFDA	100		50 - 150
13C2 PFUnA	98		50 - 150
13C2 PFDoA	95		50 - 150
13C2 PFTeDA	85		50 - 150
13C3 PFBS	96		50 - 150
18O2 PFHxS	100		50 - 150
13C4 PFOS	101		50 - 150
d3-NMeFOSAA	107		50 - 150
d5-NEtFOSAA	96		50 - 150
13C3 HFPODA	102		50 - 150

**Lab Sample ID: LCSD 320-675299/3-A**  
**Matrix: Water**  
**Analysis Batch: 676553**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 675299**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec	
							Limits	RPD
Perfluorohexanoic acid (PFHxA)	40.0	42.4		ng/L		106	72 - 129	6 30
Perfluoroheptanoic acid (PFHpA)	40.0	44.0		ng/L		110	72 - 130	2 30
Perfluorooctanoic acid (PFOA)	40.0	45.4		ng/L		113	71 - 133	6 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-675299/3-A**  
**Matrix: Water**  
**Analysis Batch: 676553**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 675299**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	46.0		ng/L		115	69 - 130	1	30
Perfluorodecanoic acid (PFDA)	40.0	49.3		ng/L		123	71 - 129	5	30
Perfluoroundecanoic acid (PFUnA)	40.0	43.8		ng/L		110	69 - 133	1	30
Perfluorododecanoic acid (PFDoA)	40.0	44.6		ng/L		112	72 - 134	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	42.5		ng/L		106	65 - 144	1	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.5		ng/L		101	71 - 132	5	30
Perfluorobutanesulfonic acid (PFBS)	35.5	36.7		ng/L		103	72 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.3		ng/L		105	68 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	39.5		ng/L		106	65 - 140	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.9		ng/L		112	65 - 136	9	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.7		ng/L		102	61 - 135	11	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	38.9		ng/L		104	77 - 137	11	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.5		ng/L		109	72 - 132	9	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	38.1		ng/L		101	76 - 136	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.5		ng/L		112	81 - 141	2	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	110		50 - 150
13C4 PFHpA	111		50 - 150
13C4 PFOA	106		50 - 150
13C5 PFNA	108		50 - 150
13C2 PFDA	103		50 - 150
13C2 PFUnA	109		50 - 150
13C2 PFDoA	97		50 - 150
13C2 PFTeDA	92		50 - 150
13C3 PFBS	107		50 - 150
18O2 PFHxS	109		50 - 150
13C4 PFOS	110		50 - 150
d3-NMeFOSAA	112		50 - 150
d5-NEtFOSAA	110		50 - 150
13C3 HFPODA	100		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

## LCMS

### Prep Batch: 675299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-100265-1	PW-035	Total/NA	Water	3535	
MB 320-675299/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-675299/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-675299/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 676553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-100265-1	PW-035	Total/NA	Water	EPA 537(Mod)	675299
MB 320-675299/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	675299
LCS 320-675299/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	675299
LCSD 320-675299/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	675299

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

**Client Sample ID: PW-035**  
**Date Collected: 05/12/23 12:23**  
**Date Received: 05/13/23 11:25**

**Lab Sample ID: 320-100265-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			298.7 mL	10.0 mL	675299	05/16/23 21:46	JER	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	676553	05/21/23 16:36	S1M	EET SAC

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100265-1

---

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
320-100265-1	PW-035	Water	05/12/23 12:23	05/13/23 11:25

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-100265-1

**Login Number: 100265**

**List Number: 1**

**Creator: Guzman, Juan**

**List Source: Eurofins 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	2124278 & 2124279
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	

# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Kristen Freiburger	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Associate	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-100265-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	6/13/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another "network" laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 1.5 °C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: The laboratory noted the samples were received in good condition.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method 3535: The following samples in preparation batch 320-675299 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. PW-035 (320-100265-1).

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-100265-1

- c. Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

- d. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability.  
See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

- b. Are all applicable holding times met?

Yes  No  N/A

Comments:

- c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

- a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments: No project analytes were detected in the method blank.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-100265-1

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-100265-1

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were not reported.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments: N/A; see above.

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; see above.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-100265-1

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments: IDAs were reported for the PFAS project samples.

- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: The data quality and usability were not affected.

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments: A trip blank is not required for PFAS analysis.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: A trip blank was not submitted with this work order.

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: Field duplicate samples were submitted with other work orders for the overall project.

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments: N/A; see above.

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: N/A; see above.

- g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

- iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

## 7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Are they defined and appropriate?

Yes  No  N/A

Comments: Other data flags and qualifiers were not required.



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Dan McMahon  
Shannon & Wilson, Inc  
5430 Fairbanks Street  
Suite 3  
Anchorage, Alaska 99518-1263

Generated 6/18/2023 10:32:04 AM

## JOB DESCRIPTION

AIA PFAS

## JOB NUMBER

320-100811-1

# Eurofins Sacramento

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

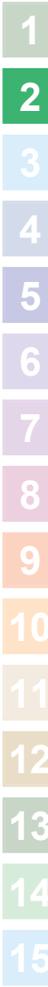
The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed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

## Authorization



Generated  
6/18/2023 10:32:04 AM

Authorized for release by  
David Alltucker, Project Manager I  
[David.Alltucker@et.eurofinsus.com](mailto:David.Alltucker@et.eurofinsus.com)  
(916)374-4383



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
Isotope Dilution Summary . . . . .	8
QC Sample Results . . . . .	9
QC Association Summary . . . . .	12
Lab Chronicle . . . . .	13
Certification Summary . . . . .	14
Method Summary . . . . .	15
Sample Summary . . . . .	16
Chain of Custody . . . . .	17
Receipt Checklists . . . . .	18

# Definitions/Glossary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

## Glossary

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

# Case Narrative

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

---

**Job ID: 320-100811-1**

---

**Laboratory: Eurofins Sacramento**

---

**Narrative**

**Job Narrative  
320-100811-1**

**Receipt**

The sample was received on 5/25/2023 1:09 PM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1° C.

**LCMS**

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

**Organic Prep**

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-681244.

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Detection Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

**Client Sample ID: PW-048**

**Lab Sample ID: 320-100811-1**

No Detections.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

# Client Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

**Client Sample ID: PW-048**

**Lab Sample ID: 320-100811-1**

**Date Collected: 05/24/23 13:18**

**Matrix: Water**

**Date Received: 05/25/23 13:09**

**Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.6	0.48	ng/L		06/07/23 20:00	06/10/23 04:23	1
Perfluoroheptanoic acid (PFHpA)	ND		1.6	0.21	ng/L		06/07/23 20:00	06/10/23 04:23	1
Perfluorooctanoic acid (PFOA)	ND		1.6	0.70	ng/L		06/07/23 20:00	06/10/23 04:23	1
Perfluorononanoic acid (PFNA)	ND		1.6	0.22	ng/L		06/07/23 20:00	06/10/23 04:23	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.25	ng/L		06/07/23 20:00	06/10/23 04:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.90	ng/L		06/07/23 20:00	06/10/23 04:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.45	ng/L		06/07/23 20:00	06/10/23 04:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.6	1.1	ng/L		06/07/23 20:00	06/10/23 04:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.60	ng/L		06/07/23 20:00	06/10/23 04:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.16	ng/L		06/07/23 20:00	06/10/23 04:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.6	0.47	ng/L		06/07/23 20:00	06/10/23 04:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.6	0.44	ng/L		06/07/23 20:00	06/10/23 04:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.1	0.99	ng/L		06/07/23 20:00	06/10/23 04:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.1	1.1	ng/L		06/07/23 20:00	06/10/23 04:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		1.6	0.20	ng/L		06/07/23 20:00	06/10/23 04:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		3.3	1.2	ng/L		06/07/23 20:00	06/10/23 04:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		1.6	0.26	ng/L		06/07/23 20:00	06/10/23 04:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.6	0.33	ng/L		06/07/23 20:00	06/10/23 04:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		50 - 150	06/07/23 20:00	06/10/23 04:23	1
13C4 PFHpA	92		50 - 150	06/07/23 20:00	06/10/23 04:23	1
13C4 PFOA	94		50 - 150	06/07/23 20:00	06/10/23 04:23	1
13C5 PFNA	96		50 - 150	06/07/23 20:00	06/10/23 04:23	1
13C2 PFDA	90		50 - 150	06/07/23 20:00	06/10/23 04:23	1
13C2 PFUnA	104		50 - 150	06/07/23 20:00	06/10/23 04:23	1
13C2 PFDoA	91		50 - 150	06/07/23 20:00	06/10/23 04:23	1
13C2 PFTeDA	82		50 - 150	06/07/23 20:00	06/10/23 04:23	1
13C3 PFBS	91		50 - 150	06/07/23 20:00	06/10/23 04:23	1
18O2 PFHxS	95		50 - 150	06/07/23 20:00	06/10/23 04:23	1
13C4 PFOS	87		50 - 150	06/07/23 20:00	06/10/23 04:23	1
d3-NMeFOSAA	88		50 - 150	06/07/23 20:00	06/10/23 04:23	1
d5-NEtFOSAA	88		50 - 150	06/07/23 20:00	06/10/23 04:23	1
13C3 HFPO-DA	105		50 - 150	06/07/23 20:00	06/10/23 04:23	1

Eurofins Sacramento

# Isotope Dilution Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFHxA (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)	PFUnA (50-150)	PFDaA (50-150)	PFTDA (50-150)
320-100811-1	PW-048	94	92	94	96	90	104	91	82
LCS 320-681244/2-A	Lab Control Sample	92	99	91	93	92	102	93	84
LCSD 320-681244/3-A	Lab Control Sample Dup	93	98	96	96	97	99	86	70
MB 320-681244/1-A	Method Blank	103	110	101	100	103	113	102	94

		Percent Isotope Dilution Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	C3PFBS (50-150)	PFHxS (50-150)	PFOS (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	HFPODA (50-150)
320-100811-1	PW-048	91	95	87	88	88	105
LCS 320-681244/2-A	Lab Control Sample	92	99	89	97	98	89
LCSD 320-681244/3-A	Lab Control Sample Dup	99	94	95	88	79	99
MB 320-681244/1-A	Method Blank	101	106	100	104	109	108

### Surrogate Legend

- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15

**Lab Sample ID: MB 320-681244/1-A**  
**Matrix: Water**  
**Analysis Batch: 681817**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 681244**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		06/07/23 20:00	06/10/23 03:32	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		06/07/23 20:00	06/10/23 03:32	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		06/07/23 20:00	06/10/23 03:32	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		06/07/23 20:00	06/10/23 03:32	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		06/07/23 20:00	06/10/23 03:32	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		06/07/23 20:00	06/10/23 03:32	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		06/07/23 20:00	06/10/23 03:32	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		06/07/23 20:00	06/10/23 03:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		06/07/23 20:00	06/10/23 03:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		06/07/23 20:00	06/10/23 03:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		06/07/23 20:00	06/10/23 03:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		06/07/23 20:00	06/10/23 03:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		06/07/23 20:00	06/10/23 03:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		06/07/23 20:00	06/10/23 03:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		2.0	0.24	ng/L		06/07/23 20:00	06/10/23 03:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		4.0	1.5	ng/L		06/07/23 20:00	06/10/23 03:32	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		2.0	0.32	ng/L		06/07/23 20:00	06/10/23 03:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	0.40	ng/L		06/07/23 20:00	06/10/23 03:32	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	103		50 - 150	06/07/23 20:00	06/10/23 03:32	1
13C4 PFHpA	110		50 - 150	06/07/23 20:00	06/10/23 03:32	1
13C4 PFOA	101		50 - 150	06/07/23 20:00	06/10/23 03:32	1
13C5 PFNA	100		50 - 150	06/07/23 20:00	06/10/23 03:32	1
13C2 PFDA	103		50 - 150	06/07/23 20:00	06/10/23 03:32	1
13C2 PFUnA	113		50 - 150	06/07/23 20:00	06/10/23 03:32	1
13C2 PFDoA	102		50 - 150	06/07/23 20:00	06/10/23 03:32	1
13C2 PFTeDA	94		50 - 150	06/07/23 20:00	06/10/23 03:32	1
13C3 PFBS	101		50 - 150	06/07/23 20:00	06/10/23 03:32	1
18O2 PFHxS	106		50 - 150	06/07/23 20:00	06/10/23 03:32	1
13C4 PFOS	100		50 - 150	06/07/23 20:00	06/10/23 03:32	1
d3-NMeFOSAA	104		50 - 150	06/07/23 20:00	06/10/23 03:32	1
d5-NEtFOSAA	109		50 - 150	06/07/23 20:00	06/10/23 03:32	1
13C3 HFPO-DA	108		50 - 150	06/07/23 20:00	06/10/23 03:32	1

**Lab Sample ID: LCS 320-681244/2-A**  
**Matrix: Water**  
**Analysis Batch: 682432**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 681244**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	40.0	42.6		ng/L		107	72 - 129
Perfluoroheptanoic acid (PFHpA)	40.0	41.6		ng/L		104	72 - 130
Perfluorooctanoic acid (PFOA)	40.0	45.9		ng/L		115	71 - 133
Perfluorononanoic acid (PFNA)	40.0	43.4		ng/L		108	69 - 130

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCS 320-681244/2-A**  
**Matrix: Water**  
**Analysis Batch: 682432**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 681244**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorodecanoic acid (PFDA)	40.0	46.5		ng/L		116	71 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.7		ng/L		104	69 - 133
Perfluorododecanoic acid (PFDoA)	40.0	45.1		ng/L		113	72 - 134
Perfluorotridecanoic acid (PFTriA)	40.0	37.3		ng/L		93	65 - 144
Perfluorotetradecanoic acid (PFTeA)	40.0	41.0		ng/L		103	71 - 132
Perfluorobutanesulfonic acid (PFBS)	35.5	38.0		ng/L		107	72 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.9		ng/L		101	68 - 131
Perfluorooctanesulfonic acid (PFOS)	37.2	38.2		ng/L		103	65 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.6		ng/L		104	65 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.3		ng/L		103	61 - 135
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	41.7		ng/L		112	77 - 137
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.2		ng/L		105	72 - 132
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	39.6		ng/L		105	76 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	46.3		ng/L		123	81 - 141

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	92		50 - 150
13C4 PFHpA	99		50 - 150
13C4 PFOA	91		50 - 150
13C5 PFNA	93		50 - 150
13C2 PFDA	92		50 - 150
13C2 PFUnA	102		50 - 150
13C2 PFDoA	93		50 - 150
13C2 PFTeDA	84		50 - 150
13C3 PFBS	92		50 - 150
18O2 PFHxS	99		50 - 150
13C4 PFOS	89		50 - 150
d3-NMeFOSAA	97		50 - 150
d5-NEtFOSAA	98		50 - 150
13C3 HFPO-DA	89		50 - 150

**Lab Sample ID: LCSD 320-681244/3-A**  
**Matrix: Water**  
**Analysis Batch: 681817**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 681244**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec RPD	
							Limits	RPD Limit
Perfluorohexanoic acid (PFHxA)	40.0	44.8		ng/L		112	72 - 129	5 30
Perfluoroheptanoic acid (PFHpA)	40.0	42.7		ng/L		107	72 - 130	3 30
Perfluorooctanoic acid (PFOA)	40.0	43.5		ng/L		109	71 - 133	5 30

Eurofins Sacramento

# QC Sample Results

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

## Method: EPA 537(Mod) - PFAS for QSM 5.3, Table B-15 (Continued)

**Lab Sample ID: LCSD 320-681244/3-A**  
**Matrix: Water**  
**Analysis Batch: 681817**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 681244**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)	40.0	43.1		ng/L		108	69 - 130	1	30
Perfluorodecanoic acid (PFDA)	40.0	40.4		ng/L		101	71 - 129	14	30
Perfluoroundecanoic acid (PFUnA)	40.0	40.3		ng/L		101	69 - 133	3	30
Perfluorododecanoic acid (PFDoA)	40.0	41.0		ng/L		102	72 - 134	10	30
Perfluorotridecanoic acid (PFTriA)	40.0	39.7		ng/L		99	65 - 144	6	30
Perfluorotetradecanoic acid (PFTeA)	40.0	40.3		ng/L		101	71 - 132	2	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.6		ng/L		109	72 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.4		ng/L		105	68 - 131	4	30
Perfluorooctanesulfonic acid (PFOS)	37.2	39.0		ng/L		105	65 - 140	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.3		ng/L		103	65 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.1		ng/L		100	61 - 135	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	37.4	38.2		ng/L		102	77 - 137	9	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.5		ng/L		104	72 - 132	2	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	37.8	33.5		ng/L		89	76 - 136	17	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.4		ng/L		110	81 - 141	11	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	93		50 - 150
13C4 PFHpA	98		50 - 150
13C4 PFOA	96		50 - 150
13C5 PFNA	96		50 - 150
13C2 PFDA	97		50 - 150
13C2 PFUnA	99		50 - 150
13C2 PFDoA	86		50 - 150
13C2 PFTeDA	70		50 - 150
13C3 PFBS	99		50 - 150
18O2 PFHxS	94		50 - 150
13C4 PFOS	95		50 - 150
d3-NMeFOSAA	88		50 - 150
d5-NEtFOSAA	79		50 - 150
13C3 HFPO-DA	99		50 - 150

# QC Association Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

## LCMS

### Prep Batch: 681244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-100811-1	PW-048	Total/NA	Water	3535	
MB 320-681244/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-681244/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-681244/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 681817

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-100811-1	PW-048	Total/NA	Water	EPA 537(Mod)	681244
MB 320-681244/1-A	Method Blank	Total/NA	Water	EPA 537(Mod)	681244
LCSD 320-681244/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537(Mod)	681244

### Analysis Batch: 682432

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-681244/2-A	Lab Control Sample	Total/NA	Water	EPA 537(Mod)	681244

# Lab Chronicle

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

**Client Sample ID: PW-048**

**Lab Sample ID: 320-100811-1**

**Date Collected: 05/24/23 13:18**

**Matrix: Water**

**Date Received: 05/25/23 13:09**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			304.4 mL	10.0 mL	681244	06/07/23 20:00	FX	EET SAC
Total/NA	Analysis	EPA 537(Mod)		1	1 mL	1 mL	681817	06/10/23 04:23	K1S	EET SAC

**Laboratory References:**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

# Accreditation/Certification Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

## Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

# Method Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

Method	Method Description	Protocol	Laboratory
EPA 537(Mod) 3535	PFAS for QSM 5.3, Table B-15 Solid-Phase Extraction (SPE)	EPA SW846	EET SAC EET SAC

**Protocol References:**

EPA = US Environmental Protection Agency

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

**Laboratory References:**

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



# Sample Summary

Client: Shannon & Wilson, Inc  
Project/Site: AIA PFAS

Job ID: 320-100811-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-100811-1	PW-048	Water	05/24/23 13:18	05/25/23 13:09

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



# Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-100811-1

**Login Number: 100811**

**List Source: Eurofins Sacramento**

**List Number: 1**

**Creator: Pratali, Sandra 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	2122574/2122575
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?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Kristen Freiburger	<b>CS Site Name:</b>	AIA Anchorage Airport Sitewide PFAS	<b>Lab Name:</b>	Eurofins Environment Testing
<b>Title:</b>	Associate	<b>ADEC File No.:</b>	2100.38.028.38	<b>Lab Report No.:</b>	320-100811-1
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	27120	<b>Lab Report Date:</b>	6/18/2023

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?  
Yes  No  N/A   
Comments: Analyses were performed by Eurofins Environment Testing in West Sacramento, California.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?  
Yes  No  N/A   
Comments: Samples were not transferred to another “network” laboratory or sub-contracted to an alternate laboratory.

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?  
Yes  No  N/A   
Comments:
- b. Were the correct analyses requested?  
Yes  No  N/A   
Analyses requested: PFAS by QSM 5.3 Table B-15 Method that complies with the modified EPA Method 537.  
Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?  
Yes  No  N/A   
Cooler temperature(s): Cooler temperature was reported at 2.1 °C upon arrival at the laboratory.  
Sample temperature(s): A temperature blank was not recorded.  
Comments:
- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?  
Yes  No  N/A   
Comments: No preservation (other than chilling) was required for the requested analyses.
- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?  
Yes  No  N/A   
Comments: The sample receipt form indicates that the samples arrived in good condition.
- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?  
Yes  No  N/A   
Comments: The laboratory noted the samples were received in good condition.
- e. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: The laboratory did not mention an effect on data quality or usability.

### 4. Case Narrative

- a. Is the case narrative present and understandable?  
Yes  No  N/A   
Comments:
- b. Are there discrepancies, errors, or QC failures identified by the lab?  
Yes  No  N/A   
Comments: The laboratory case narrative noted the following:
- Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-681244.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-100811-1

- c. Were all the corrective actions documented?

Yes  No  N/A

Comments: The laboratory did not specify any corrective actions.

- d. What is the effect on data quality/usability according to the case narrative?

Comments: The laboratory did not specify an effect on data quality or usability.  
See the following sections for our assessment.

## 5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

- b. Are all applicable holding times met?

Yes  No  N/A

Comments:

- c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments: Soil samples were not submitted with this work order.

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: The laboratory reporting limits were less than the applicable regulatory levels.

## 6. QC Samples

- a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments: No project analytes were detected in the method blank.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-100811-1

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: An LCS/LCSD was reported for PFAS analysis for each preparatory batch.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metals were not reported for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-100811-1

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: LCS/LCSD accuracy and precision were within laboratory control limits, where calculable.

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were not reported due to insufficient sample volume.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analyses were not requested for this work order.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments:

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments: N/A; see above.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; see above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above.

vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**CS Site Name:** AIA Anchorage Airport Sitewide PFAS

**Lab Report No.:** 320-100811-1

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments: IDAs were reported for the PFAS project samples.

- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

Comments:

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments:

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: The data quality and usability were not affected.

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments: A trip blank is not required for PFAS analysis.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: A trip blank was not submitted with this work order.

- iii. If above LoQ or RL, what samples are affected?

Comments: N/A; a trip blank was not submitted with this work order.

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected; see above.

f. Field Duplicate

- i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: Field duplicate samples were submitted with other work orders for the overall project.

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments: N/A; see above.

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

- iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: N/A; see above.

**g. Decontamination or Equipment Blanks**

- i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Reusable equipment was not used to collect the water supply well samples, therefore an equipment blank was not required.

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: An equipment blank was not submitted with this work order.

- iii. If above LoQ or RL, specify what samples are affected.

Comments: N/A; an equipment blank was not submitted with this work order.

- iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability are not affected; see above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

- a. Are they defined and appropriate?

Yes  No  N/A

Comments: Other data flags and qualifiers were not required.

Appendix D

# CONCEPTUAL SITE MODEL

## CONTENTS

- Scoping Form
- Graphic Form

APPENDIX D: CONCEPTUAL SITE MODEL

# Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

**Site Name:**

**File Number:**

**Completed by:**

### Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

*General Instructions: Follow the italicized instructions in each section below.*

### 1. General Information:

**Sources** *(check potential sources at the site)*

- USTs
- ASTs
- Dispensers/fuel loading racks
- Drums
- Vehicles
- Landfills
- Transformers
- Other:

**Release Mechanisms** *(check potential release mechanisms at the site)*

- Spills
- Leaks
- Direct discharge
- Burning
- Other:

**Impacted Media** *(check potentially-impacted media at the site)*

- Surface soil (0-2 feet bgs\*)
- Subsurface soil (>2 feet bgs)
- Air
- Sediment
- Groundwater
- Surface water
- Biota
- Other:

**Receptors** *(check receptors that could be affected by contamination at the site)*

- Residents (adult or child)
- Commercial or industrial worker
- Construction worker
- Subsistence harvester (i.e. gathers wild foods)
- Subsistence consumer (i.e. eats wild foods)
- Site visitor
- Trespasser
- Recreational user
- Farmer
- Other:

\* bgs - below ground surface

**2. Exposure Pathways:** *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.)

*If the box is checked, label this pathway complete:*

Complete

Comments:

Surface soil samples collected from various locations contained PFAS concentrations greater than ADEC PFAS soil limits.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)?

*If both boxes are checked, label this pathway complete:*

Complete

Comments:

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future?

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.

*If both boxes are checked, label this pathway complete:*

Complete

Comments:

PFAS contamination has been encountered in groundwater within the ANC property boundary. Although the groundwater within the ANC property boundary is not considered to be a current or future drinking water source, there is a potential that groundwater in the the area surrounding the ANC

## 2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future?

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).

*If both boxes are checked, label this pathway complete:*

Complete

Comments:

PFAS contamination has been encountered in surface water within the ANC property boundary. Surface water near ANC is not used for drinking water. However, incidental ingestion is possible during recreation and subsistence activities in creeks and lakes in the vicinity of ANC.

## 3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods?

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)?

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.)

*If all of the boxes are checked, label this pathway complete:*

Complete

Comments:

The area of concern is potentially used for harvesting.

### c) Inhalation-

#### 1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Are the contaminants in soil volatile (see Appendix D in the guidance document)?

*If both boxes are checked, label this pathway complete:*

Incomplete

Comments:

PFAS are not included in Appendix D. If volatile organic compounds are reported during future site characterization activities, this section will be updated.

## 2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminated soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures)

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)?

*If both boxes are checked, label this pathway complete:*

Incomplete

### Comments:

PFAS are not included in Appendix D. If volatile organic compounds are reported within 100 feet of occupied structures during future site characterization activities, this section will be updated.

**3. Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

**Dermal Exposure to Contaminants in Groundwater and Surface Water**

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

*Check the box if further evaluation of this pathway is needed:*



Comments:

Anchorage residents may swim in lakes in the vicinity of ANC.

According to the Alaska Department of Health of Social Services, PFOS and PFOA are not appreciably absorbed through the skin. However, Appendix B of the 2017 Guidance on Developing Conceptual Site Models lists both PFOS and PFOA. We consider dermal exposure to these compounds to be insignificant for the purposes of this CSM.

**Inhalation of Volatile Compounds in Tap Water**

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

*Check the box if further evaluation of this pathway is needed:*



Comments:

PFAS are not included in Appendix D.

## Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM<sub>10</sub>). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

*Check the box if further evaluation of this pathway is needed:*

Comments:

Surface soil samples collected from various locations contained PFAS concentrations greater than ADEC PFAS soil limits.

## Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

*Check the box if further evaluation of this pathway is needed:*

Comments:

Surface soil samples collected from various locations contained PFAS concentrations greater than ADEC PFAS soil limits. AFFF was likely released to the ground surface in unpaved areas around the ANC open to DOT&PF employees and the public.

**4. Other Comments** *(Provide other comments as necessary to support the information provided in this form.)*

This initial CSM will be revised following the receipt of analytical data.

# HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: AIA Aircraft Rescue and Fire Fighting Bldg PFAS

Completed By: Shannon & Wilson, Inc.

Date Completed: April 2024

**Instructions:** Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.

(1) Check the media that could be directly affected by the release.	(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.
Media	Transport Mechanisms
<input checked="" type="checkbox"/> Surface Soil (0-2 ft bgs)	<input checked="" type="checkbox"/> Direct release to surface soil <i>check soil</i> <input checked="" type="checkbox"/> Migration to subsurface <i>check soil</i> <input checked="" type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Runoff or erosion <i>check surface water</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input checked="" type="checkbox"/> Subsurface Soil (2-15 ft bgs)	<input checked="" type="checkbox"/> Direct release to subsurface soil <i>check soil</i> <input checked="" type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input checked="" type="checkbox"/> Ground-water	<input checked="" type="checkbox"/> Direct release to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Flow to surface water body <i>check surface water</i> <input checked="" type="checkbox"/> Flow to sediment <i>check sediment</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input checked="" type="checkbox"/> Surface Water	<input checked="" type="checkbox"/> Direct release to surface water <i>check surface water</i> <input type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Sedimentation <i>check sediment</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input checked="" type="checkbox"/> Sediment	<input checked="" type="checkbox"/> Direct release to sediment <i>check sediment</i> <input checked="" type="checkbox"/> Resuspension, runoff, or erosion <i>check surface water</i> <input checked="" type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____

(3) Check all exposure media identified in (2).	(4) Check all pathways that could be complete. The pathways identified in this column must agree with Sections 2 and 3 of the Human Health CSM Scoping Form.	(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.						
Exposure Media	Exposure Pathway/Route	Current & Future Receptors						
		Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
<input checked="" type="checkbox"/> soil	<input checked="" type="checkbox"/> Incidental Soil Ingestion <input checked="" type="checkbox"/> Dermal Absorption of Contaminants from Soil <input checked="" type="checkbox"/> Inhalation of Fugitive Dust	C/F	C/F	C/F	C/F			
<input checked="" type="checkbox"/> groundwater	<input checked="" type="checkbox"/> Ingestion of Groundwater <input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Groundwater <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water	C/F	C/F	C/F	C/F			
<input type="checkbox"/> air	<input type="checkbox"/> Inhalation of Outdoor Air <input type="checkbox"/> Inhalation of Indoor Air <input type="checkbox"/> Inhalation of Fugitive Dust							
<input checked="" type="checkbox"/> surface water	<input checked="" type="checkbox"/> Ingestion of Surface Water <input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Surface Water <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water	C/F	C/F	C/F	C/F			
<input checked="" type="checkbox"/> sediment	<input checked="" type="checkbox"/> Direct Contact with Sediment	C/F	C/F	C/F	C/F			
<input checked="" type="checkbox"/> biota	<input checked="" type="checkbox"/> Ingestion of Wild or Farmed Foods	C/F	C/F	C/F	C/F			

# Important Information

About Your Geotechnical/Environmental Report

IMPORTANT INFORMATION

## CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

## THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

## SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

## MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining

your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

### A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

### THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

### BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

### READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims

being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

**The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland**

IMPORTANT INFORMATION